

**Volume 5, Number 1**

**Print ISSN: 2574-0369**  
**Online ISSN: 2574-0377**

# **GLOBAL JOURNAL OF BUSINESS DISCIPLINES**

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# **DIGITAL DISRUPTION SOLUTION FOR AIRLINES IN BRAZIL**

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## **ABSTRACT**

*Since March 2017, the cost of denied boarding began to draw all Brazilian airlines' attention because of the Resolution 400 of the Brazilian National Civil Aviation Agency. This Resolution covers several items, but we will focus on the penalty that the airlines need to pay for each passenger who had his boarding denied involuntarily in domestic flights. Our goal is to create a plugin that any airline could use in their self-service check-in channels and direct communication with the passenger. It could also become a way to offer proactive accommodation options and monetary compensations due to itinerary or ticket schedule change.*

## **INTRODUCTION**

Nowadays, Brazilian airlines' operation has a significant concentration of flights in airports of short runways, such as Congonhas (CGH) and Santos Dumont (SDU). According to the statistical control report of the Department of Airspace Control (DECEA, 2017), they are respectively the second and the fifth busiest airports in the country. This fact results in recurring overload situations that may result in denied boarding. Also, airline tickets' perishability allied with the airline industry's low financial margins requires increasingly aggressive overselling practices. These actions are complicated situations that the airports' ground staff has to face and solve to offer a good customer experience.

The cost of denied boarding began to draw all Brazilian carriers' attention since the ANAC's Resolution 400 come into force in March of 2017. Due to this new Resolution, all airlines must pay a fine of R\$ 1065.00 for each passenger who had his boarding denied involuntarily on domestic flights. According to Section II, Art.23, § 1º from the Resolution 400, if there are passengers who have accepted the preterition in exchange for compensation, whether financial or through loyalty points and/or upgrades, the company is not obliged to pay them the imposed penalty due to operational restrictions. The range time between the closing of the check-in window and the start of the boarding process is the interval that the airport team has to identify which passengers will have their boarding denied. For domestic flights in Brazil, this range varies between 30 and 40 minutes. The proximity to the takeoff schedule makes the process

critical for punctuality. Another aggravating factor that is important to mention is the passenger contact information that the airlines have.

With the increase in self-service check-in stages to domestic flights, and since the beginning of the new Brazilian National Civil Aviation Agency (ANAC) resolution that encouraged the use of hand luggage due to the payment of checked baggage, the minutes before boarding passengers have been critical regarding punctuality. When a denied boarding situation occurs, the airline and customers' negotiation increases its complexity, especially as the airport agent needs to negotiate with the passengers to select possible groups with flexibility. The prior identification of passengers who can accommodate operational restrictions, such as overbooking and overload, brings operational efficiency. The airport agents don't spend time identifying which passengers they must first address. Compensation options must be provided by airlines, but as long as they claim to make the change voluntarily, no penalty will be imposed on the airline. Today the only point of contact we can guarantee between the airline and the passenger before boarding is the check-in process. So, this step was chosen to be the moment where we will classify the passenger as flexible or not. Our suggestion for a technological solution is based on whether this moment for the passenger's classification is voluntary or not for each trip. They can be flexible in one flight but may not be flexible for the other connecting flight.

This research's primary purpose is to investigate the operational process during disrupting situations, avoiding delays and minimizing the number of involuntary denied boarding, consequently reducing the total amount spent with fines paid by airline companies.

## **REVIEW OF THE RELEVANT LITERATURE**

### **USA Scenario**

Since the 1960s, the USA has a regulation that forces air carriers to pay compensations for those passengers who were bumped from flights because carriers sold more confirmed seats than were available. But the standard for denied boarding compensation (DBC) established in 1978 remains the same until 2008 when the U.S. Department of Transportation (DOT) ruled that passengers who encounter a delay of more than 1 hour due to the involuntarily denied boarding are entitled to compensation

(Schoonover, 2011). In 2010, the US DOT issued a Proposed Ruling on Enhancing Airline Passenger Protections that seeks to increase the denied boarding compensation airlines should pay when involuntarily denied boarding occurs (Federal Register, 2010).

Figure 2.1 shows the new compensations that the DOT established.

**Figure 2.1. Compensation Policy for Denied Boarding in the USA.**

<b>Domestic transportation</b>	
0 to 1 h arrival delay	No compensation
1 to 2 h arrival delay	200% of one-way fare (but no more than \$650)
Over two h arrival delay	400% of one-way fare (but no more than \$1300)
<b>International transportation</b>	
0 to 1 h arrival delay	No compensation
1 to 4 h arrival delay	200% of one-way fare (but no more than \$650)
Over four h arrival delay	400% of one-way fare (but no more than \$1300)

Garrow, Kressner, and Mumbower (2011) showed in their study; this new regulation didn't reduce the number of involuntarily denied boarding in the USA. Also, the increasing load factor contributed to the problem since companies have fewer options to accommodate the passengers conveniently. After this regulation, the carriers look for new solutions to tackle the involuntarily denied boarding problem; the first and more common is to seek volunteers to give up their seats. Garrow, Kressner, and Mumbower (2011) listed other actions that the U.S. carriers adopted to avoid denied boarding. These included the following: 1) Day of departure flight management: carriers use to leave the A.U. at high levels until the day of departure. This could generate more denied boarding when one carrier experiences any contingency and needs to reallocate passengers once the no-show rate of those passengers is close to zero; 2) Demand-driven dispatch: as some flights experience higher Load Factors than expected and others lower than expected, companies can swap aircraft closer to the departure to match supply and demand and avoid denied boarding. Another strategy presented by Chung and Feng (2016) entailed using airline alliances to reduce the cost of reallocating passengers.

With all these actions, the U.S. Carriers started to reduce the percentage of denied boarding, reaching its lowest level in 15 years in 2017. The figure below shows the impact of those actions to reduce the total number of denied boarding in the United States:

**Table 2.1. Passengers Boarded and Denied boarding by the Largest U.S. Air Carriers (Thousands of passengers)**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
<b>Boarded</b>	467.205	485.797	522.308	516.553	552.445	567.740	576.474	548.041	595.253	591.825	600.774	599.405	535.551	602.019	660.618	680.890
<b>Denied Boarding Total</b>	837	769	747	597	674	685	684	719	746	626	598	494	467	531	471	365
<b>Voluntary</b>	803	727	702	552	619	621	621	651	681	578	539	440	418	486	430	342
<b>Involuntary</b>	34	42	45	45	55	64	63	68	65	48	59	54	49	44	41	23
<b>Percent Denied Boarding</b>	0,18%	0,16%	0,14%	0,12%	0,12%	0,12%	0,12%	0,13%	0,13%	0,11%	0,10%	0,08%	0,09%	0,09%	0,07%	0,05%

The denied boarding evolution showed in table 2.1 is based on the U.S. Department of Transportation reports.

According to representatives from an airline industry association, GAO (2019) published a study to explain how denied boardings can be avoided on specific routes using larger aircraft if available. According to GAO (2019), airlines may accommodate passengers in a special aircraft section by upgrading or downgrading passengers. Airlines have taken a range of actions,

primarily intended to reduce such incidents by offering added incentives for passengers to volunteer to be denied boarding. Some additional ways that airlines have implemented to avoid denied boarding include reducing the rate or eliminating overbookings, improving the ability to predict no-shows or rebook passengers, improving communication with passengers, increasing and diversifying compensation for passengers, and offering passengers the opportunity to suggest acceptable voluntary denied boarding compensation.

## European Scenario

Considering the European scenario, regulation 261/2004 of the European Parliament and the Council establish standard rules on compensation and assistance to passengers in the event of denied boarding and cancellation or long delay of flights. This regulation defends that passengers should be fully informed of their rights in the event of denied boarding and cancellation or long delay of flights to effectively exercise their rights. The rules for denied boarding after this Resolution are:

1. When an operating air carrier reasonably expects to deny boarding on a flight, it shall first call for volunteers to surrender their reservations in exchange for benefits under conditions to be agreed between the passenger concerned and the operating air carrier.

2. If an insufficient number of volunteers come forward to allow the remaining passengers with reservations to board the flight, the operating air carrier may deny boarding to passengers against their will.

3. If boarding is denied to passengers against their will, the operating air carrier shall immediately compensate them.

According to this Resolution, passengers shall receive compensations amounting to:

1. EUR 250 for all flights of 1500 kilometers or less.
2. EUR 400 for all intra-Community flights of more than 1500 kilometers and all other flights between 1500 and 3500 kilometers.
3. EUR 600 for all flights not falling under (1) or (2).

But the operating air carrier can reduce the compensation mentioned above by 50% when passengers are offered re-routing to their final destination on an alternative flight which does not exceed the scheduled arrival time of the flight booked initially by:

1. Two hours, in respect of all flights of 1500 kilometers or less; or
2. Three hours, in respect of all intra-Community flights of more than 1500 kilometers and for all other flights between 1500 and 3500 kilometers; or
3. Four hours, in respect of all flights not falling under (1) or (2).

Defossez (2021) conducted a study to propose revisions of regulation 261/2004. He explains an updated airline passenger's rights from a passenger's perspective. The proposal includes some well overdue changes needed to account for a passenger's satisfaction, such as the inclusion of missed connecting flights.



## Brazilian Scenario

Some of these solutions are useful for the Brazilian carriers, such as searching for volunteers and reducing the A.U. level the day before the flight. Still, as two of the country's busiest airports have small runways with restrictions on the aircraft's size, the carriers can't use the demand-driven dispatch solution. The strategy to reallocate passengers into partners flight isn't applicable in the Brazilian scenario, as we don't have carriers from the same alliance operating domestic flights in the country. Hence, companies need to relocate passengers on competitors' flights, and this generates more costs.

Even though the USA has a specific regulation for denied boarding since the 1960s, Brazil has only reestablished more clear rules of denied boarding at the end of 2016. The same Resolution of the National Civil Aviation Agency (ANAC) establishes that the passenger has 24 hours after the purchase to give up their travel and be refunded by the airlines and that the airlines must show in their website and any marketing campaign or promotional action the total amount of the ticket, already with the taxes. With this new Resolution, the companies could also offer ancillary revenue options, such as reserved seats and checked baggage purchase. Airlines saw the possibility of increasing ancillary revenues, such as charging for the first checked bag (Josephs, 2018). This new Resolution brought a chance to improve its operating financial margins. However, the new rules for denied boarding brought extras costs, such as the compensation, that needed to be immediately managed, especially during a disruption.

A disruption situation occurs when some passengers will not reach the final destination when scheduled. This can happen for several reasons, such as weather conditions, aircraft maintenance, overload, and overbooking. However, overbooking cannot be treated as a common contingency, as passengers often feel betrayed and deceived by the companies (Wangenheim & Bayo, 2007; Büsing, Kadatz & Cleophas, 2019; Matikiti, Roberts-Lombard, & Mpinganjira, 2019). Haynes & Egan (2020) examined the ethics of overbooking from a guest's perspective exploring compensation options to guarantee satisfaction and customer loyalty (Hwang, & Wen, 2009).. If frontline employees can offer appropriate compensation to guests and give a warning of an outbooking scenario they perceive, then an ethical balance between hospitableness and commercially driven overbooking practices can be achieved.

As the Load Factor of Brazilian carriers has increased over the past 18 years, companies have fewer options to reallocate passengers.

Figure 2.2. Load Factor Evolution by Brazilian



The Load Factor evolution shown in figure 2.3 is based on ANAC, 2018, and shows that the Load Factor rate increases. Denied boarding is a problem not only to the passengers but also to airlines in the entire world. Several factors cause the airline to deny boarding, and those

factors differ across carriers. Carriers generally have strong internal incentives to reduce denied boarding because it directly impacts their operational costs and passenger satisfaction. It is essential to set that this project will cover only flight depreciation; it means that it considers the airline action to define which customer will board the flight. We will not consider canceled flight disruption in this project.

It is clear that even with all the efforts, the disruption situation could occur and is a reality in the airline business. The point of this project is to minimize the operational costs and improve recovery actions to the passenger.

To tackle those points, we will present two different perspectives:

#### 1. Operational Costs

Following Section II, Article 24. the item I from Resolution 400, in case of an involuntary, denied boarding, the airline shall, immediately, make payment of financial compensation to the passenger, and maybe by bank transfer, voucher, or cash, in the amount of 250 (two hundred and fifty) SDR, (approximately R\$ 1065.00) in the case of domestic flight.

On the other hand, in the Art.23, § 1º in the same Resolution 400, the rearrangement of the volunteer passengers on another flight by the acceptance of compensation will not set preterition so, in this case, if the passenger was a volunteer and accepted the negotiation, the airline is not obliged to pay the penalty of R\$1065.00.

Establishing an accurate mechanism for estimating the cost of disruption for each voluntary or involuntary passenger is useful for many aspects of modeling airline behavior and for better understanding the likely impact of regulations on this.

Unfortunately, there is no official number available in Brazil to identify the Passengers Boarded and Denied boarding. In Figure 2.2, we presented the Largest U.S. Air Carriers to directly collect this data from the air carriers.

#### 2. Improvement of the Management Airport Operation

Currently, the airport process in case of disruption is chaos. The process happens when the passengers are already in the boarding area. At this moment, the airline airport agent reports that there is an operational problem on the flight and asks for volunteers to follow on a different flight. At this point, there are no criteria for electing denied boarding passengers.

This usually causes a collective commotion and turmoil in the boarding area and could cause more flight delays. If no passenger volunteers, the airline airport agent randomly selects passengers, which confuses an involuntarily denied boarding situation.

Today, the airline company's only available passenger profile differentiation option is its loyalty program classification and the need for special assistance during the flight, such as wheelchairs, seniors, and unaccompanied children. The only way to differentiate them in the few minutes before takeoff is through a face-to-face approach when the airline asks the passenger group if anyone is willing to change the original flight schedule or take another route to their final destination.

In addition to the lack of differentiation between passengers, direct communication between passengers and the airline is also restricted. One of the essential flows where the telephone contact is requested is to purchase the tickets. However, not all purchases are made through the direct channels of the airlines. Intermediate channels such as travel agencies are used

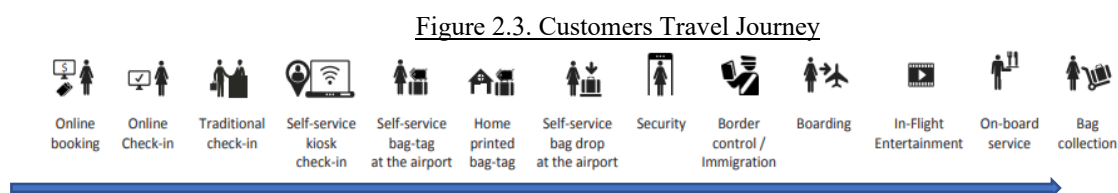
to buy tickets. The airline does not guarantee that the contact and telephone information will be forwarded to the airport front line's departure control system.

According to a survey conducted by the company MindMinners and ordered by Paypal at the beginning of 2017, in Brazil, almost 35% of leisure passengers buy tickets from an OTA or a Travel Agency, and culturally these companies do not send the customers information, which is a critical process to this project. Without their flow of contact information for passengers, airlines become very dependent on third parties. The consequence is the lack of real-time means of communication.

### What Passengers Expect from Technology

In May 2017, the International Air Transport Association (IATA) conducted a Passenger Survey, and its findings were published in a Global Passenger Survey. This survey received feedback from almost 10,700 passengers around the world. The results revealed that passengers expect technology to give them more personal control over their travel experience. In this survey, the passengers expect to be well-informed, and the preferred options for receiving notifications are by e-mail (26% of the passengers) and the Smartphone app (28% of passengers). They are still able to use SMS as a way to receive information, but this number is decreasing. So, in this project, it is clear what the passenger prefers.

Thirteen steps compose the Customer travel journey, but the remaining contact with customers is during their check-in after buying the ticket. In this part of the process, the customers need to include their national I.D. or passport number. Before the boarding process, they are the singular point of contact that can be guaranteed between the airline and the passenger. At this point, the company collects all the required information to make the trip safe and tailored to its passengers' needs. If the company calls for some additional information after this step, the only way is to contact the passenger in person or through their contact.



After having customer contact, it is imperative to distinguish what the passenger wants in a disruptive situation to minimize the inconvenience and resulting frustration. As soon as the airline has this information, it becomes possible to notify the passenger in their previously chosen channel.

In the same IATA survey, the passengers considered three essential services to improve what they called "the travel disruption experience."

- Real-time information is shared with passengers.
- Flight rebooking.
- Hotel accommodation.

However, the factors affecting time use are different between business and non-business travelers. They could be altered even by the journey since a passenger may not have flexibility on his outward flight. Still, he has on the return, making it possible to implement a solution that considers the passengers' different needs in each part of the journey. An alternative to managing a situation of collective dissatisfaction is identifying the different profiles within a group of passengers affected by the disruption. Zhang, Wang, Wang, & Wang (2010) discussed the different passenger profiles and classified them into two types: under time pressure and time enough customers. The authors also presented how airlines' solutions can have different impacts on passenger satisfaction and customer expectations. The customers under time pressure preferred loss prevention and time enough customers were more concerned about achieving gains. Oki & Dewi. (2018) examined expected revenue in the dynamic programming model to maximize revenue expectations of airlines' overbooking policies as a whole. They explain revenue management with overbooking in airlines and how customer behavior plays a significant role in cancellations and no shows. According to their findings, the expected revenue function is projected to maximize the expected revenue from accepting or rejecting the booking requests between passengers and air cargo by the same airline.

Zhang (2011) conducted a study using data gathered from the Chinese Airline industry to expand the conventional attribute-satisfaction analysis by combining customer's psychological factors and suggested a novel implementation process. His research establishes the efficacy of categorizing the customers into time fixed versus time flexible situations while highlighting asymmetric impacts in both time situations.

This study's findings propose a more contended and added accuracy to prioritize service recovery attributes contemplating psychological impacts.

## METHODOLOGY

Since there is no official information about the denied boarding costs in Brazil, the projection was based on the USA and Europe's available data. By these means, it is expected to learn the most common airport practices regarding how to adjust the airport processes in case of involuntary boarding.

This research is deeply grounded in the theory of constraints (TOC) (Goldratt, 1990; Polito et al., 2006, Goldratt & Cox, 2016). This theory was designed to help organizations achieve their goals continuously. Through TOC, any organization has at least one restriction that impacts performance. We identified a policy bottleneck that is the penalty fee that needs to be paid in case of involuntarily denied boarding caused by a disruption in a flight and the lack of time to search for volunteers.

Following the methodology after finding the bottlenecks, we used the Five Focusing Steps to adjust the process and achieve the goals.

1. Identify the constraints (bottlenecks) of the system studied:

The primary constraint of this process is the number of seats that result in denied boarding, and this restriction generates other limitations:

- a. Time: once the carriers know that they will need to deny boarding close to the departure time.

- b. Process: lack of a standard procedure makes the companies waste time searching for volunteers.
  - c. Technology: with the new ways that the passengers have to make the check-in, the number of passengers passing through the check-in desk reduces.
- 2. Explore the constraints encountered (make them work in favor of production capacity).  
This restriction impacts the Operational Costs, Airport Operation Management process, and Customer Experience. The solution that we are proposing will help air carriers to overcome those restrictions.
- 3. Subordinate the system to the changes elaborated in the previous step.  
With this new Plugin, the airlines can modify their system and adapt their airport process to improve the recovery when a disruption occurs. The airport agents can work on this new process without wasting time searching for volunteers once they know who to contact.
- 4. Increase the capacity of constraints.  
To improve this new recovering process, the airlines need to create campaigns to stimulate the passengers to download and use the companies' APP. The more the passengers use this channel, the easier it is for the carriers to contact the clients to change the flight promptly; in other words, the companies have more guarantees that they will find volunteers.
- 5. Prevent inertia from generating new constraints (ensure that the lack of action and changes in existing processes do not create new bottlenecks).  
This item will not be detailed in this project; this needs to be done after implementation. We expect to motivate airlines to change the mindset that it is possible to have passengers' information and learn more about that. The expectation is that the airlines that accept this solution are rather motivating the process change.

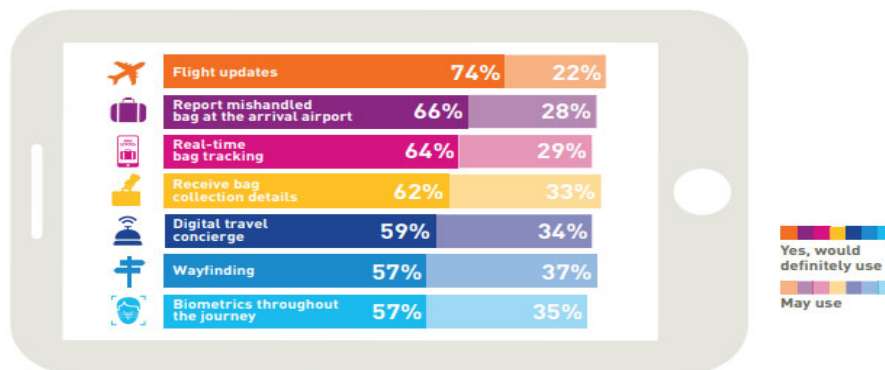
## OUTCOMES

Since March of 2017, when ANAC published Resolution 400, the airlines have been studying how to improve their processes to minimize impacts or to enhance the quality of services provided to the passengers. Our research focused on section II of the Resolution that covers the pretermission process in domestic flights. This specific section's critical point is that all carriers must pay a fine for each passenger who had his/her boarding denied involuntarily in domestic flights. In the Art.23, § 1º in the same section, there is a possibility of saving this cost if any passengers have accepted the pretermission in exchange for compensation.

As previously mentioned, a denied boarding could happen for any reason like operating restriction of an airline, airport, or even overbooking problems. By researching corporate websites like IATA, ANAC, ABEAR, and Abracorp, we verified that airlines do not have historical information about denied Boarding in Brazil. The probable cause is that this is a new resolution in Brazil, with only a little more than a year of effect. Another possible reason for the difficulty of collecting data is the fact that currently, all denied boarding processes, whether voluntary or involuntary, are performed manually by Brazilian airlines. Given the absence of technology available to assist airlines in managing a denied boarding process, we created a plugin that can be used in any self-check-in channel. It was considered the first point of contact with the passenger and the airline.

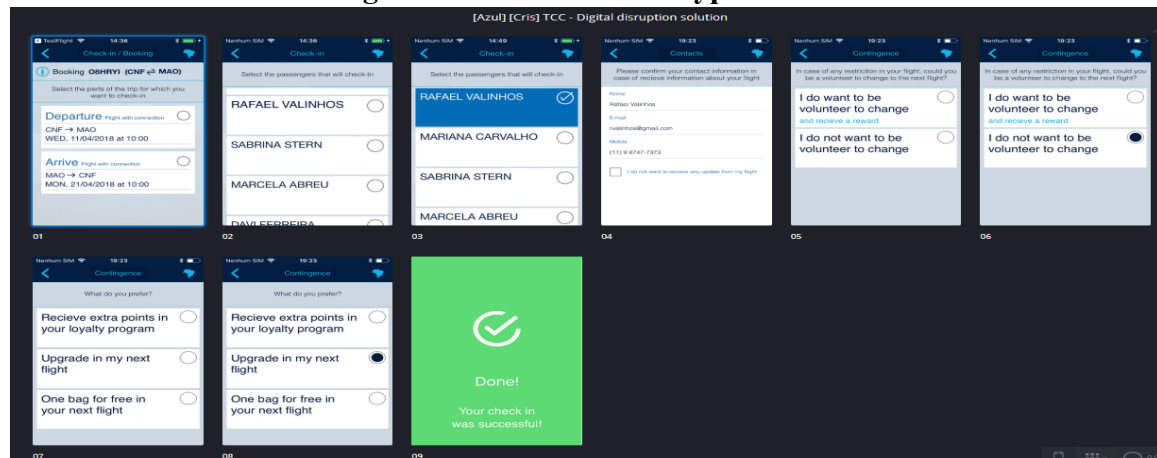
In a study conducted by SITA in 2016 in Brazil's eight international airports, which together represent approximately 63% of the country's passenger traffic, the results showed that Brazilians were optimistic about the use of self-service technology, and more than half of them (51%) used these channels during check-in. Latest I.T. Trends from Sita (2017) have shown a worldwide breakthrough in APPs for airports and airlines, intending to provide real-time and personalized information for passengers. When the clients are questioned about what kind of information and services they would like to have through APP, the first is flight information, as shown in figure 4.1.

**Figure 4.1 – Which Mobile Services Would Passengers Use? Percentage of Passengers in 2017.**



These survey results show a possible new form of communication between the airline and passengers for matters related to their flights. Another critical point to highlight is that it is believed that more and more smart and personal devices will continue to gain space. Looking at the global passengers, most of them carry a smartphone when they fly; these devices are becoming the unifying technology to provide a connected end-to-end experience (Sita, 2016).

The Project Approach (Lemes, 2008) uses the Plug-in, which will give the airline conditions to previously identify the voluntary passengers to check which items would be accepted by them. Airlines have to negotiate compensation for the passengers who did not take their original flight. The goal is to provide the airline with the number of volunteers they could have by flight, optimize the process and make the individual and customized negotiation. This improves the trading power of the airline that performs this operation in groups. Having this information in advance helps the airlines achieve a quantitative improvement, reducing the operational costs in the negotiation and saving the fine for involuntary passengers. The airline's qualitative goal is Process Improvement, generating a reduction in the aircraft ground time during disruption situations.

**Figure 4.2. Website Prototype**

The Plugin scope is gathered by two necessities:

- Passengers expect technology to give more personal control over their travel based on the IATA Passenger Survey conduct in May 2017.
- Airlines need to know how many volunteers are and what customers would like to receive as compensation

Based on these requirements, the Plugin proposes a single stream after the check-in process with questions that will join these two demands while maintaining the customer experience's continuity and providing the airline the passenger profile in advance. The items were defined through the researcher's involvement with the airline business.

This Plugin can be used by any airline and implemented in any self-service channel:

- Mobile – embedded in the airline app application in the middle of the header and footer.
- Web – it is a webpage after the check inflow.

It provides a seamless experience to continue in the airline check-in.

The steps established in this Plugin are listed below:

### **First Step**

#### **1. Confirm Data Information**

In this step, the passenger updates his/her data information. This ensures that the airline has the data updated and is more successful in contacting the passenger in case of contingency.

The passenger could do not want to include his/her data. That makes him/her out of the stream, and the Plugin assumes he/she is not a volunteer.

### **Second Step**

#### **2. Identify the passenger volunteer.**

The passenger will answer a question: "In case of any restriction in your flight, could you be a volunteer to change to the next flight?"

This question gives the airline the information on how many passengers is flexible or not considered in a denied board problem.

### Third Step

#### 3. Identify Passenger compensation needs:

If one day you have some problems, how could we help you?

- Points in your loyalty program.
- Upgrade in the next flight.
- One extra bag for free

These three possible answers are based on the airlines' compensation methods in a negotiation in Brazil's domestics flights.

All of the answers noted in the three steps are recorded in an airline database, and the information could be used as soon as needed.

It is essential to notice that this application provides a repository with the passenger's information and does not modify, cancel, or send any additional information about the flight.

**Figure 4.4. Plug-in Technical Information**

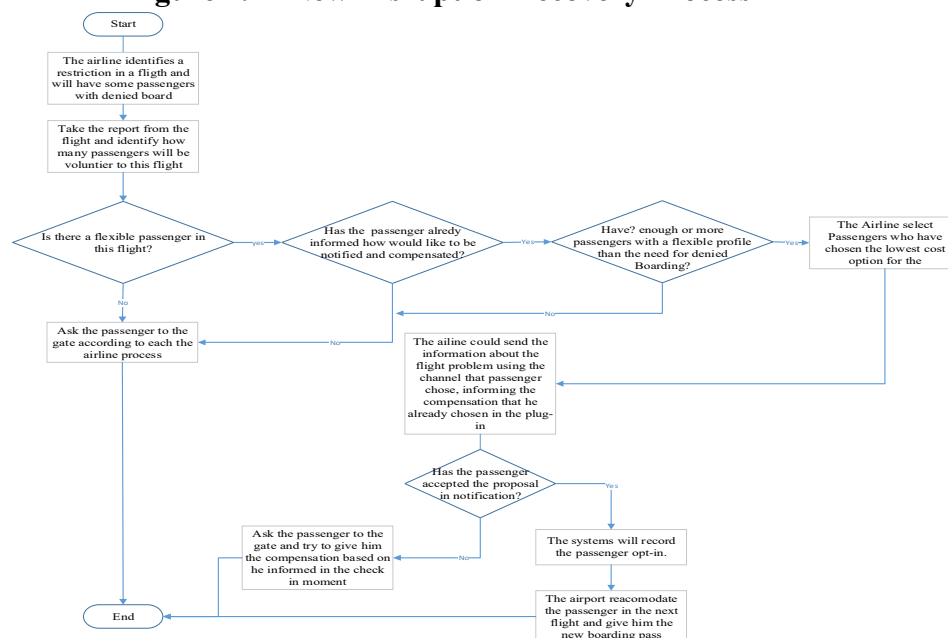
<b>Last Update</b> Oct. 26 2018	<b>SIZE</b> 3,0M	<b>Installation</b> 0,00
<b>Release</b> 1.0.1	<b>Requirement</b> Android 6.0 or superior Windows 7 or superior	<b>Content Classification</b> Free
<b>Permission</b> <ul style="list-style-type: none"> <li>📍 <b>Location</b> <ul style="list-style-type: none"> <li>• Approximate Location (network-based)</li> <li>• Precise location (GPS and network-based)</li> </ul> </li> <li>📶 <b>Connection Wi-Fi</b> <ul style="list-style-type: none"> <li>• View Wi-Fi connections</li> </ul> </li> </ul>	<b>Report</b> N/A	<b>Provided by</b> Charlies angels Group
<b>Others</b> <ul style="list-style-type: none"> <li>• Receive data from the Internet.</li> <li>• View network connections</li> <li>• Full network access</li> <li>• Read Google service configuration.</li> </ul>		
<b>Developer</b> Access site	<b>Investment</b> Design: US\$ 3,000.00 Application: US\$ 6,530.00	



## Process Improvement

After the passenger checks that he/she could be a volunteer, this information goes to the airline data store and could be used at any time until the flight departure. This simple process brings to the airline the information that they need to identify possible volunteers in case of disruption better. If the airline faces some problems, it could use the information in the new process in the flowchart below:

**Figure 4.4 –New Disruption Recovery Process**



Our analysis matches with IATA's Simplifying the Business (StB) program. StB looks over the passenger experience from an end-to-end perspective across all processes, with a particular focus on transformation. Under the StB umbrella, some programs include Real-Time Interaction that aims to provide customers with trusted, accurate real-time information from all travel service providers throughout their journey. The main gains with this process are: Knowing the customer's profile, the airline can be more assertive in approaching customers and improving the management of the operation, and consequently reducing flight delay time with the operating procedures of resettling. This process will minimize frustration knowing the customer's preferences. The airline will avoid payment of no-volunteer denied boarding penalty fee and reduced the compensation paid for volunteers. This also results in a personalized flight to the passenger and an update of passenger contact information to airlines. Besides, this information helps optimize the airport process, and we propose an optimized flow in the outcomes.

## CONCLUSIONS AND RECOMMENDATIONS

This project motivation was ANAC's resolution 400, more precisely based on Section II, Art. 23, § 1. This section establishes that all carriers must pay a fine of R\$1065.00 for each

passenger who had his boarding denied involuntarily on domestic flights. This project's main goal is to minimize the number of involuntarily denied boarding, reducing the total compensation amount spent by the airline companies and improving the airport process. The proposed way to tackle this problem is to create a plugin to identify possible volunteers in advance, avoid obstacles at the check-in counter, and reduce legal costs.

Based on the presented analysis, more than 60% of passengers transported are sensitive to use this Plugin to make the check-in. A prototype was produced, and it is available for development and testing. In addition to the financial impacts, the operational challenges to determine which passengers will be denied **boarding** is also something that the front line of an airport needs to deal with, using the new process improvement proposed in *Figure VII. 8 –New Disruption Recovery Process*.

In summary, this research presented a way to identify the type of passengers prone to volunteer. We initiated Internal process changes for the airline as soon as they have the passenger information while the I.T. development guides and channels to communicate with passengers. Roll out plan's suggestion is to put the Plugin embedded in the airline mobile app, web check-in, and implement the Process Improvement showed in the outcomes. It works based on the implementation results analyses.

The Plugin's practical implementation has statistics to validate the process's improvement and characterize the cost reduction. For this, the airlines should also be more flexible and disseminate data to promote future studies to improve customer service to the Brazilian airline market. The information produced by this app, though being simple, can be used for load factor optimization and an increase in the average rate per flight (Basa & Kedir, 2017).

A practical example of the application of this project can be identified in the case below:

An airline has more than two frequencies of flights to the same destination. One flight is with a high load factor and high fares, the other one later, with a low load factor and low tickets. If passengers on the first flight information through the Plugin are flexible to move for the other flight, they can transfer passengers to the flight with a low load factor and give compensation that they choose. In this case, the airline increases the availability on the first flight, so more seats will be available on a flight with higher fares. In summary, the airline can manage the load factor in its flights without causing problems with passengers.

While the results of this research are applicable to all airlines in Brazil, the results can be generalized to any other country with comparable information technology infrastructure. Areas for future work would involve enhancement to the use of the application. It's also essential to conduct a consumer survey to see how the passengers react to the plugin questions.

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# **FOLLOWERSHIP BEHAVIOR IN NIGERIA AND USA PENTECOSTAL CHURCHES: A STUDY OF SELECTED CHURCHES**

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## **ABSTRACT**

*The study examined the followers' behavior in some pentecostal churches in Nigeria and the USA. The design for the study was a cross-sectional one. It involved using convenience sampling technique at the same time from two churches in the USA and two in Nigeria. The participants for the study were 97 in number. The hypotheses for the study were (a) there is a difference in followers' Independent Critical Thinking (ICT) between Nigerian and USA Pentecostal churches (b) there is a difference in the followers' Active Engagement (AE) between Nigeria and USA Pentecostal churches. The study used Ghislieri, Gatti, and Cortese's (2015) followership scale. It is a brief scale for measuring followership behaviors. The data obtained from the field were analyzed using a two-tailed t-test statistical model. The study revealed a difference in the followers' AE for the examined pentecostal churches in Nigeria and the USA. There was no difference in follower's ICT behavior among Pentecostal churches examined. Therefore, one can suggest that the result might help those who want to worship, lead, and follow in these two cultures (Nigeria and USA). The study results have implications for theory and practice for employers of labor and Pentecostal church leaders in different cultural settings.*

*Keywords: Pentecostal, followers, leaders, power distance, democratic culture.*

## **INTRODUCTION**

Ghislieri et al. (2015) argued that followership is a pervasive but understudied phenomenon in organizations. Gatti et al. (2017) claimed that positive followership behaviors impact the relationship between leader and follower and the interpretation of followers' roles. It is an individuals' behavior or actions relative to a leader (Carsten et al. 2010). Riggio et al. (2008), while reviewing Kelley's work, described the model follower as one who takes part in a shared process of achieving a shared drive. Here follower's behavior is considered along the line of participation or engagement. It is what is done by the follower to motivate fellow followers, leaders and help the organization advance.

Gatti et al. (2017) claimed that followership behaviors are essential in achieving goals and improving organizational well-being because leaders' and followers' work styles can influence each other. Yukl (2013) argued that the increasing globalization of organizations makes it more important to learn about effective leadership in different cultures. Leaders are now frequently confronted with the need to influence people from other cultures, and strong influence needs a good understanding of these cultures. The study explains how culture can influence

leaders and followers, and examples of cross-cultural studies on leadership are described, including the multinational GLOBE project (Yukl, 2013). The study explored followers Active Engagement (AE) and Independent Critical Thinking (ICT) creativity and innovation in the USA and Nigerian settings (Kelly, 1992).

The study was about followers' behavior in some Pentecostal Churches in Nigeria (House of purpose-TA, Lekki, Lagos and Tower of Victory assembly, Lagos) and the USA (Redeem Christian Church of God, Upper Marlboro, Maryland and Randallstown House of Power, Maryland). Looking at followers' work attitudes or behavior, one wanted to know the extent of work engagement or participatory behavior in the churches. The study aimed to understand if the different cultures in Nigeria and the USA would make followers behave differently to the leaders or the Church as an organization. One hoped that the study help understands followers' behavior in the churches in different countries, such that leaders can best manage them in the growth of a local church.

## **STATEMENT OF THE PROBLEM**

The followers' behavior in some Nigerian churches and that of the USA churches was perceived as different, as reflected in church activities' attitudes. Followers' active engagement and independent critical thinking were the focus of the study. It appears these are not the same with churches in different countries. Leaders may have a challenge with dealing with followers as they work with followers when they find themselves in a nation different from theirs. Followers may also have challenges working with leaders from new nations. The outcome of the study may help prepare leaders to work with followers from different nationalities and cultures.

### **Purpose of the Study**

The study set out to determine if followers' behavior differs among Pentecostal Churches in the USA and Nigeria and attempt to proffer solutions.

### **Objectives**

To establish if there was a behavioral difference between Pentecostal Church followers in the USA and Nigeria. On issues of active engagement: Getting things done, getting on church work, taking initiatives; On independent critical thinking: looking at analytical thinking, ability to solve problems, open-mindedness, asking provoking and thoughtful questions, and analytical thinking.

### **Significance of the Study**

The study will benefit Pentecostal Churches in understanding followership behaviors in diverse cultures. It will also help advise followers interested in residing, working, and worshipping in other national cultures.

## LITERATURE REVIEW

In the review of related materials to the study variables, there was an examination of various aspects of the subject matter. It included topics such as understanding followership, Nigeria high-power distance, USA democratic culture, followership in USA Pentecostal churches, and followership in Nigeria Pentecostal churches.

### Understanding Followership

Kelley (1992) conceptualized that followers are strong individuals who are honest and courageous enough to chase societal goals such as fame and status, frame their meaning of life, choose to follow leaders to achieve set goals. It implies that they may not take the lead; others do while they follow.

Siegel (1993) examined the works of Kelley (1992), a management consultant. He found that most followers do not believe the stereotype of sheep or yes-men. Instead, followers fall into five types: passive followers, conformist followers, alienated followers, practical followers, and exemplary followers. Siegel claimed that people usually combine two or more types. Exemplary followers display two seemingly mutually exclusive qualities: they exercise critical thinking, independent of the group and its leader, and at the same time apply their talents with the benefit of the larger enterprise in mind. In other words, they make a positive difference in accelerating the organization toward its goals but do not necessarily want to be responsible for vision or final judgment. Essentially, Kelley claimed that followership does not mean accepting a minor role but finding fulfillment outside the narrow definition of traditional power. Kelley's (1992) point is that everyone is a follower some of the time. One needs to acknowledge both parts; he claimed that emphasizing leadership to exclude followership breeds limiting conformism.

Lundin and Lancaster (1990) argued that the longer and harder one looks at leadership, the more it is realized that great leaders' success rests on their ability to establish a base of loyal, capable, and knowledgeable followers. He also claimed that nurturing effective followership requires doing away with the misconception that leaders do all the thinking while followers merely carry out the commands. They claimed that followers play vital roles in an organization.

Looking at leadership and followership from the Church worldview, Dale (1987) argued that the relationship between leaders and followers is the most intensely practical issue in Baptist life. Like all Christian community challenges, the solution is not at the national, state, or even associational level. Ultimately, leadership and followership relationships boil down to the nuts-and-bolts workings of the local Church. He claimed that no group or organization functions well without leadership. Leaders are necessary for families, teams, businesses, armies, classrooms, or congregations to show effectiveness and efficiency. Opinions vary, however, on the practice of leadership in local churches. However, Dale (1987) argued that followership is the forgotten dimension of leadership. He claimed that the Bible does not make the mistake of overlooking followership and that the Bible identifies various types of followers.

Considering the sample of followers and leaders: Blood-kin clansman followed the patriarchs and tribal chiefs. Obedient soldiers followed the judges. Loyal subjects followed the kings. Faithful worshipers followed the priests. Responsive listeners followed the prophets.

Eager pupils followed the sages and the rabbis. Ministering congregants followed the pastors. Believing converts followed the missionaries and evangelists. None of these followers would have functioned that well without their special leaders; none of these leaders would have worked that well without their compatible followers (Dale, 1987).

Dale (1982) argued that followership is as essential in congregations as leadership. Dale (1982) believes that leadership and followership are related functions; they are two sides of the same coin. Leadership and followership are roles lived out in interdependent relationships. Also, that effective leadership strengthens followers, and effective followership strengthens leaders (Dale, 1982). Dale (1982) also claimed that followers are frequently leaders-in-training and that if every member of a given church is tired of leading or all decided not to follow, there would be neither leadership nor followership. Dale (1982) is of the view that training can enhance both leadership and followership. Ironically, religious groups who affirm the minister hood of all Christians have primarily forgotten or overlooked the importance of followership.

Dale (1987) observed that leaders could not be discussed seriously without a parallel exploration of followers in looking at interdependency. He is of the view that without subordinates, there are no leaders. Also, that without leaders, there are no subordinates. Leaders and followers live in reciprocal relationships. Therefore, interdependency is a fundamental dynamic in a healthy and effective congregational life. He argued that healthy interdependency helps leaders and followers relate in ways that advance the kingdom of God. That interdependent leader-follower mix remains one of the fundamental challenges in today's congregations. Bringing our individual and corporate lives under the rule of God, Jesus' description of God's kingdom at work is possible and probable when leaders and followers serve each other in local churches.

### **Nigeria high-power distance and USA democratic culture**

A summary of the power distance culture in Nigeria and the USA:

#### **Power distance culture in Nigeria**

Power distance comprises the acceptance of an unequal distribution of power and status in organizations. In high-power distance cultures, people expect the leaders to have greater authority and are also likely to comply with rules and orders without questioning or challenging them (Dickson, Den Hartog, & Michelson, 2003). Subordinates (followers) are less willing to challenge bosses or express disagreement (Adsit, London, Crom, & Jones, 1997). More formal policies and rules and managers consult less often with subordinates when making decisions (Smith, Peterson, Schwartz, Ahmad, & Associates, 2002).

Participative leadership is a more favorable leadership attribute (for followers) in low power distance cultures such as Western Europe, New Zealand, and the United States than in high-power distance countries such as Russia, China, Taiwan, Mexico, and Venezuela (Dorfman, Hanges, & Brodbeck, 2004). In low-power distance countries, transformational (supportive and inspirational) leadership is more likely to be combined with a participative decision-making style (Den Hartog, House, Hanges, Ruiz-Quintanilla, Dorfman, & Associates 1999). In contrast, in high-power distance countries, it is likely to be combined with a directive, autocratic decision-



making style. In developing countries with a high-power distance culture, people often prefer a "paternalistic" style that combines autocratic decisions with supportive behavior (Dickson et al., 2003; Dorfman., Howell, Hibino, Lee, J. Tate, & Bautista, 1997).

### **USA democratic culture**

Nancy (2006) defined democracy as an ordinary being, founded on the mutual realization of fellow men and on each group's independence in sharing this realization. Nancy claimed that democracy is a matter of thinking through the space that separates the public from politics. There is also the likelihood for organizations in this type of government structure (culture) to emulate this kind of culture (Dorfman, Javidan, Hanges, & House, 2012). The democratic culture is an egalitarian, participatory one, where people's culture is not exclusive, elite, or aristocratic. Kohut and Wike (2009), commenting on the USA image's positive aspects, claimed that the nation's popular culture and democratic values remain its most appealing features.

### **Followership in USA pentecostal churches**

The USA democratic culture can be said to fit into what GLOBE studies described as autonomous leadership: a newly defined global leadership dimension that refers to independent and individualistic leadership attributes (Dorfman, House, Hanges, Javidan, & Gupta (2004).

May (1994) argued that people associate being a follower with being passive in the American Christian church. He reviewed the works of Wills that rightly emphasize the ongoing responsibility of followers. He believed that the stakes on this issue are high, particularly in political and ecclesiastical leadership and that passive followers do not inevitably hold an exalted view of their leaders. On the contrary, their passivity tempts citizens and parishioners to heap disproportionate blame on leaders since passive bystanders accept no responsibility for their community's failures. Active citizenship (followership) requires that people develop the art of acting in concert with others for the common good. As the founders defined it, such public-spiritedness requires a readiness to sacrifice some measure of self-interest for the common good. May (1994), also reviewing Wills' book, argued that Wills acknowledged that followers' complicity with their leaders is timely.

Foland (2003) reviewed the book "The courageous followers" by Ira Chaleff, which he recommended for severe leaders who want effective followers and severe followers who wish to be effective leaders. He claimed that it should include all pastors and lay leaders who desire better pastor-laity relations. He highlighted the challenge with the power of followers' reaction when badly treated and their threat to withdraw support if leadership actions violate their values. The challenge leaders might have been that it is essential to remember that followers possess the power to decide to follow a leader's decisions or not.

Kellerman (2007) argued that followers are as significant as leaders. Defining followers as subordinates who have lesser amounts of power, authority, and influence than their superiors, who usually, but not always, fall in line, she noted that everyone is a follower at various points in time. Kellerman (2007) argued that when followers get bolder and more strategic are less likely to know their place and affect workplaces for mixed results. She identifies five types of followers based on the level of engagement: isolate, participant, bystander, activist, and diehard. With

examples extending from Nazi of Germany to Merck, she explored each type of the U.S. military's Operation Anaconda in Afghanistan. She also explored the relationships between leaders and followers, who, Kellerman (2007) argued, should be understood as inseparable. Followership is not about varying the rank of followers, he stated, but instead about changing their response to their rank, their superiors, and the situation at hand.

### **Followership in Nigeria Pentecostal churches.**

Ikeh (2011) examined team leadership of leaders and followers in a Pentecostal church, using "The Tidings of Faith Ministries International Incorporated, Jos" as a case study. The research revealed that the institutional leadership had failed to address the all-important question of leadership distance between the clergy and the laity (high-power distance). It showed that the clergy has the cumbersome work of running almost every aspect of the ministry responsibility while the laity(followers) becomes spectators. He also found out that there is no conscious attempt within the ministry to train and make competent some outstanding members of the laity (followers) by involving them in everyday leadership to developing leadership continuity in the 21st century. As a credible alternative, the research proposed team leadership mode as an effective and 21st-century friendly option for the Tidings of Faith in the years ahead. These include strategies to manage conflict and moral issues and training for laity (followers), and mentoring programs for the next generation of church leaders. In other words, to overcome this obvious challenge, leaders' and followers' power distance gap can be closed through training and mentoring.

Ogbueli (2005), a leading pastor in Nigeria, argued that a local church's challenge with members(followers) would include finding trained and untrained followers in the Church. He claimed that most churches have 90% untrained and un-disciplined people and less than Ten percent of trained people and that less than two percent are involved in training others. Oladimeji (2009) argued that the Church leaders in Nigeria could effectively reach out to only 200 people within their Church. Ogbueli (2005) also claimed that to deal with this challenge or limitation; there will be a need to train a few to train others. In Nigeria, where one large Pentecostal Church that seats 30 000 to 60 000 on a single Sunday, one pastor as a lead pastor having one-on-one contact with one's pastor as a follower would be challenging. Oladimeji (2009) admonished Nigeria church leaders to adopt the use of home cell groups to grow their churches. However, in these large Nigeria Pentecostal churches, for followers to have counseling, mentoring and an appointment with the lead pastor of the church and other church leaders is a huge challenge.

The current changes in the world of organizations demand leaders who can face the challenges of uncertainties, and to influence their subordinates' change readiness, and develop followers who can provide backing in these challenging times (Ghislieri et al., 2015). Ghislieri et al. (2015) argued that several scholars are of the view that followers are a precondition for successful organizations, a position supported by Agho's (2009) results: that more than 98% of 302 research respondents agree with statements regarding the influence that effective followers have on the organization. However, Kelly (1992) drew attention to the active engagement and independent critical thinking of followers. Ghislieri et al. (2015) argued that active and independent followership is related to different personal and organizational variables. On

personal features, Tanoff and Barlow (2002) examined leadership traits by employing a tool that adopts the Five-Factor Model. The personality features showed a positive relationship with the Two Factors of Followership as stated by Kelley's (1992) scale, conscientiousness (Conscientiousness) was above all.

In respect to organizational variables, Blanchard, Welbourne, Gilmore, and Bullock (2009) examined the well-being and motivational pointers about followership proportions. A sample of university personnel found that AE positively links to organizational commitment (affective and normative) and job satisfaction (intrinsic and extrinsic). The same study found that ICT has a positive link with intrinsic job satisfaction but not positively linked to extrinsic job satisfaction and organizational commitment. In this study, one aimed to determine if AE and ICT were different between Nigeria and the USA.

### **Research hypotheses**

There is a difference in followers' independent critical thinking (ICT) between Nigerian and USA Pentecostal churches.

There is a difference in the followers' active Engagement (AE) between Nigerian and USA Pentecostal churches.

### **Theoretical framework**

The study used Kelley's (1992) work on followership as a theoretical framework. He operationalized the followership work along two main dimensions: a. Active Engagement (AE) – a propensity to take the initiative, participate actively and be self-starters, especially in the relationship with the leader; b. Independent Critical Thinking (ICT) – offering constructive criticism and showing the ability to think for oneself with creativity and innovation. Kelley (1992) also advocates that active and independent followership is related to different personal and organizational variables. The study used Kelly's work to see followers' behavioral dimensions along with AE and ICT lines. The followership scale adopted was Kelley's (1992) reviewed followership scale by Ghislieri et al. (2015). It is a brief scale for measuring followership behaviors.

## **METHODOLOGY**

The study used a survey methodology. Surveys are important method of studying behavior. It helps to study relationships among variables and how attitudes and behavior change over time (Cozby & Bakes, 2015). The study used a non-probability purposive sampling technique. It was a quantitative study using a cross-sectional design. It involved studying the participants at the same time (Cozby & Bakes, 2015). The research relied on the research questions generated and lend themselves to investigation using a deductive approach. The study used the questionnaire for the data collection. The questionnaire was presented in written format, while respondents wrote the answers. They are appropriate because they are less costly than the interview approach and allowed the respondent to be completely anonymous (Cozby & Bakes, 2015).

**Research design**

The adopted cross-sectional research design data involved collecting samples of persons of different ages and studied only at one point in time (Cozby & Bakes, 2015). It implied that followers from the sample populations from the churches in Nigeria and the USA were of different age brackets. The study was within the allocated three weeks. Though this study design has its advantage, it might have a cohort effect (Cozby & Bakes, 2015).

**Population**

The population of the study consists of all the adults who are followers, each from the two Pentecostal Churches (House of Purpose-TA and Tower of Victory) in Nigeria and all the adults who are followers each from the three Pentecostal churches (Randallstown House of Power, Maryland and Redeem Christian Church of God, Kettering MD) in the USA. Participants were adults who are workers in the churches that were studied.

**Sampling**

Purposive sampling of 52 followers from the two churches in Nigeria and 52 followers from the USA's two churches were used (total sample size of 104). The resources available were enough to study the said sample. The sample size was arrived at using a sample size calculator with a confidence interval of five, a confidence level of 95%, and a population of 142. (Associations, 2016). The study focused on respondents from these churches' entire population due to the observed commitment and loyalty concerns. Those who met the commitment/loyalty concerns were the ones that were studied. They could be called the information-rich workers for this research (Patton, 2015).

**Instrumentation**

The followership scale adopted was Kelley's (1992) reviewed followership scale by Ghislieri et al. (2015). It is a brief scale for measuring followership behaviors. Their study evaluated the followership scale's principal psychometric properties based on Kelley's (1992) model. They used Kelley's (1992) followership scale that consists of eight items. The study used 559 nurses in Northern Italy. The EFA results show a two-factor solution (active engagement and independent critical thinking), confirmed by confirmatory factor analysis where both subscales showed adequate reliability. The scale used for this purpose consisted of four items in a 5-point Likert format extending from 1 (very unsatisfied) up to 5 (very satisfied), and the questionnaire created by Pejtersen, Kristensen, Borg, and Bjorner (2010). Cronbach's alpha for the scale in this study was .85 ( $M = 16.53$ ,  $SD = 3.55$ ). They found the scale to be a useful tool for training and organizational research. They administered questionnaires to followers on issues that bother on both scales. (Please see details in the appendix).

**Data collection**

This study's data were collected using Kelley's (1992) reviewed followership scale by Ghislieri et al. (2015) and analyzed with SPSS.

### Data analysis

The data gotten were analyzed using a two-tailed t-test statistical model. The study employed a t-test for testing the Significance of difference between the means of the two populations (In this case, Nigeria and the USA) based on the means and distributions of two samples (Williams & Monge, 2011).

### Results

The study drew a total of 104 participants from Nigeria and the USA. The questionnaires returned by the participants were 97. There were 50.50% of the population from two Pentecostal churches from Nigeria (HOP-TA and TOVA) and 49.50% from two Pentecostal Christian churches (RCCG AND Randallstown House of Power. Overall, 97 returned questionnaires meant 95.2% success. They were 104 participants from a convenience sample made available through personal contact with the senior pastors of these local churches in Nigeria and the USA. In both countries, the copies of questionnaires distributed yielded 49 from Nigeria and 48 from the USA. Two questionnaires came back from the USA participants unfilled. Table 1 and 2 highlight participant demographics for the 97 respondents from the United States and Nigeria.

Table 1

*Frequency representation in Nigeria and USA participants*

	Country	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nigeria	48	50.50	50.00	50.00
	USA	49	49.50	49.50	100.00
	Total	97	100.00	100.00	

Table 2

*Frequency for gender distribution in Nigeria and USA participants*

	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	45	46.40	46.40	46.40
	Female	52	53.60	53.60	100.00
	Total	97	100.00	100.00	

Also, worthy of note is the frequency report on gender participation. The number of male participants in the study was 45, which is 46.40%, while the number of female participants was 52, which is 53.60%.

Table 3

*Group Statistics for AE and ICT in Nigeria and USA*

	Country	N	Mean	Std. Deviation	Std. Error Mean
AE	Nigeria	48	2.74	1.11	0.16
	USA	48	3.34	1.28	0.18
ICT	Nigeria	49	3.70	0.84	0.12
	USA	48	3.95	1.06	0.15

The group statistics box provides some important relevant information such as: the number of participants (N) in each country is shown for AE for Nigeria 48, while USA is 48. Also, for ICT the number of participants(N)for Nigeria is 49, while USA is 48. In the SPSS analysis, for Nigeria, one sees the mean condition in AE for Nigeria is 2.70, while that of USA is 3.30 and the standard deviation for Nigeria and USA are 1.10 and 1.130 respectively. Also, for ICT, for Nigeria the mean condition is 3.70, while that of USA is 3.90; the standard deviation for Nigeria and USA came to 0.80 and 1.10 respectively.

### t-test Results

Table 4

*T-test analysis result for AE and ICT*

confidence the		Levene's Test for					t-test for Equality		95% interval of	
		Equality of Variance					of Means		Difference	
		f	Sig	t	df	Sig(2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Upper AE	Equal variances assumed	1.39	0.24	-2.43	94	0.02	-0.60	0.24	-1.08	0.11
	Equal variances not assumed			-2.43	92.32	0.02	-0.60	0.24	-1.08	0.11
ICT	Equal variances assumed	2.80	0.10	-1.23	95	0.22	-0.24	0.19	-0.62	0.15
	Equal variances not assumed			-1.23	89.49	0.22	0.24	0.19	-0.63	0.15

\*p < .05 Value is significant at the 0.05 level (2-tailed).

Looking at AE, since the significance value is greater than 0.05,  $p = 0.2 > 0.05$ . one will read from the top row. It indicates that the variability of the two countries is about the same. It implies that the scores in Nigeria do not vary too much than the scores in the USA for the hypothesis AE. Also, for ICT, since the significance value is greater than 0.05,  $p = 0.098 > 0.05$ , one will read from the top row. It indicates that the variability of the two countries is about the same.

Since the row to read from have been shown above, from the Significance (2-Tailed) value one can see the t-test implications of the study. For AE, looking at the significance (2-Tailed) value since the significance (2-Tailed) value is less than 0.05,  $p = 0.017 < 0.05$ ; thus, the hypothesized difference by country was found to be statistically significant. It indicates that hypothesis (H2), there is a difference in the followers' active Engagement (AE) between Nigerian

and USA Pentecostal churches is supported. So, hypothesis 2 predicts that there is a difference in the followers' active engagement (AE) between Nigeria and USA Pentecostal churches.

Also, for ICT the Significance (2-Tailed) value is greater than 0.05; that is  $p = 0.2 > 0.05$ . It implies that the hypothesized difference by country was not found to be statistically significant. between your two conditions (Nigeria and USA). It means the hypothesis (H1), 'there is a difference in followers' independent critical thinking (ICT) between Nigerian and USA Pentecostal churches' is not supported.

## Discussion

The present study aimed at determining if there is a difference in the followers' active Engagement (AE) between Nigerian and USA Pentecostal churches. The results indicate a difference in followers' independent critical thinking (ICT) between Nigerian and USA Pentecostal churches. In partial agreement with the previous theoretical and conceptual framework, one can say that this study's result on followers' active engagement conforms with Kelly's (1992) position. It implies that followers have the propensity to take the initiative, participate actively and be self-starters, especially in the relationship with the leader. However, concerning the same conceptual framework of this study, the result of ICT is not in agreement with Kelly's (1992) position that followers have Independent Critical Thinking (ICT) – offering constructive criticism and showing the ability to think for oneself with creativity and innovation.

Ghislieri et al. (2015), while reviewing the work of Kelly (1992) on AE and ICT, argued that the instrument is valuable not only for inquiry but also for training and development. They claimed that self-evaluation of followership conduct could contribute to training, developing a critical learning procedure about this aspect, and discover a "better way to be a follower" in a specific organizational context. What is even very important for theory and practice is the AE result from the two countries (Nigeria and the USA), which shows the difference and an important factor to consider in cross-cultural adaption (Moodian, 2009).

On the difference of followers AE in Nigeria and USA, one might want to review Nigeria's power distance culture where subordinates (followers) are less willing to challenge bosses or express disagreement with them (Adsit, London, Crom, & Jones, 1997). One may say that though followers might not be bold enough to challenge their superiors, it might affect how actively engaged they are. The difference in AE in the USA churches might be associated with the democratic culture in the USA that fit into what GLOBE studies described as autonomous leadership: a newly defined global leadership dimension that refers to independent and individualistic leadership attributes (Dorfman, House, Hangs, Javidan, & Gupta (2004).

One might also say that the noticed difference in AE would mean that a follower emigrating from one country to the other might need training to effectively follow the leader in the new location where there is a different work culture (Ghislieri et al.2015).

Also, reviewing the results of ICT in which there was no statistical difference in the mean of the Nigeria population and that of the USA, one may say that it shows that the followership behavior about their leaders is similar. So, the implication for theory and practice, in this case, would be that the Pentecostal Church in both countries might not need to worry over followers'

adaptability to contemporary work culture. The similarity ICT of followers from both countries may then be seen as possible strength that leaders can rely on in the Church's growth.

### **The implication of the study in the formulation of theory and practice**

First, the study showed that on the followers' active Engagement (AE) between Nigerian and USA Pentecostal churches, the study results indicate an agreement with the previous theoretical and conceptual framework. One can say that this study's result on the active engagement of followers to their leaders conforms with Kelly (1992). It means that followers tend to take the initiative, participate actively and be self-starters, especially in the relationship with the leader. Also, that organizations could have difficulty with the follower's ability to follow. It implies that this can be resourceful for scholars, consultants, leaders, and members (followers) thinking of worshiping in Nigeria or the USA.

Secondly, on the result of ICT not in agreement with Kelly (1992), followers have Independent Critical Thinking (ICT) – offering constructive criticism and showing the ability to think for oneself, with creativity and innovation; it may help stakeholders think of how to adapt. Also, researchers could study to see how ICT can be encouraged in a new Church location.

### **Limitations of the study**

The study involved two Pentecostal churches in Lagos, Nigeria, and two Pentecostal Churches in Maryland, USA. The time available for the study was a constraint extending the study to more than one state in both countries. So, the result of the study might not be easily generalized. In the future, scholars might consider extending the study to more states in both countries and involving more research subjects. Though the time and resources available could only allow studying 52 followers from both countries each, the result could give an idea to anyone who wants to settle and be a part of any Church in the studied countries. The results could also guide leaders of churches domiciled in these countries on behaviors followers may likely have.

## **CONCLUSION**

One can conclude that since great and successful organizations consist of leaders and followers, understanding followers' behavior becomes imperative. Furthermore, for a good cross-cultural adaption to follow leaders, the leaders themselves should appreciate followers' behaviors across different cultures, such as in the USA and Nigeria, as in this study. So, while this study revealed that followers AE is different for some pentecostal churches in Nigeria and the USA, the study showed no difference in ICT behavior among the followers examined in Nigeria and USA pentecostal churches. The result can assist people who might want to worship or work in other cultures to know what to expect as an expatriate worker. Most importantly, the study results can help pastors (leaders) from both cultures know what to expect from followers in a new location.



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## APPENDIX

English and Italian Versions of Brief Followership Scale For each question, indicate How often it applies to you as a follower of your supervisor

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

1. When starting a new assignment, do you promptly build a record of successes in tasks that are important to your departmental chairperson?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

2. Do you take the initiative to seek out and successfully complete assignments that go above and beyond your job?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

3. Do you independently think up and champion new ideas that will contribute significantly to your departmental chairperson's or your department's goals?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

4. Do you try to solve the tough problems (technical or organizational), rather than look to your departmental chairperson to do it for you?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

5. Do you make a habit of internally questioning the wisdom of your departmental chairperson's decision rather than just doing what you are told?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

6. When your departmental chairperson asks you to do something that runs contrary to your professional or personal preferences, do you say 'no' rather than 'yes'?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

7. Do you act on your own ethical standards rather than your departmental chairperson's or your department's standards?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

8. Do you assert your views on important issues, even though it might mean conflict with your group or reprisals from your departmental chairperson?

(0 = never; 1=very rarely, 2=rarely, 3=sometimes 4=frequently, 5=very frequently, 6 = always)

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# **ECONOMIC IMPACTS OF A GENERAL AVIATION AIRPORT: MURFREESBORO MUNICIPAL AIRPORT (MBT)**

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## **ABSTRACT**

*Airports represent important parts of local, regional, and global transportation systems. General aviation (GA) airports (as contrasted with large commercial airports) operate within the scope of needs for their local communities and provide direct effects for employment, business revenues, and tax revenues. This study confirms the impacts of Murfreesboro Municipal Airport (MBT) on its resident county (Rutherford County) and for the state of Tennessee. More broadly, we show the heaviest use of MBT is through Middle Tennessee State University's (MTSU) Aerospace program. In this way, MBT contributes to the aviation labor supply (in the form of pilots and air traffic controllers) for the global community.*

## **INTRODUCTION**

General aviation (GA) airports offer many services to local communities that are out of the scope of large commercial airports (hubs). Not least of which is the service of providing the physical location for flight instruction and, in some cases, large-scale university aviation training. For Murfreesboro Municipal Airport (MBT), its partnership with Middle Tennessee State University's (MTSU) Aerospace department affords the university with the use of a close airport, which may be large reason for the success of the department.

In this study we seek to measure the impact of the MBT and the MTSU Aerospace department on local areas (here: the City of Murfreesboro, Rutherford County, and Tennessee), and we use IMPLAN modelling software to calculate the impact counterfactually. The impact categories presented are employment, business revenue, and tax revenues. We can draw the impact of these entities even further through the pipeline for aviation labor, showing that the airport and the university together provide the global aviation stage with aviation transportation professionals.

The paper is structured as follows. The following section outlines research surrounding transportation, regional airports, and general aviation airports. Next, we present the methodology and data used in this study. Then, we report the results for the defined impact areas and categories. We discuss the implications and limitations of this study. Lastly, we conclude.

## **LITERATURE REVIEW**

The review of selected literature suggests that regional airports, like the more-researched large airports, have a significant social, fiscal, and economic impact first through community connection and second through the education of the next generation of aviation professionals.

### **Transportation and Airport General Effects**

A well-designed transportation system aids businesses and individuals in accessing markets for goods and services in a cost-efficient way, and the efficiency of this system can impact the way regions grow and evolve (Weisbrod, 2007). From paved roads to locomotives, to cars, and finally to airplanes—air travel has become the next step in the story of transportation (Weisbrod). To support the recognized economic impact of air service, both U.S. state and federal government agencies award grants to promote airport activity. One well-known program funded by federal grants is the Essential Air Service program, which subsidizes air service to remote or rural areas in order to provide low-growth areas access to wider markets.

Researchers have established through a variety of methodologies the positive impact that airports have on a region's population growth and employment growth (Green, 2007), population growth and GDP (Blonigen and Cristea, 2015), income per capita and personal income (Button and Yuan, 2003), number of business establishments and average wage (Bilotkach, 2015), and gross metropolitan product (Tittle et al., 2012). These studies show the connection between large airports and regional growth.

Not only do airports impact economic growth, they also shape economic growth. Research on airports shows they change the distribution of employment (Cidell, 2015), influence the concentration of employment of different industries (Appold, 2015), and impact the growth rate of employment in a certain radii of miles from the airport itself (Appold and Kasarda, 2013). It is important to mention that in the cited research (Appold, 2015; Appold and Kasarda, 2013; Cidell, 2015), passenger or cargo volume are the most common measures of airport activity. For large airports, these are crucial and applicable measures to determine the impact and influence of airports.

### **Regional Airport Effects**

While smaller airports have not received the research attention of larger airports, Button et al. prove that regional airports in Virginia, along with the larger Virginia commercial airports, have direct effects on the surrounding regions (Button et al., 2009). Button et al. measure the effects of variables on the dependent measure of economic impact: county-level per capita income. For both their random- and fixed-effect models, Button et al. use the independent variables passenger volume to capture airport activities. The study uses population, aged population, federal and local expenditure for each region, and employment to capture local characteristics; and they use distance to hub airlines in Dulles and Reagan to capture the effects of availability of alternative air travel (Button et al., 2009, p. 134). Their choice of variables stems from their assumption that “the success of an airport is linked to the nature of the local economy and the availability of alternative air transportation facilities” (Button et al., 2009, p.132). The authors find in the random-effects model that increasing passenger numbers does have a positive and significant effect on per capita income, meaning that airports of all sizes impact a region's income through increases in passenger count.

### **General Aviation**

Though regional airports impact communities through passenger volume, passenger count alone is not always the best measure of airport activity for smaller, local airports. Non-commercial airports provide non-scheduled passenger services, flight training, cargo shipping, and emergency services—none of which are captured by traditional commercial measures. Most

of these non-commercial airports are categorized as general aviation (GA) airports and operate on levels that provide local services. GA airports make up 77% of U.S. airports and 84% of Tennessee airports (NPIAS, 2018). The National Plan of Integrated Airport Systems (NPIAS) further subcategorized GA airports into national, regional, local, and basic GA airports in 2012 (Federal Aviation Administration, 2012).

Table 1 defines the types of GA airports, as redefined in 2013 by the NPIAS. The definitions in Table 1 include the relationship between the community and the airport, the activity level of the airport, and the based-aircraft parameters for each definition. As shown in Table 1, the defining characteristic of GA airport operations is local impact through partnership with communities. This community impact gives GA airports a unique connection to these areas that allows them to provide services outside the scope of larger airports, such as emergency services (Smith, 2012).

Despite their impact on communities, the impact of GA airports cannot be measured with passenger numbers and cargo weight, as they are not applicable measures for assessing the full range of activities of a GA airport. In order to better measure GA airport activity, the Federal Aviation Administration (FAA) has surveyed GA airports to estimate flying hours. Table 2 shows the top uses of general aviation airports for 2014 and 2016 based on flying hours.

Though not measured by passenger count, the uses of GA airports and the employment and business opportunities they create are important. Personal use—a category that involves recreational flying, family and tourism use, and flying to keep license requirements—makes up the biggest category for GA airports. However, the next highest category is instruction, proving the necessity of GA airports in providing pilot and other aviation-related training.

### **General Aviation in Tennessee**

Within the state of Tennessee specifically, GA airports have impacts through aviation-related output and employment, and a 2015 TDOT aviation report highlights GA airports as the important link between rural communities and larger, more diverse markets. Figure 1 shows all airports across Tennessee by category, based on information from the 2019 NPIAS report. Murfreesboro Municipal Airport (MBT), a regional GA airport, is represented with a five-point star. Any category of airport that is not “hub” or “unclassified” represents GA airports, which have varying degrees of activity and scope.

GA airports in Tennessee are an integral part of local communities and the aviation network. In 2015, TDOT reported that GA airports in Tennessee had over one billion dollars of aviation-related output, over eight thousand aviation-related employees, and over three million dollars in aviation-related earning.

### **Airport Functions Overview**

In the previous sections, we emphasize that commercial airports and GA airports operate in different scopes of activity. Figure 2 shows the primary functions of the airports outlined in this section. GA airports without a commercial provider have local connections to the communities they serve, and their aviation activities are more difficult to measure. Largely, GA airport functions support the community in its business, recreational, and emergency service aviation needs. Due to GA airports’ community connections, they are often used for flight instruction, by both private entities and universities. In this way, strong aviation colleges have impacts on the airports they use. However, GA airports are no less important to the global aviation labor supply pipeline, as GA airports provide most pilot training in the U.S.

**Table 1: 2013 Revised General Aviation Categories**

National	Supports the national airport system by providing communities with access to national and global markets. These airports have very high levels of activity with many jets and multiengine propeller aircraft. These airports average about 200 total based aircraft, including 30 jets.
Regional	Supports regional economies by connecting communities to regional and national markets. These airports have high levels of activity with some jets and multiengine propeller aircraft. These airports average about 90 total based aircraft including 3 jets.
Local	Supplements local communities by providing access to local and regional markets. These airports have moderate levels of activity with some multiengine propeller aircraft. These airports average about 33-based propeller-driven aircraft and no jets.
Basic	Supports general aviation activities, often serving critical aeronautical functions within the local community such as emergency response and access to remote communities. These airports have moderate levels of activity with an average of 10 propeller-driven aircraft and no jets.

Source: Table recreated from 2013 NPIAS Report, p. 14

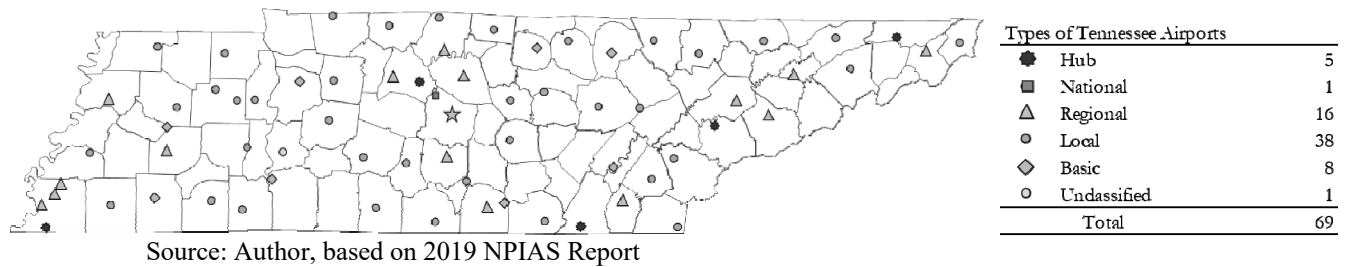
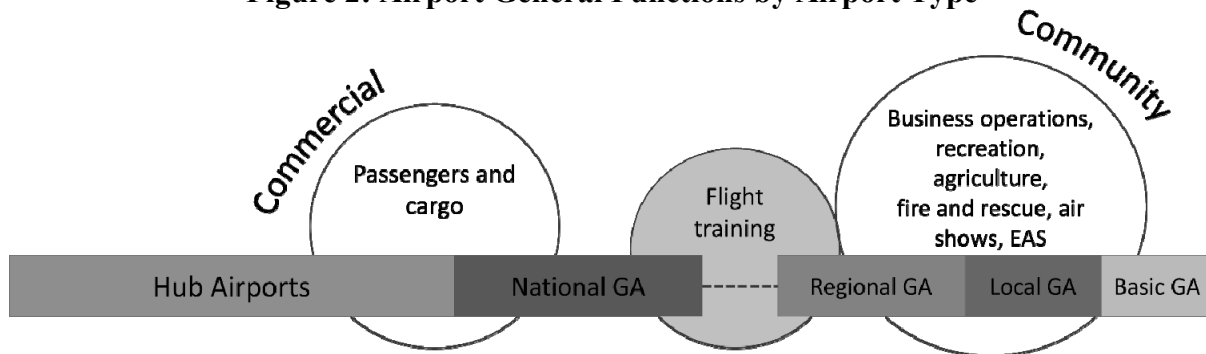
**Table 2: General Aviation by Actual Hours Flown by Use, 2014 and 2016**

Category	Percent of Total	
	2014	2016
<b>General Aviation Use</b>		
Personal Use <sup>1</sup>	29.5%	31.7%
Instructional	16.4%	19.7%
Corporate/Executive (with paid flight crew)	12.2%	10.3%
Business (without paid flight crew)	7.5%	7.2%
Aerial Observation	6.4%	5.8%
Other <sup>2</sup>	4.5%	3.8%
Aerial Application Agriculture	4.0%	3.5%
Other Work Use	1.1%	1.7%
External Load (Rotorcraft)	0.7%	0.6%
Aerial Application Other	0.7%	0.6%
Sightseeing	0.8%	0.7%
Air Medical	0.5%	0.4%
Subtotal	84.3%	86.0%
<b>On-Demand Federal Aviation Regulation Part 135 Use</b>		
Air Taxi and Air Tours	12.6%	11.0%
Part 135 Air Medical	3.1%	3.0%
Subtotal Part 135 Use	15.7%	14.0%
<b>Total All Uses</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Table recreated from NPIAS Report 2019-2023, info based on GA and Part 135 Activity Surveys

<sup>1</sup> Personal use includes recreational flying, family use and tourism, and flying in order to stay current with license requirements

<sup>2</sup> Other is defined as positioning flights, training, ferrying, sales demos, etc.

**Figure 1: Airport Types Across Tennessee****Figure 2: Airport General Functions by Airport Type**

Source: Author, based on 2013 NPIAS Report

### MTSU's Aerospace Department

MTSU's Aerospace department received its first Council of Aviation Accreditation in 1992 (Schwab and Haute, 2005), and since that time has grown to be an important part of the university. Schwab and Haute (2005) used MTSU's Aerospace program as a guideline for Indiana State University's own aviation program. More recently, research around the Aerospace department has been on why students stay in aviation programs (Beckman and Barber, 2007), what makes women choose an aerospace major (Zlotsky and Beckmen, 2009), and how students use communication in "high-fidelity" aviation simulations (Lester et al., 2017). This study departs from these types of studies in that we look to the total impact of the Aerospace department on the surrounding communities.

In this section, we explored the relevant literature surrounding the effect that airports have on the surrounding areas, which suggests that airports provide essential services, provide employment, and increase incomes for the surrounding regions. We cited research that finds that small airports (such as GA airports) have economic impacts in the same ways as larger or hub airports. Finally, we outlined the importance of GA airports specifically, examined their NPIAS categories across the U.S. and Tennessee, and cited a TDOT report confirming the importance of GA airports in Tennessee.

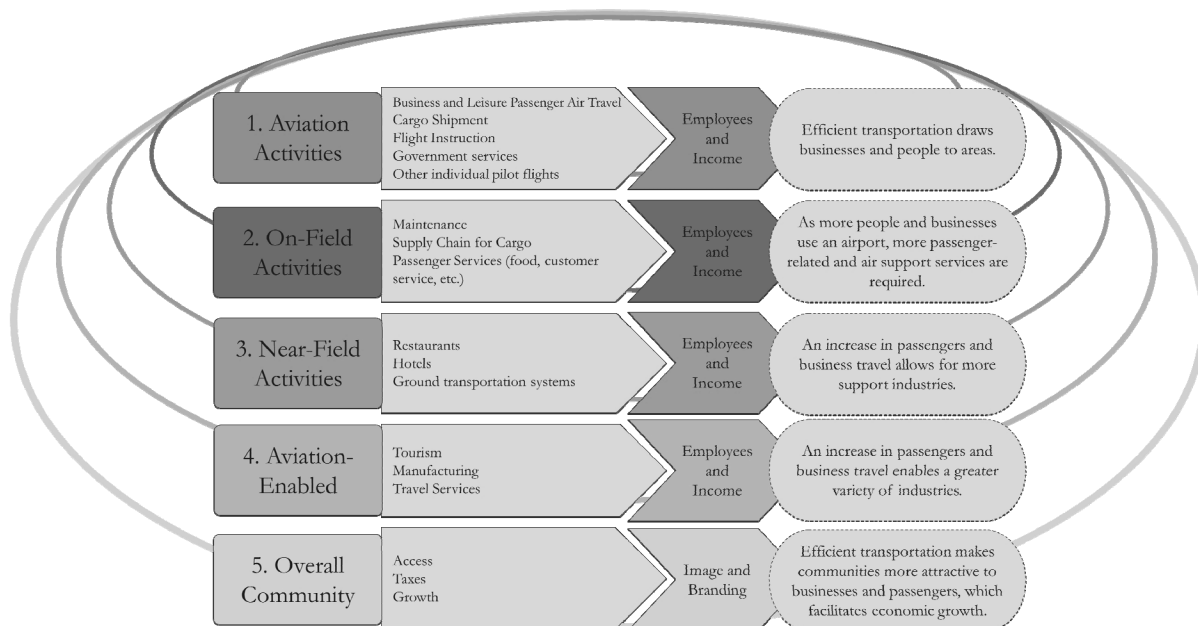


## METHODOLOGY AND DATA

In this study, economic impact refers to the impact of new economic activity in an existing regional economy, measured by net change. Examples might include out-of-town visitor spending, a new manufacturing plant operating in the region, federal or out-of-region money flowing to an area to support a new program, or an activity that is unique to the region. Economic impact analysis is different from economic contribution analysis or economic significance analysis in that we counterfactually remove an institution, program, or event from an economy to estimate the total economic activities associated with that removal. In this study, we counterfactually remove all MBT-related activities from the economy and then measure the economic contributions the removed activities created.

To measure the impacts of MBT on the local community and beyond, this study uses IMPLAN impact modelling software. IMPLAN is nationally recognized as an appropriate method for calculating impacts of institutions and businesses using sectoral input-output analysis (IMPLAN, 2021). We use IMPLAN software because it is connected to major data sources, with which the program creates sectoral input-output calculations based on region. The conceptual framework of how airports impact their local areas is shown below (Figure 3). As a general aviation airport, MBT does not have many of the commercial or tourist-centric impact items shown in Figure 3. Its main purpose is to provide a space for educating MTSU Aerospace Students, and MTSU's Aerospace department has reached its level of success in no small part to its partnership with MBT.

**Figure 3: Airport Community Impact Framework**



Source: Author recreation, TDOT (2015)

This study used institutional data directly provided to the researchers by MBT, its associated businesses, and MTSU Aerospace as inputs to determine the total contributions of the airport. We then created regional IMPLAN models for Rutherford County and Tennessee to

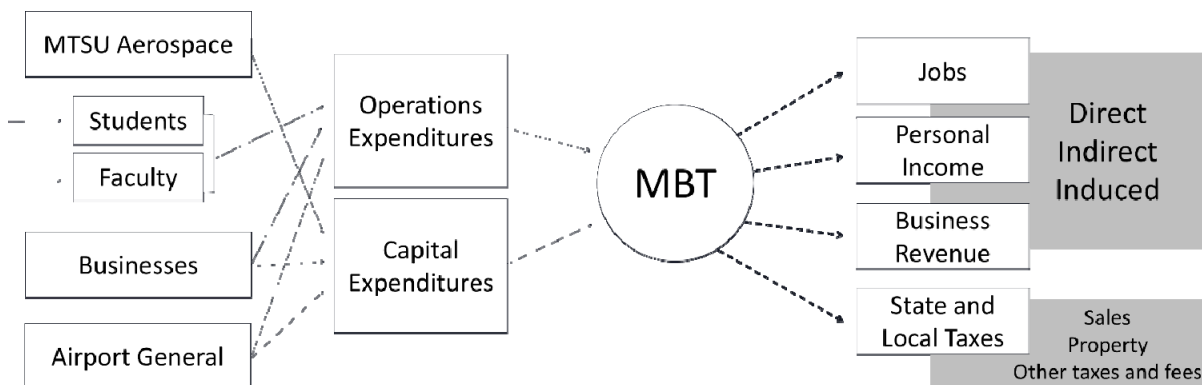
assess the economic impact of MBT operations within those regions. We used the IMPLAN default regional purchasing coefficients to allow for leakages out of the region. In reporting economic impact and economic contribution estimates, we follow the procedure outlined below (see Figure 4 for visual representation of measures):

1. Business revenue (output) effect: direct, indirect (the effect of business-to-business interactions), and induced (the effect of employee spending on wages and salaries) by MBT. These measures (indirect and induced) are also called the ripple effect. The business revenue effect represents all economic activities (i.e., trade, value added, income, taxes, proprietary income, etc.) associated with the activity. Therefore, this figure should not be aggregated with any other measures reported here.
2. Employment effect: direct, indirect, and induced by MBT.
3. Personal income effect: direct, indirect, and induced by MBT.
4. Local and state taxes: total taxes by nonprofit segment.

In this context, it is also important to remember the major assumptions used for this study:

1. The study regions are Rutherford County and the state of Tennessee as a whole.
2. There may be a certain degree of discrepancy in data files in terms of establishments, revenue, expenditure, and employment resulting from (a) the use of multiple databases, (b) several levels of aggregation, and (c) change in data year and impact year.

**Figure 4: IMPLAN Inputs**



Source: Author

### Data

As shown by Figure 4, measures of impact in this study involve inputs from both MBT and the MTSU Aerospace department, namely employment, operations expenditures (including wages and salaries), and capital expenditures. Economic impact studies commonly use employment and wages and salaries as inputs in creating impact models (see Lee and McGrath, 2019). Employment measures were directly supplied by MBT staff, MTSU Aerospace faculty, and MBT businesses themselves as the data for these entities are not publicly available. Table 3 shows the entities that use the MBT for their business or, in the case of MTSU, aviation education purposes. Table 3 breaks down MBT employment by source, where MBT employment represents the airport employees and the employees of the various business entities who work at

MBT. Wage and salary inputs were provided under the heading of operations expenses for both MBT and MTSU Aerospace.

**Table 3: Employees at MBT (2019)**

	Full time	Part time
MBT Airport and Airport-Based Businesses	72	7
MTSU Aerospace	21	72
	Total Full time	93
	Total Part time	79
	Total FTE	121

Source: Author's calculations based on information provided by MBT and MTSU Aerospace

Note: For the IMPLAN model, MTSU Aerospace full time employment counts only Pro Pilot or Maintenance Management related faculty and only counts staff that have offices at the airport. MTSU Aerospace FTE is calculated as one third of part time. MBT Airport FTE is calculated as half of part time.

This study incorporates the economic impacts of the planned expansion at MBT. MBT plans to construct a South Apron addition, which will include 18,000 square feet of hangar and shop space, 1,000 square feet of office space, and further apron and tie-down space. The terminal project is expected to cost \$5.5 million, with state funds of only \$350,000. The South Apron project will cost \$4.1 million, and the Airport Economic Development Grant will contribute \$2 million in funding.

This study also looks specifically at the impact of the MTSU Aerospace students who primarily use the airport for their instruction (or *at airport* students). Table 4 below shows how the total Aerospace student enrollment has grown and that the majority of the growth comes from the increased enrollment of at airport students.

**Table 4: MTSU Aerospace Student Total Enrollment by Major/Concentration**

Department/Major/Concentration	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018
Maintenance Management	105	98	90	87	89
Professional Pilot	330	347	387	403	499
<b>Students at airport</b>	<b>435</b>	<b>445</b>	<b>477</b>	<b>490</b>	<b>588</b>
<i>At-airport</i> percentage of total	62.32%	62.50%	62.60%	61.71%	66.59%
Aviation Management	78	75	66	76	83
Flight Dispatch	95	79	82	84	72
Technology	58	47	49	43	29
UAS Operations	0	27	55	70	82
MS Aeronautical Science	32	39	33	31	29
<b>Students on campus</b>	<b>263</b>	<b>267</b>	<b>285</b>	<b>304</b>	<b>295</b>
<i>On-campus</i> percentage of total	37.68%	37.50%	37.40%	38.29%	33.41%
<b>Total Aerospace Students</b>	<b>698</b>	<b>712</b>	<b>762</b>	<b>794</b>	<b>883</b>

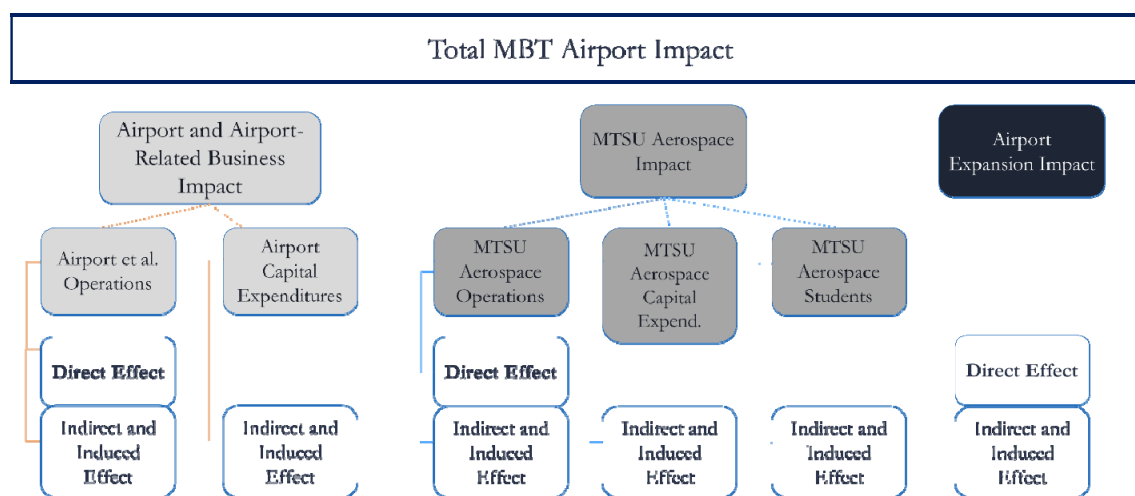
Source: Author's calculations based on information provided by MTSU Aerospace Department

Note: In impact calculations, the number of part-time student flight instructors (72) was subtracted from the number of at-airport students, as the flight instructors are counted as MBT employees.

## RESULTS

MBT impacts the surrounding regions through three channels; each channel exists in its current state due to MBT airport (see Figure 5 below). The first channel is through the operations and employment of the airport itself and the businesses based at MBT. The second is through the MTSU Aerospace program and is calculated using department operations, airport-related capital expenditures, and at-airport major employees and enrolled students. Lastly, we measure MBT impact through the airport's plans for expansion. In this section, we will first discuss the Rutherford County impacts by the three categories; then we will show impacts by impact category (e.g. employment, personal income) for both Rutherford County and Tennessee. Finally, we will outline total impacts based on region.

**Figure 5: MBT Impact Channels and Categories**



Source: Author

### Economic Impacts of MBT on Rutherford County

This section outlines the impact of the three impact channels on Rutherford County only. Table 5 below shows MBT's total general operations (representing operation spending plus capital expenditures for the airport) account for more than 133 jobs, \$7.2 million in personal income, \$18.2 million in business revenue, and \$1.1 million in state and local taxes in Rutherford County.

**Table 5: Airport Impact on Rutherford County by Category**

Impact Category	Impact Type	Employment	Personal Income	Business Revenue	State and Local Taxes
Operations	<b>Direct</b>	<b>76</b>	<b>\$4,384,009</b>	<b>\$10,261,581</b>	
	Indirect/ Induced	40	\$1,781,821	\$5,363,584	\$992,111
Capital Expenditures	Indirect/ Induced	17	\$1,008,463	\$2,579,045	\$73,467
<b>Total Impact</b>		<b>133</b>	<b>\$7,174,293</b>	<b>\$18,204,210</b>	<b>\$1,065,578</b>

Source: Author's calculations

As Table 6 shows, the impact of MTSU Aerospace operations accounts for 144 jobs, \$4.3 million in personal income, \$13.7 million in business revenue, and \$0.7 million in state and local taxes in Rutherford County. Table 6 also shows the breakdown of impacts by MTSU Aerospace category (operations, students, and capital expenditures).

**Table 6: MTSU Aerospace Impact on Rutherford County by Category**

Impact Category	Impact Type	Employment	Personal Income	Business Revenue	State and Local Taxes
Operations	<b>Direct</b>	<b>45</b>	<b>\$855,469</b>	<b>\$2,551,124</b>	
	Indirect/ Induced	12	\$509,092	\$1,745,859	\$182,446
Student	Indirect/ Induced	81	\$2,546,055	\$8,579,974	\$503,330
Capital Expenditures	Indirect/ Induced	6	\$336,205	\$861,312	\$23,738
<b>Total Impact</b>		<b>145</b>	<b>\$4,246,821</b>	<b>\$13,738,269</b>	<b>\$709,514</b>

Source: Author's Calculations

As Table 7 shows, the planned MBT Expansion, which involves \$9 million of construction and planning spending, accounts for 105 jobs, \$5.7 million in personal income, \$13.5 million in business revenue, and over \$370,000 in state and local taxes in Rutherford County.

**Table 7: Airport Expansion Impact on Rutherford County by Category**

Impact Type	Employment	Personal Income	Business Revenue	State and Local Taxes
<b>Direct</b>	<b>72</b>	<b>\$4,226,666</b>	<b>\$9,004,100</b>	
Indirect and Induced	33	\$1,496,887	\$4,491,223	\$ 370,828
<b>Total</b>	<b>105</b>	<b>\$ 5,723,553</b>	<b>\$ 13,495,323</b>	<b>\$ 370,828</b>

Source: Author's calculations

### **Economic Impacts of MBT by Impact Category**

In the following sections, we pay special attention to the MTSU Aerospace students, and student impacts are reported separately from MTSU Aerospace department impacts. Though enrollment and department spending are very much connected, highlighting student impact separately reinforces the fact that increases in enrollment numbers will increase impacts on the local and state economies. Due to the nature of the impact of the airport expansion, its impacts will be reported separately from the general day-to-day operations impact of the airport, its based businesses, and MTSU Aerospace.

Additionally, the figures in this section report total impacts, meaning that the numbers shown on the graphs are direct, indirect, and induced impacts added together.

#### *Employment*

Table 8 presents MBT's impact on employment by channel and region of impact. The table shows that the airport and its based businesses have the most impact on business revenues,

followed by the airport expansion, the MTSU Aerospace students, and the Aerospace department, respectively. The total impact of both the airport and the MTSU Aerospace department on employment is 277 jobs for Rutherford County and 309 jobs for Tennessee.

**Table 8: Airport Impact on Employment by Region**

	Rutherford	Tennessee
<b>Airport Expansion</b>		
Expansion Direct	72	73
Expansion Indirect and Induced	33	51
<b>Total Airport Expansion Employment Impact</b>	<b>105</b>	<b>124</b>
<b>Airport and Based Businesses</b>		
Operations Direct	76	76
Operations Indirect and Induced	40	56
Capital Expenditures Indirect and Induced	17	20
<b>MTSU Aerospace Department</b>		
Operations Direct	45	45
Operations Indirect and Induced	12	23
Students Indirect and Induced	81	82
Capital Expenditures Indirect and Induced	6	7
<b>Total Airport and MTSU Aerospace Employment Impact</b>	<b>277</b>	<b>309</b>

Source: Author's calculations

### *Personal Income*

Table 9 presents MBT's impact on personal income by channel and region of impact. The airport and its based businesses have the most impact on personal income, followed by airport expansion. MTSU Aerospace has a larger impact on Tennessee in terms of personal income, which the Aerospace students have a larger impact on Rutherford County. The total impact of the airport and MTSU Aerospace on personal income is \$11 million in Rutherford County and almost \$15 million for Tennessee.

**Table 9: Airport Impact on Personal Income by Region**

	Rutherford	Tennessee
<b>Airport Expansion</b>		
Expansion	\$ 4,226,666	\$ 4,174,336
Indirect and Induced	\$ 1,496,887	\$ 2,582,384
<b>Total Airport Expansion Personal Income Impact</b>	<b>\$ 5,723,553</b>	<b>\$ 6,756,720</b>
<b>Airport and Based Businesses</b>		
Operations Direct	\$ 4,384,009	\$ 4,503,369
Operations Indirect and Induced	\$ 1,781,821	\$ 2,849,385
Capital Expenditures Indirect and Induced	\$ 1,008,464	\$ 1,181,222
<b>MTSU Aerospace Department</b>		
Operations Direct	\$ 855,469	\$ 1,992,852
Operations Indirect and Induced	\$ 509,092	\$ 1,093,989
Students Indirect and Induced	\$ 2,546,055	\$ 2,905,164
Capital Expenditures Indirect and Induced	\$ 336,205	\$ 396,340
<b>Total Airport and MTSU Aerospace Personal Income Impact</b>	<b>\$ 11,421,115</b>	<b>\$ 14,922,321</b>

Source: Author's calculations

*Business Revenue*

Table 10 presents MBT's impact on business revenue by region of impact. The airport and its based businesses have the most impact on business revenues, followed by the airport expansion, the MTSU Aerospace students, and the Aerospace department, respectively. The total impact of the MBT and the MTSU Aerospace department on business revenue is almost \$32 million for Rutherford County and \$39 million for Tennessee.

**Table 10: Airport Impact on Business Revenue by Region**

	Rutherford	Tennessee
<b>Airport Expansion</b>		
Expansion Direct	\$9,004,100	\$9,090,000
Expansion Indirect and Induced	\$4,491,223	\$7,530,385
Total Airport Expansion Business Revenue Impact	\$13,495,323	\$16,620,385
<b>Airport and Based Businesses</b>		
Operations Direct	\$10,261,581	\$10,336,741
Operations Indirect and Induced	\$5,363,584	\$8,037,965
Capital Expenditures Indirect and Induced	\$2,579,045	\$3,016,894
<b>MTSU Aerospace Department</b>		
Operations Direct	\$2,551,124	\$3,754,966
Operations Indirect and Induced	\$1,745,859	\$3,402,089
Students Indirect and Induced	\$8,579,974	\$9,610,246
Capital Expenditures Indirect and Induced	\$861,312	\$1,048,549
Total Airport and MTSU Aerospace Business Revenue Impact	\$31,942,479	\$39,207,450

Source: Author's calculations

*State and Local Taxes*

Table 11 breaks down MBT's fiscal impact by type of tax and shows that sales tax revenues represent the biggest portion of the airport's total fiscal impact on Rutherford County and the City of Murfreesboro. The total fiscal impacts of the airport and MTSU Aerospace are nearly \$1.8 million for Rutherford County, almost \$0.7 million for the City of Murfreesboro, and almost \$2 million for the state of Tennessee.

**Table 11: Airport Fiscal Impacts by Category and Region**

	Rutherford County	City of Murfreesboro	Tennessee
<b>Airport Expansion</b>			
Sales Tax	\$218,809	\$91,900	\$268,939
Property Tax	\$90,821	\$32,696	\$126,694
Other Taxes	\$61,198	\$12,240	\$73,714
Total Airport Expansion Fiscal Impact	\$370,828	\$136,835	\$469,347
<b>Airport</b>			
Capital Expenditure			
Sales Tax	\$42,832	\$17,989	\$48,036
Property Tax	\$17,746	\$6,389	\$22,618
Other Taxes	\$12,889	\$2,578	\$14,285
Operations			
Sales Tax	\$590,568	\$248,039	\$627,120
Property Tax	\$242,719	\$87,379	\$292,984
Other Taxes	\$158,824	\$31,765	\$160,676
<b>MTSU Aerospace</b>			
Operations			
Sales Tax	\$109,519	\$45,998	\$145,507
Property Tax	\$45,070	\$16,225	\$68,363
Other Taxes	\$27,857	\$5,571	\$38,645
Students			
Sales Tax	\$293,166	\$123,130	\$290,760
Property Tax	\$120,363	\$43,331	\$135,701
Other Taxes	\$89,801	\$17,960	\$90,628
Capital Expenditure			
Sales Tax	\$14,030	\$5,893	\$17,022
Property Tax	\$5,816	\$2,094	\$8,010
Other Taxes	\$3,892	\$778	\$4,632
Impacts	\$1,775,092	\$655,118	\$1,964,987

Source: Author's calculations

Note: Rutherford County and Tennessee level fiscal effects are calculated directly through IMPLAN. City of Murfreesboro fiscal impacts are calculated using ratios (City of Murfreesboro/Rutherford County) based on the sources as follows: For property tax calculations, ACS 2017 Estimates (Housing Characteristics); for sales tax calculations, the combination of number of households, total income, and employment numbers; for other taxes, fees, and fines, Census Bureau municipal government finances.

As the results above show, MBT is a crucial part of MTSU's Aerospace training programs. These training programs lead to degrees for professional pilots or air traffic controllers, adding to the labor supply of the important sector of aviation transportation professionals. Those professionals—and pilots especially—take their talents to the global stage and become themselves crucial parts of the global transportation system. MBT provides the link between general aviation and global commercial aviation by affording the background for educating future generations of aviation professionals.



## IMPLICATIONS AND LIMITATIONS

The strong impact of both MBT and MTSU on the surrounding communities implies that the growth of those organizations will lead to increased economic impact on the surrounding areas. As MTSU Aerospace enrollment grows, traffic to the airport will also grow, which may induce more restaurants, gas stations, etc. to build in that area, expanding employment. As we show in the results for the planned MBT expansion, the actual process of building expansions will bring employment and business revenues to Rutherford County.

Though this study focuses primarily on local impacts, those in the field of aviation benefit from having well-taught, experienced graduates entering the workforce. These graduates can only get hands-on experience from MTSU Aerospace's partnership with MBT, and the close proximity of the airport to the university makes the partnership even more valuable.

In exploring the impacts of a general aviation airport, this paper did not include the negative externalities imposed on the local community, such as noise pollution. In the same way as the employment and payroll impacts, the negative externalities fade as we look from the local to the global impacts. Globally, the negative externalities of a general aviation airport are next to none, while the impacts of well-trained aviation professionals remain. A less limited study would include the local negative impacts.

## CONCLUSION

GA airports are less researched than major or hub airports due to the nature of their aviation activities, but their impacts on their communities are nonetheless substantial, as shown by Murfreesboro Municipal Airport's (MBT) impact on Rutherford County and Tennessee.

This study demonstrates that MBT provides economic impact through employment, income, business revenue, and state and local taxes. In Rutherford County, MBT is directly and indirectly responsible for 277 jobs and almost \$32 million in business revenues through airport-based businesses and the MTSU Aerospace program. MBT and MTSU Aerospace's partnership make the program attractive to perspective students, and the Aerospace students from other regions stimulate business dynamics through spending. Furthermore, the students trained using MBT facilities eventually become part of the aviation workforce.

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# INFLUENCER MARKETING AND THE EVERCHANGING DOMAIN OF SOCIAL MEDIA MARKETING

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## ABSTRACT

*Influencer marketing, digital marketing, and social media marketing are hot topics in the marketing world especially among adolescents nowadays. However, the relationships among these concepts have not been investigated systematically. By definition, influencer marketing practitioners use people with large social media following to influence their viewers on what they should buy. Opinion leadership is a type of influencer marketing and has been investigated to a degree in marketing as an opinion leader has an opinion or voice that others may value. Both of these techniques have grown in popularity especially among adolescents with the increased use of technology and social media in everyday life. Adolescents extended the activities of opinion leaders beyond the traditionally defined boundaries.*

*This research aims to investigate influencer marketing from the perspective of consumers of all ages, especially adolescents. Specifically, the objective of this research is to analyze relationships among influencer, digital and brand marketing in order to understand the domain of social media marketing. This paper offers a conceptual model and concludes with implications for managers and researchers.*

## INTRODUCTION

As time and technology have progressed, social media has become a pivotal part of society. Social media and the internet have allowed for quick and easy retrieval of information and with so many products on the market, it is being used more than ever. With so many companies and products competing for a piece of the market, businesses have been forced to become more creative and demanding in their advertising. Diving into the growing popularity of social media and video content, personalities were born, and businesses saw a chance to grow off of those personalities.

In the past, it is believed that the earliest influence marketers were the Pope or the Queen who were said to promote medications for those who were not yet considered believers (Grin 2019). More recently, in 2018, Daniel Wellington, a watch company, was one of the most popular influencer accounts by receiving over 20,000 posts with the mention of #ad. Influencer marketing has played a huge role in their company helping it grow into the powerhouse that it is today. Daniel Wellington started sending watches to micro-influencers in 2015 in exchange for a mention in their post which, in turn, helped generate over \$220 million in revenue in a single year (Huhn 2019). Paying attention to lots of niche markets can help generate new customers from a variety of different areas that a company might not have thought to reach out to before.

As for the future, the influencer marketing industry is expected to grow to \$15 billion by 2022 (Grin 2019). Consumer interest in influencer marketing has risen 90 times since 2013 and is only expected to continue to grow (Huhn 2019). Influencer marketing is viewed as more reliable than a traditional advertisement and therefore more people are going to read the post and take its content seriously.

With growth comes greater attention from the public. A company does not have to be big in order for it to draw the attention of the public, but the company needs to weigh the pros and cons of using influencer marketing. While influence marketers can draw lots of positive attention to a brand of any size, they can draw a lot of negative attention as well. Influence marketers can have total freedom to post what they want about a brand or post specific, guided updates depending on the contract that was made (Radoslav 2018). A popular, modern-day example of how influence marketers can impact your brand in unexpected ways is the Colin Kaepernick scandal from Nike. In 2016, Kaepernick knelt during the National Anthem at a football game in protest for the unarmed killings of people of color by the police (2019). Nike did not go into a contract with Kaepernick thinking that he would do something like this that would come back and draw their brand into a controversial topic. Companies need to evaluate the people they are using as influence marketers to ensure that they continue to align with the values of their brand.

This research introduces a model to organize the boundaries of social media marketing and better understand the relationships of concepts and implementations around this domain. The relationships among the concepts of influencer, digital and brand marketing within the context of adolescents are discussed. As new concepts and implementation tactics are introduced to the market every day, this model may help research directions and analysis.

## LITERATURE REVIEW

A rising trend among businesses on social media is influencer marketing. Bladow describes an influencer as “anyone who has the ability to impact someone’s purchase decisions” (Bladow 2018, p.1). Lin, Vijayalakshmi, and Lacznia define influencer marketing as people who “are famous in a field and have accumulated a large number of followers ... and often persuade followers through their authentic messages” (Lin, Vijayalakshmi, Lacznia 2019, p.1). Drawing from these two definitions, a new one can be made by defining an influencer as anyone who has a mass social media following where followers trust their opinion on what they should and should not buy.

Influencer marketing is different from opinion leadership. Opinion leaders are people of whom you value their opinion, this can be a friend or a celebrity. A perfect example is the use of celebrities sponsoring fitness and dietary supplements (Belyh 2018). The viewer might not know the celebrity personally but they value their opinion and so they too go out and purchase the same supplements because they believe in what the celebrity is posting (Belyh 2018). Opinion leaders have experience have experience or expertise in a specific field and are not necessarily celebrities. Influence marketers are usually celebrities and paid to promote a brand or product and share their content of that product with the world. What they say in the content is not necessarily their true feelings or opinions on the matter. What sets an opinion leader apart is that they are experts in their field and can give opinions and facts to the consumers without input or pressure from brands.

Influencer marketing is used in a multitude of different platforms and creative content. These platforms include all social media, the most popular of which are YouTube, Instagram,

Twitter, Facebook. The divisions of this creative content range from beauty, health, subscription boxes, and food; anything that the Influencer's audience would be interested in and matches their original content. The goal of a marketer using an influencer on social media is to build brand awareness through other people's platforms. By doing so, marketers can reach a whole new audience that traditional advertisements might not reach.

An adolescent is defined as someone who is in the transition into adulthood and aged between 13 and 19 years old (2020). Adolescents are a huge and easily accessible target because the children of today are connected more than ever before. In America alone, 52 percent of tweens have their own tablet, 41 percent have a smartphone and 23 percent have a laptop (Tolbert, Drogos 2019). Something else that makes adolescents a vulnerable group is their age and lack of awareness whether the information that they are consuming online is the truth. Adolescents are at a very impressionable age, so when they are viewing a video or a post on Instagram featuring a certain product being promoted by a certain influencer, they are not able to decipher if what the person is saying is truthful, or they are just being paid to say these things.

This is the age of technology and it is getting harder and harder for parents to keep the internet and social media out of the lives of their children. It has been shown that adolescents take what influence marketers say as honest and trustworthy which causes moral and ethical issues among parents and the companies. There is also believed to be a connection between how parents view influence marketers and how their children will perceive them. Lin, Vijayalakshmi, and Laczniaak say that "poor understanding of Internet ads in parents results in ineffective as-related discussions with their children" (2019, p.1). In addition to a lack of understanding from the parent's end, the lack of development on behalf of the children viewing online videos can lead to wishful identification. Wishful identification is the "psychological desire to be like a media personality" which can later manifest in adolescents imagining themselves as the personality they are watching or going as far as to imitate them (Tolbert, Drogos 2019, p.2).

Online endorsements are monitored by the Federal Trade Commission (FTC) who "establish broad principles that govern endorsement disclosure requirements and provide the FTC's interpretation of (...) the use of endorsements in advertising" (Bladow 2018, p.1). Bladow also states that "to date, the FTC's enforcement actions have failed to effectively address the nondisclosure of endorsements in the affiliate marketing industry" (2018, p.1). With the rise of influencer marketing and the more relaxed enforcement from FTC, children are at even more of a risk of consuming various advertisements without their knowledge.

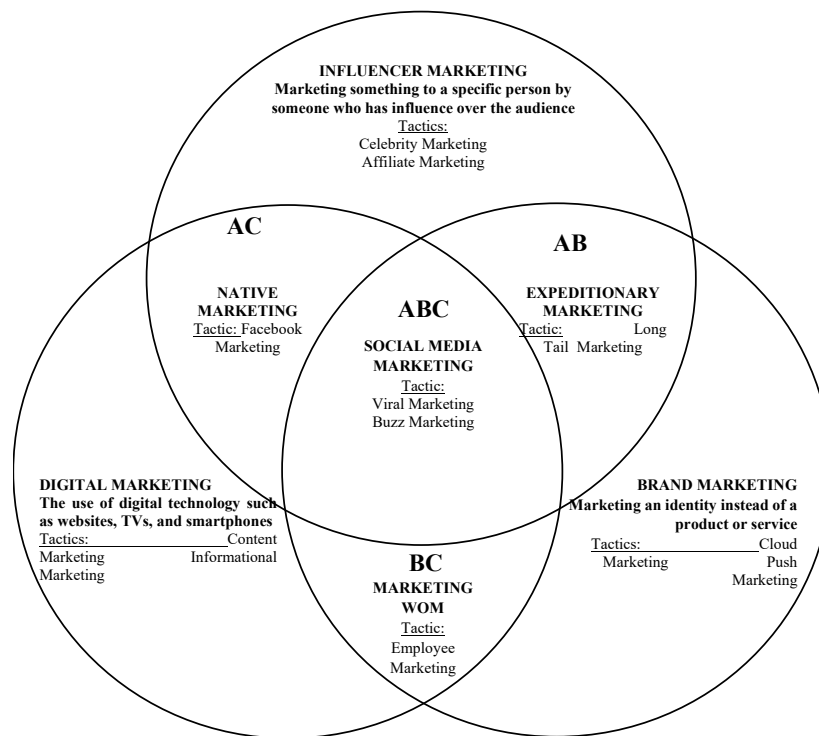
As video and social media content become more popular among youths, influencer marketing sounds like it could be good for brands that target younger audiences. By using personalities and characters that the young viewers love to persuade them to buy certain products, brands can expand their markets and grow their sales. Despite the perceived benefits for the companies and advertisers, there is concern about how the use of influencer marketing is affecting adolescents. The purpose of this paper is to propose a conceptual model of social media marketing and explore the effects of influencer marketing on adolescents. This will allow the elaboration of influencer marketing, digital marketing, and brand marketing.

## **RELATIONSHIPS AND SOCIAL MEDIA MARKETING**

Social media marketing is quite literally the use of online social platforms, like Instagram and Facebook, as a marketing tool. Social media advertisements can range from paid posts, free promotion from happy consumers, to even opinions and posts from employees. Today social

media marketing has almost become synonymous with influencer marketing which is the use of a person or groups of people and their power to persuade their followers to use or buy a certain brand or product. Social media marketing can be boiled down to a mix of influencer marketing, brand marketing, and digital marketing. Figure 1 introduces the relationships between these marketing tactics shows the interconnectedness of these three topics as well as how they play a role with each other. Each main section is labeled in Figure 1 as A, B, and C. Interactions among these sections are labeled as AB, AC, BC, and ABC. Also, examples of common tactics that are used in recent marketing activities are discussed in each section. Section discussions are concluded with propositions for future research.

FIGURE 1 – RELATIONSHIPS IN SOCIAL MEDIA MARKETING



Section A represents influencer marketing that can be defined as using anyone who has a mass following, where followers trust their opinion on what they should and should not buy (Lin, Vijayalakshmi, Lacznia 2019, Bladow 2018). One way to achieve influencer marketing is through celebrity marketing, which is the use of a famous person to offer an endorsement of a product or service (2020). Affiliate marketing also relates to influencer marketing by a company paying an affiliate, or partner, for each referral of a new customer that they bring in (Gregori 2014). An early influencer from 1931 is Santa Claus who was depicted as a spokesperson for Coca-Cola (2019). A more modern example is Khloe Kardashian who promotes FabFitFun boxes (2019).

Section B represents brand marketing, which is the art of marketing a brand's identity which helps depict what a brand stands for in the social world and business world (2020). With the vast technological advances of the 21st century, cloud marketing is also an effective way to market a brand through the use of all modern tools like email and social media (2020). Push marketing is an aggressive form of marketing that pushes a product or service onto an audience who might not have to know about the product previously (2020). Push marketing can also be

used to push a brand's image or position on a topic onto their markets. On the other end of the spectrum is pull marketing which is marketing that creates interest without being intrusive like the creation of a Facebook group for a company to deliver content to a specific group of interested individuals who want to receive it (2020). At Home's Snapchat stories, they show videos of different do it yourself projects that happen to use At Home items and colors, but they do it in a way that seems natural.

Section C represents digital marketing, which defined as a way to promote products online and through various digital channels like websites, email marketing, and display ads (Sherman 2019). Digital marketing was born with the invention of the World Wide Web and Netscape in 1994 (Simon 2019). As the internet grew in popularity, brands started to market themselves online via new Search Engine Optimization (SEO) techniques and email marketing (Simon 2019). Content marketing, which is "creating and distributing content to drive positive action", plays a role within digital marketing via the content that brands create online (2020). Informational marketing is the trend of explaining exactly what a product is, how it works, and its benefits which fits into digital marketing because the use of the internet makes it easier for informational content to be created and distributed (2020).

Section AB is the overlap of Section A (Influencer Marketing) and Section B (Brand Marketing). Expeditionary Marketing can be described as marketing for growth in the form of risk-taking to achieve the goal of expanding into a new market or the successful use of new marketing tactics (2020). This happens in today's market when established companies break into a market that is new to them and might be unexpected for that specific brand. Expeditionary marketing can be highly successful if done correctly.

Long Tail marketing refers to target small, niche markets with a certain product or service which may happen when the current market of a company is controlled by a larger company inhibiting growth (2020). An example of long-tail marketing is the recommendations that you receive on websites like Amazon. The items that pop up in your recommended section might have nothing to do with what you were searching for and is an example of how companies target a niche market. On the opposite end of the spectrum is mass marketing which is marketing something with the intention of selling it to the largest number of people possible (2020). A good example of mass marketing is Wal-Mart because they aim to sell their products to everyone that they can, not having a narrow market in mind. This leads to the conclusion that:

*P1: Companies that target smaller, niche markets might have better luck at creating a strong, loyal customer base which, in turn, allows their company to hold a stake in that particular area.*

Section BC is the overlap between Section B (Brand Marketing) and Section C (Digital Marketing). Word of Mouth Marketing (WOM) has long been an established part of the marketing world and is highly relevant in today's world of the internet. WOM is when customers recommend a product or service or company for any reason and, in return, the name of the company spreads (2020). An example of WOM is like when a commercial stands out in a certain way, like the puppy-monkey-baby Mountain Dew commercial from the Super Bowl. People saw that as very out of the ordinary, and in turn, were talking about it to their friends, spreading the name of Mountain Dew as they went.

Employee marketing is the subliminal use of employees to market a brand or company since employees are ambassadors of their work, they can spread the word on the company (2020). An employee has the opportunity to always share what happens in the workplace with their friends and family in person or online. This means that they can praise the company they



work for because they feel like the company is doing a great job, or they can air their grievances online to the world whether the company was intending for this or not. Consumers take what employees say to heart and that can have a great impact on the company. Online and offline marketing are also variations of WOM marketing. Online marketing is any marketing that takes place online, like social media and websites; people can also spread and share posts and links (2020). Offline marketing is any marketing that takes place off the internet when people are talking to one another or see an advert on a paper flyer or billboard (2020). People are the most abundant type of advertising:

*P2: Word of mouth marketing is a reliable way for companies and businesses of any size to get their products out into the world while relying on a free service that is performed by their clients.*

Section AC is the overlap between Section A (Influencer Marketing) and Section C (Digital Marketing). Native Marketing is the placements of advertisements that have a similar look to the surrounding content (2020). The ads that are seen at the top of a Google search page are native; they don't look like ads except for the little green box which indicates it is an ad (2020). The six main types of native marketing are in-feed units that promote a brand within its own website, promoted listings, paid search ads, recommended widgets, custom ads, and in-ad native element units (2017). Native Marketing is relevant now more than ever with the increased use of social media.

Email marketing is a perfect example of native advertising. Email marketing is the use of email to send customers important information and offers (2020). Emails that people receive from companies look just like a regular email that they would receive from a friend which allows the advert to blend in with the environment around it. Product placements are also an excellent way to display native advertising. Product placements occur in movies, TV, and online videos when a certain product or brand is prominently displayed for the viewer to see, but it does not stick out from its surroundings. The opposite of native advertising would be pop-up advertising. Pop-up ads occur frequently on the Internet and do not try to hide the fact that they are an advertisement. Sometimes the easiest way to get people's attention is the subtlest:

*P3: Native advertising does not have to be in the consumers face or expensive. Instead, it can be subtle like an email or from Search Engine Optimization (SEO).*

Section ABC is where influencer marketing, brand marketing, and digital marketing come together. When companies utilize digital marketing in a variety of ways, they might also venture into influencer marketing. While digital marketing alone might reach a wide range of consumers, influencer marketing will reach a whole new market and create new demand for the product. Influencer marketing and brand marketing can also go hand in hand. When a brand chooses an influencer, they are saying that that person aligns with the brand's personality. Companies that utilize brand marketing, influencer marketing, and digital marketing can achieve overall social media marketing. Social media marketing is marketing through multiple social media platforms (2020). YouTube is a popular platform that is used for influencer and digital marketing.

Buzz marketing plays a large role in social media marketing because it creates excitement through noteworthy marketing efforts and messages (Rollins et al., 2014). An example would be the Taco Bell hotel that took place in the summer of 2019 where influence marketers and some lucky fans got the chance to stay for a weekend at a hotel made by the company. The Taco Bell

Hotel was a limited-time event that was not open to the public but instead played a role in promoting the brand as well as some new products. This event created a lot of buzz and eventually went viral which is the next step. Viral marketing is when something becomes popular between consumer-to-consumer communication (Rollins et al., 2014). When good social media marketing is made, it leads to the development of buzz and viral marketing.

Word of mouth marketing, in both the traditional and online sense, is the modern, popular ways for the public to receive their information and form opinions. WOM is developed in the traditional sense through people communicating via phones, newspapers, or face to face (Rollins et al., 2014). Traditional WOM marketing is similar to how news circulated before the invention of the Internet when people were dependent on each other's opinions to help form their own. Buzz marketing is when a company or consumer creates an interesting message that leads to lots of people talking about it (Rollins et al., 2014). It can also be created from the company themselves by something called word-of-mouth marketing meaning that a company creates their own buzz and that is then shared by the consumers on the Internet which can then lead to viral marketing (Rollins et al., 2014).

Businesses should also be aware that opinion leaders play a role equal to influence marketers. An opinion leader has a unique perspective of products and can communicate with the customer in a different way. Simon Moores is an opinion leader because he has experience in his area which gives him credibility with consumers as well as the public as a whole (Influencer Marketing Hub, 2019). Moores is not a typical celebrity, but because of his expertise in his area, his words have influence.

Today's consumers have started to dismiss traditional forms of marketing like commercials and paper ads for influence marketers on YouTube and social media (Gerdeman 2020). The process behind influencer marketing is quite simple. All a company needs to do is to identify a popular influencer in a certain market segment, give them a product or payment, and have them create content that encourages their viewers to purchase that product (Richardson 2016). An important thing to note is that an influencer in one space might not be an influencer in another space, which is why it is important, as a company, to research your market (Richardson 2016). Anyone that has connection to the Internet has the chance to post their opinions about whatever product or company they feel like and it has the chance to gain traction and support from thousands of people around the world. It does not matter where they are from or what their interests are because there is a target market for everything and because of this power:

*P4: Anyone can be an influence marketer no matter their area of specialty is and targeted age range.*

Influencer marketing can be a very effective tactic to use when dealing with a younger audience like adolescents, but it should also be done with care. When asked, 24 percent of tweens: children aged 9 to 12, were reported saying that they watch their favorite YouTuber every single day of the week, and another 40 percent reported that they watch for more than 1 hour each day (Tolbert, Drogos, 2019). It appears to be that tweens are consuming upwards of an hour's worth of persuasive content daily. Adolescents are still developing and therefore they lack the skill of advertising literacy (van Dam, van Reijmersdal, 2019). YouTube is a huge market for influencer marketing because the advertisement of a product or service can be weaved in seamlessly into the content. This can be dangerous for the children that are watching because they might not be able to decipher the difference between honest opinions and advertisements.

Children can recognize brands as early as 3 or 4 and they develop further to begin and make abstract connections between the product, brand and associate the product with different things (Achenreiner, John, 2003). This can be good or bad news when it comes to influencer marketing and the companies that utilize it. Adolescents that are subject to influencer marketing see the influence marketers as role models and therefore accept their behavior and attitudes (van Dam, van Reijmersdal, 2019). Since advertising literacy is less easily triggered at their age, the influence tends to work better which will, in turn, create more sponsorships for that influencer and so on (van Dam, van Reijmersdal, 2019). While this plays in favor of brands, parents might not be as accepting of the deception that their children are undergoing.

To protect consumers, especially adolescents, the Federal Trade Commission (FTC) requires there to be a clear disclosure when there is a material relationship between brands and influence marketers (Bladow, 2018). This is important so consumers understand that what they are about to witness is a paid or sponsored advertisement. While influencer and social media marketing are important for companies who want to increase their presence and sales, it can be a slippery slope when dealing with adolescents and their parents. This can benefit companies because they can gain a positive reputation in the eyes of parents if they continue to have transparent marketing practices with the adolescents and children they are targeting.

### **MANAGERIAL IMPLICATIONS**

Business initiated influencer marketing is an increasingly growing field that can give businesses several advantages. 192 marketers and agency professionals were surveyed, and 57 percent said that they were going to increase their influencer marketing budget this coming year (Zeng 2020). An easily seen benefit of influencer marketing is the wide range of influence marketers that marketers can choose from. Ranging from micro-influencers who have as few as 5,000 followers to macro-influencers who have over 100,000 followers, 77 percent of marketers are interested in micro-influencers (Zeng 2020).

Viral marketing has the chance to play a key role in influencer marketing. Viral marketing can be described as a combination of WOM, buzz marketing, and online marketing (Rollins et al., 2014). WOM, as discussed before, is a key tactic to be utilized in not only viral marketing but also influencer marketing. WOM ties into viral marketing because when a marketing message is circulated on the internet and is talked about frequently, it can become viral on and offline (Rollins et al., 2014). Influence marketers can achieve the same status depending on the content that they create. From their wording to the activities that they perform on social media and video can all play into their content, and in turn, a company's content, going viral.

Buzz marketing is the creation of excitement through a noteworthy marketing campaign (Rollins et al., 2014). Buzz marketing can happen at any time under any circumstances whether the creator intended it or not. The goal of most influence marketers is to have their content grow in popularity so that they can grow their influence and hopefully get more brand deals. This can be achieved through viral and buzz marketing. Influence marketers should have the goal to create content that makes people want to talk about it, and in turn, talk about the products or brands associated with them.

Online marketing is the last key factor that relates to influencer marketing and buzz marketing. As a recap, online marketing is the use of the Internet and other online sources like banner ads to facilitate marketing plans (Rollins et al., 2014). What makes online marketing so

important because of the widespread use of online platforms for several different purposes which presents various opportunities for marketing. The Internet has allowed for lower barriers of entry for smaller businesses which allows them to enter the marketplace which means that small businesses will gain from influencer marketing (Rollins et al., 2014). Firms of all sizes struggle with brand loyalty and some tend to stay in niche markets which depletes their use of buzz or viral marketing (Rollins et al., 2014). Since all firms struggle with loyalty, influencer marketing might be key to developing stronger brand loyalty. If someone sees their favorite influencer supporting a specific brand, there is a good chance that they too will purchase this product and continue its use in hopes to become more like that influencer.

Viral marketing, marketing that occurs from word of mouth marketing also plays a role in influence marketing (Rollins et al., 2014). Viral marketing and influencer marketing can go hand in hand. Influence marketers have the potential to go viral and that is something that companies need to keep in mind as well. A single post from Facebook has the chance to reach thousands of people (Rollins et al., 2014). In the modern-day world of constant creation of social media content, companies need to be aware of the content that is being published with their name on it.

Opinion leadership and influencer marketing go hand in hand. Dr. Oz is a perfect example of the powerful influence that opinion leaders have over their viewers. Dr. Oz, who is a physician turned wellness advisor, gained fame through his many books and famous TV landing him a place on *TIME*'s '100 Most Influential People of the Year and Century Lists' (Schein, 2018). His growth in popularity has placed him front and center which has led him to become a go-to for medical advice even after it was revealed that 60% of his advice lacked scientific backup (Schein 2018). Oz has continued to grow his platform and has become a spokesperson for RealAge.com, a website that allows the user to take a quiz to determine their 'real age' and discover ways to reverse and improve their aging. Due to his extensive time in the medical field, Dr. Oz has become a trustworthy person to seek medical advice despite the evidence that has been presented against him.

Comparatively, Dr. Fauci, Director of the National Institute of Allergy and Infectious Diseases, is considered the lead doctor for the Coronavirus outbreak (NIAID, 2020). He is also strictly an opinion leader. The difference between Dr. Fauci and Dr. Oz is that the former is not actively doing any marketing in a commercial way for a product, service, or company. Dr. Oz not only can give opinions and suggestions for people to do certain activities, but he can also provide examples of products and services because he is also an influence marketer.

## RESEARCH IMPLICATIONS

A common assertion of influencer marketing is that their endorsements are more authentic than messages given by traditional celebrities and carry more weight than a peer recommendation (Bladow 2018). While there is academic research that backs up the idea that adults can perceive what they see and make decisions for themselves, adolescents are not able to do the same. The brain of adolescents is not fully developed in the areas that allow them to make decisions and judgments that are fully thought out and this affects their advertising literacy; the ability to see content as an advertisement instead of being truthful (van Dam, S., & van Reijmersdal 2019). The information that is provided to adolescents is seen as facts and they give in easier to the effects of influence marketers. This paper established the conceptual possibility that influencer marketing has a greater effect on the adolescents that are consuming the content

instead of their parents. This brings up the question: how can we research what does and does not work in the market from the viewpoint of parents, children, and both together?

Investigating this assumption would require an in-depth qualitative research analysis that needs to be studied to better understand how influencer marketing works with modern-day adolescents and their parents. This could vary from a case study to focus on groups to achieve the desired information. Current companies like Glossier, The Honest Company, and Target that are participating in influencer marketing should be researched in their efforts of how they create their influence on marketing campaigns (Wheeler 2016). These companies should follow the current model that is described in this paper as close as possible to entertain all aspects of social media marketing to their advantage. The content that is created via the influence marketers that the companies pick would then be viewed and analyzed by a group of adolescents and their parents separately. The first metric would be to see if adolescents and their parents can decipher a sponsored influence marketer from a normal influence marketer who is just using products in their videos. The second metric would measure whether they felt the influence marketer was being open and honest about using the product or if the viewer felt that they were deceiving the audience.

After the creation of content that is adequate in meeting both metrics, companies would be able to choose the right influencer to meet their needs. For instance, if their goal is to reach children between 9 and 12, they should try shifting towards YouTube as that age range is the fastest growing audience on that platform (Tolbert and Drogos, 2019). Companies would also be able to revise their agreements with their current influence marketers to match the results found in the earlier focus groups and case studies. Companies could also use this time to determine if they need to focus their aim towards parents, who are the gatekeepers, rather than the adolescents that they might have previously been targeting. Making this change might play in favor of the company because the parents might no longer feel like their children are being targeted unknowingly online.

Parents are not only the gatekeepers, but with all of the new advances online, they are also having issues navigating the online marketplace. Certain aspects of parents' online usage have been less effective as they navigate the online world which reflects on their children (Lin, Vijayalakshmi, and Lacznia 2019). This means that the way parents perceive the ads targeted towards their children is important because they will most likely influence their children's responses to the same ad (Lin, Vijayalakshmi, and Lacznia 2019). Children may have access to online advertisements, but it is ultimately the parent that decides to purchase things for their children, and if they have a negative attitude towards the company, they are less likely to buy that product for their children.

Companies would then follow up regularly on their performance after initiating their changes. At this time, they would disclose any changes in followings or revenue that could prove or disprove the accuracy of their changes. This will be when target audience surveys could be sent out so that companies can see how they are viewed by their clients. Search engines may also be helpful in this time to compare the number of positive versus negative searches that are performed on the companies.

Though influencer marketing has been around for decades, it has become popular in recent years and has changed drastically from what it used to be. While we are providing a model (*Figure 1- Relationships in Social Media Marketing*) for managers, this model is untested and conceptual. However, it revealed the fact that the domain of social media marketing is changing

and spreading fast. The influence of adolescents in this domain is significant but not investigated enough. Future researches will provide relevant, beneficial insights into this topic.

## CONCLUSION

Influencer marketing has the chance to expand a company's audience, thereby increasing profits. It allows companies to play a role in the content that is consumed daily by millions of people across the world and ease their way into the minds of the viewers. Any company can participate in influencer marketing so that their company might gain favor or preference in the eyes of the consumer. Small companies may use influencer marketing to get good word of their company into the marketplace and gain footing in their particular target market. Larger companies may use influencer marketing to create new customers and expand into previously uncharted areas of the market. This paper has investigated the effects of influencer marketing on adolescents, proposed a conceptual model, and provided the implications for research. Influencer marketing is a powerful tool that is widely used daily by numerous companies and influence marketers. Managers are able to create successful influencer marketing campaigns if they are familiar with the basics of social media marketing. The symbiosis between a good product and an honest influencer can create the ideal influencer marketing campaign for any company.

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# CREDIT CARD LITERACY OF AMERICAN COLLEGE STUDENTS: A FIVE CAMPUS STUDY OF DEMOGRAPHIC DIFFERENCES

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## ABSTRACT

*Are college students prepared to be financially literate consumers? American college students across five campuses (n=787) were surveyed. Their knowledge of credit cards and budgets were examined. Few students were aware of the true costs of credit cards and only half had a budget. We found specific demographic subgroups of upperclassmen, older students and married students knew more about their credit cards. Gender had no effect. We also examined the 2009 CARD Act, designed to limit access to credit on campus and discovered the statute had been effectively enforced.*

Key words: credit card literacy, college students, credit cards, budgeting, survey

## INTRODUCTION

Financial literacy research has been confusing and contradictory because of the many operational definitions of the construct. We will describe our concept as credit card literacy. Few of our students will become hedge fund managers, but all of them will become consumers. What financial skills does a consumer, every consumer, need in the modern economy? Credit card literacy involves understanding credit cards for day-to-day life. Despite the commonplace use of credit cards, the knowledge of the convenience costs is limited and often incorrect.

In America, credit cards on campus have been a tsunami, but times are looking better. Prior to 2010, easy credit was everywhere. Norvilitis et al. (2006) found that 74% of U.S. students had at least one credit card. Block (2009) reported fifty percent (50%) of college students had four or more credit cards. Students were using credit. By 2010, the average college student credit card debt soared to \$10,000 (Hodson & Dwyer, 2014).

The primary cost of credit is the interest rate. The interest rate on a credit card typically fluctuates with the prime rate (White, 2020). Ironically, the average interest rate on credit cards is 17-24%, while the US has historically low interest rates (U.S. News & World Report, 2020). Nearly half (45%) of US households have had a credit card balance for over 2 years (O'Brien, 2018). The average household has a balance over \$16,000 and spends nearly \$1300 per year on interest alone (O'Brien, 2018).



Besides interest, credit cards are loaded with fees. Consumers in America paid \$104 billion in credit card interest and fees in 2018, and that amount was expected to grow to \$110 billion annually by 2020 (O'Brien, 2018). The average late fee is \$36 and in addition, some card companies raise interest rates to 27% (U.S. News & World Report, 2020). The average over balance fees are \$35 (White, 2020). The convenience cash advance fee is 2-8%; however, most cards have a \$5 minimum (U.S. News & World Report, 2020) which means for the convenience of getting \$20 in cash, your account is lessened by \$25. Lastly, many companies charge you a fee just to have a credit card, whether you use it or not. Annual fees for cards often exceed \$100, but are lower or waived for the first year (White, 2020).

Over a third of Americans (36%) have experienced a hidden fee (Hutheesing, 2019). The problems are especially acute on campus, where most students are making financial decisions alone for the first time. Historically, credit card issuers were ready to pounce on these unsuspecting and naïve customers. In addition, consumers should have a budget, which is essential for those with limited discretionary income, like college students. Without this knowledge, bad financial decisions are all too common.

Congress tried to address this issue with the CARD Act of 2009, effective 2010, to slow the spread of easy credit on campus. The CARD Act required students to have either co-signors or independent income in order to gain credit (Samuelson, 2010). Part of the motivation of the current project is to determine if the CARD Act of 2009 was being effectively enforced on campus.

## REVIEW OF THE LITERATURE

Since interest is the primary cost of credit, a financially literate student should know the interest rate he/she pays (Robb and Sharpe, 2009). College students, however, did not possess a strong financial knowledge (Ludlum and Smith, 2010; Jones, 2005; Warwick and Mansfield, 2000; Chen and Volpe, 2002). This lack of knowledge also included budgeting (Norvilitis et al. 2006).

Ludlum, Tilker, Ritter, Cowart, Xu, & Smith (2012) surveyed American college students (n=725) and found that 70% of undergraduates had a credit card. However, less than 10% of students paid their credit card in full monthly. This meant 90% of students paid very high interest. Fewer than one in five students claimed to know the interest rate they paid. Fewer than 10% knew their interest rate, the late charges, and the over balance penalty on their credit card(s). Less than one in ten students knew basic facts of a financial tool they have in their pocket every day.

Singh, Rylander, & Mims (2018) segmented college students into four payment behavior groupings (n=400). Students who pay full balances on time each month were predictably in better financial shape, with higher credit limits and less debt. These students also checked their statements more carefully and had more positive perceptions of credit card companies.

Friedline, West, Rosell, Serido, & Shim (2017) examined outstanding credit card debt among young adult college students and the communities in which these students grew up or lived (n = 748). They confirmed that a community's unemployment rate, average total debt,

average credit score, and number of bank branch offices were associated with a young adult college student's acquisition and accumulation of credit card debt. Community characteristics had the strongest associations with credit card debt, after controlling for individual characteristics and familial characteristics.

Limbu & Sato (2019) examined American college students (n=427) and found credit card literacy led to greater financial well-being of college students, thereby supporting the efforts of financial literacy programs.

Limbu (2017) surveyed the direct and indirect effects of credit card knowledge on credit card misuse among US college students. Credit card knowledge and social motivation were inversely associated with credit card misuse. Credit card literacy programs should incorporate strategies that can enhance students' knowledge, social motivation, and behavioral skills for the responsible use of credit cards.

Barboza (2018) studied the role that present-biased preferences and impatience play in the repayment behavior of (n=380) college students. The study found that individuals suffering from self-control issues and using credit cards to bridge unexpected shortage of income are more likely to fail to repay credit cards in full in the period after the purchase was completed, therefore, carrying over a month-to-month balance

With this as a background, we wanted to see if any demographic factors correlated with undergraduate students' credit card literacy. We crafted six research hypotheses. Those hypotheses are:

*Hypothesis 1. Gender (male/female) is correlated with increased credit card literacy;*

*Hypothesis 2. Indoctrination (year in school) is correlated with increased credit card literacy;*

*Hypothesis 3. Being an international student is correlated with increased credit card literacy;*

*Hypothesis 4. Employment is correlated with increased credit card literacy;*

*Hypothesis 5. Marriage is correlated with increased credit card literacy; and*

*Hypothesis 6. Having children is correlated with increased credit card literacy.*

For each, we started with a null hypothesis.

## METHOD FOR THE SURVEY

A convenience sample was taken from large business survey classes at five state (public) schools across the United States in the fall of 2016. Those campuses included: University of Nebraska-Lincoln, University of Central Oklahoma, Oklahoma City Community College, Indiana University of Pennsylvania, and East Stroudsburg University of Pennsylvania.

Students completed the Institutional Review Board approved questionnaire during class time. The survey instrument was voluntary and anonymous. We were best able to minimize bias by using a large group survey, with anonymous results and confidential submissions. A total of 787 surveys resulted. After excluding those surveys missing significant amount of data, some questions had fewer than 787 responses. The text of the questions is in the appendix.

Most (63%, n=466) of the participants were business majors. The respondents were in the following academic years: first, 10.8%, n=81; second, 24%, n=180; third, 28.7%, n=215; fourth, 33.7%, n=253; and 21 graduate students (2.8%). In our sample, males outnumbered females 52.1% to 47.9%. Only 9.5% (n=71) of the respondents were married, and only 62

students (8.4%) had children. Most students worked while attending school (73%, n=540). See Table 1 below for descriptive statistics from the sample.

**Table 1. Descriptive statistics for sample surveyed.**

Total surveys completed	n = 787	Percentage
Year in school		
Freshman	81	10.8
Sophomore	180	24
Junior	215	28.7
Senior	253	33.7
Graduate	21	2.8
Total	750	100.0
Gender		
Males	390	52.1
Females	359	47.9
Total	749	100.0
Employment status		
Not employed	201	27.1
Part-time	383	51.7
Full-time	157	21.2
Total	741	100.0
Nationality		
Domestic (USA)	692	88.3
International	92	11.7
Total	784	100.0
Marital status		
Married	71	9.5
Not married	678	90.5
Total	749	100.0
Children		
0	677	91.6
1+	62	8.4
Total	739	100.0

Credit cards are still common on campus, but not universal. In our survey, over a third (37%) of students did not have a credit card. Another 30% only had a single credit card. However, 18% of our sample had four or more credit cards.

Did students understand their credit cards? Sadly, no. Table 2 (below) indicates the percentages of students who did know the features of their credit card, and the percentages range from a third to nearly 90% on some of the common fees.

**Table 2. Credit Card Proficiency**

<b>Question</b>	<b>Correct *</b>	<b>Do Not Know</b>
What is the current balance on the credit card you use most?	(261/402) 64.9%	(141/402) <b>35.1%</b>
What is the interest rate?	(177/402) 44.0%	(224/402) <b>56%</b>
What is the late fee?	(156/402) 38.8%	(246/402) <b>61.2%</b>
What is the cash advance fee?	(55/402) 13.7%	(347/402) <b>86.3%</b>
What is the over balance fee?	(75/402) 18.7%	(327/402) <b>81.3%</b>

\*Assumed to be correct, a self-reported measure.

In addition, we wanted to examine student budgeting. In our sample of college students, only 373/728 or 51.2% had a budget. Half of students being prepared might sound good, but 100% of our students will be consumers and need to be prepared.

## FINDINGS

We wanted to examine what demographic factors affected student financial life skills. We ran chi square analyses for relationships for independent variables (gender, year in school, employment, marital status, etc.). We used SPSS version 26 for analysis. We examined five questions on credit card literacy and one question on budgets.

For Hypothesis 1, we examined if gender (male/female) was correlated with higher credit card literacy. To our surprise, gender yielded no statistically significant results.

For Hypothesis 2, we determined year in school (as opposed to physical age) was correlated with higher credit card literacy. We found that upperclassmen more aware of four of the five credit card literacy questions. Specifically, we found upperclassmen were more aware of his/her credit card balance ( $\chi^2=32.006$ ,  $df=12$ ,  $p=.001$ ); as well as the interest rate ( $\chi^2=27.429$ ,  $df=12$ ,  $p=.007$ ); the late fee ( $\chi^2=28.14$ ,  $df=12$ ,  $p=.005$ ); and the over balance fee ( $\chi^2=27.364$ ,  $df=16$ ,  $p=.038$ ).

For Hypothesis 3, we found being an international student (non-USA) was correlated with higher credit card literacy. Specifically, we found international students were more aware of all five of their credit card literacy issues. From our analysis, international students were more likely to know the balance on his/her credit card ( $\chi^2=45.194$ ,  $df=4$ ,  $p=.000$ ); the interest rate ( $\chi^2=32.903$ ,  $df=3$ ,  $p=.000$ ); the late fee ( $\chi^2=16.554$ ,  $df=3$ ,  $p=.001$ ); the cash advance fee ( $\chi^2=24.648$ ,  $df=4$ ,  $p=.000$ ); and the over balance fee ( $\chi^2=20.23$ ,  $df=4$ ,  $p=.000$ ).

In Hypothesis 4, we determined Employment was correlated with higher credit card literacy. For this question, we reduced employment to a binary issue (yes/no). We combined all full-time (which were very few) with part-time workers and considered “employed.” From our analysis, employed students did better on two issues of credit card literacy and the question on budgeting.

Specifically, we found that employed students knew more about the current balance on his/her credit card ( $\chi^2=28.274$ ,  $df=6$ ,  $p=.000$ ), as well as knowing about the late fee ( $\chi^2=15.432$ ,  $df=6$ ,  $p=.017$ ). Employed students were more likely than non-employed students to have a budget ( $\chi^2=33.817$ ,  $df=4$ ,  $p=.000$ ).

In Hypothesis 5, we found that marriage was correlated with higher credit card literacy, being statistically significant on eight of nine questions. The results found that married students were more financially aware in knowing his/her current credit card balance ( $\chi^2=7.921$ ,  $df=3$ ,  $p=.048$ ); the interest rate ( $\chi^2=28.143$ ,  $df=3$ ,  $p=.000$ ); the late fee ( $\chi^2=17.258$ ,  $df=3$ ,  $p=.001$ ); and the cash advance fee ( $\chi^2=26.941$ ,  $df=4$ ,  $p=.000$ ). In addition, married students were more likely to have a budget ( $\chi^2=13.711$ ,  $df=2$ ,  $p=.001$ ).

Hypothesis 6 examined whether having children was correlated with higher credit card literacy. For this analysis, we made having children binary (yes/no) rather than based on the number of children, since few students had a child, and a very few had more than one child.

Students who had children had statistically significant results on all questions. We found students who had children were more aware of his/her current credit card balance ( $\chi^2=13.175$ ,  $df=3$ ,  $p=.004$ ); the interest rate ( $\chi^2=40.68$ ,  $df=3$ ,  $p=.000$ ); the late fee ( $\chi^2=23.781$ ,  $df=3$ ,  $p=.000$ ); the cash advance fee ( $\chi^2=15.256$ ,  $df=4$ ,  $p=.004$ ); and the over balance fee ( $\chi^2=9.413$ ,  $df=4$ ,  $p=.052$ ). Also, students who had children were more likely to have a budget ( $\chi^2=6.082$ ,  $df=2$ ,  $p=.048$ ).

**Table 3. Significant results by factor**

Question	Gender	Year	International	Employed	Marriage	Kids
What is the current balance on the credit card you use most?			x	x	x	x
What is the interest rate?		x	x		x	x
What is the late fee?		x	x	x	x	x
What is the cash advance fee?			x		x	x
What is the over balance fee?		x	x			x
Do you have a budget?				x	x	x

We finished the analysis by testing for reliability and consistency. The Cronbach's alpha for the five items in Table 3 was .834, exceeding the .70 standard for reliability.

## DISCUSSION

Hypothesis 1 was not supported. Both males and females had poor credit card literacy.

Hypothesis 2 (year in school) was generally supported. Our rationale would be that more senior students, with more experience with credit cards, and more access to credit, would be more financially aware consumers. In addition, older students are closer to entering the real world (and student loan repayment) so issues of financial solvency are more urgent.

For Hypothesis 3 (being an international or domestic student) heavily favors the international students. Our explanation would be two-fold. First, we had a small group of international students which might affect the result. Second, we believed the necessity of living abroad (not with family) requires a budget. In addition, having to use credit cards for all transactions would make the international student much more dependent on the use of the credit card as a sole source of funds. In other words, necessity leads to increased awareness.

For Hypotheses 4, 5, and 6, we rationalize the overwhelming support for all three as evidenced by the adage, *if you want to learn about the real world of money, get a job, get married, and have some kids*. In our sample, the result was clear. Real world obligations make students much more aware and concerned about the financial issues. As several of our students explained, financial life skills “is all a bunch of talk until the real world happens.”

Lastly, we asked whether our students had gotten a credit card after 2010, when the CARD Act became effective. The CARD Act was an attempt to stop the lax issuing of credit cards on campus. Often students were plied with free pizza, t-shirts, and other giveaways to entice them to apply for credit cards, usually unaware of the ramifications of the decision. The CARD Act required any issuer to a college student to either verify the income or have a co-signor on the account.

**Table 4. Effect of the 2009 CARD Act.**

Question	Yes	No
Do you have a credit card in your name?	(445/781) 57%	(336/781) 43%
Did you apply for a credit card after 2010?	(402/781) 51.5%	(379/781) 48.5%
If Yes, were you employed when you applied?	(392/402) 97.5%	(10/402) 2.5%
If Yes, did your parents co-sign?	(137/402) 34.1%	(265/402) 65.9%

In our sample, 402 students indicated they acquired a credit card since 2010. Of the, 402 with post-CARD Act credit, 392 (97.5%) were employed at the time, and 137 (34.1%) had parental co-signors (some had both). Based on these results, it appears the CARD Act enforcement has been a success. The time of students getting credit cards without any income verification or co-signor appears to be gone.

### **LIMITATIONS AND IMPLICATIONS FOR FURTHER RESEARCH**

Because of the limited sample size, we are not able to generalize to all college students, nor to all students at the examined schools. Further, this analysis describes correlation, not causation, so these results should be considered preliminary.

The biggest limitation of this project is that it relies upon self-reported knowledge. The authors had no way to independently verify the correct answers. As such, these results likely over-estimate students' understanding of financial tools.

Respondents might also face some confusion of credit versus debit cards. Future projects should be clear in defining this difference, as debit cards may not provide any credit access, but students might not understand the distinction.

While five campuses were surveyed in the current project, all are state schools. Are private schools or for-profit schools different? One would assume those other two types of higher education appeal to different sets of students. Would those students have different views on financial life skills? Further research would be justified.

Another limitation is the sample size. A larger sample size could result in more (statistically significant) detailed analysis of the sub-groups (religion, political views, etc., as well as undergraduate versus graduate students). In addition, a larger sample size could define majors into discipline areas (accounting, tourism, management, etc.) to see if any disciplines had different views.

Lastly, future projects should incorporate student loans into the discussion. Student loans are a very different form of credit, with heavily regulated terms and subsidized interest, so they lack the punitive fees so common in credit card use. Clearly, further research on this topic is warranted.

Despite being well-versed in the detailed content of their discipline, this study demonstrates that college students need more information on the consumer skills they need for everyday life: credit card literacy and having a budget.

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The authors would like to offer a special thanks to Cenea Reese, and undergraduate research assistant from the University of Central Oklahoma who helped with the input and verification of survey data. In addition, the authors would like to offer a special thanks to Jennifer Davidson of the University of Nebraska-Lincoln and James J. Jozefowicz of Indiana University of Pennsylvania who helped with the collection of survey data. Any errors or omissions are those of the authors.

The authors were honored to receive a Distinguished Research Award for this project at the 2020 IGBR Fall Conference.

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**APPENDIX ONE. SURVEY QUESTIONS.**

This is a voluntary research project on student views of financial issues. The survey should take approx. five minutes to complete. There is no penalty for refusal to participate. You must be at least 18 years old to take this survey. **DO NOT PUT YOUR NAME OR IDENTITY NUMBER ON THE SURVEY. ALL ANSWERS ARE ANONYMOUS AND CONFIDENTIAL.** If you do not wish to participate, you may hand in the survey form blank. Thank you for your input on this research project.

How many credit cards do you have?

Do you have a credit card in your name?

Have you applied for a credit card in your name since 2010?

---Were you employed when you applied for credit?

---Did your parent's co-sign on your credit card?

What is the Interest Rate (APR) on the credit card you use most often?

What is the Late Fee for the credit card you use most often?

What is the Cash Advance Fee for the credit card you use most often?

What is the over balance fee for the credit card you use most often?

What is the current balance of the credit card you use most often?

Do you have a monthly budget?

What year in school are you presently?

What is your college?

Are you male or female?

Are you married?

Have you taken a class in personal finance?

Are you currently employed (this semester)?

How many children do you have?

Are you an international student?

# BUYER DEPENDENCE, INDUSTRY REGULATION, AND EFFECTUATION: EXAMPLES FROM THE COVID-19 PANDEMIC

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## ABSTRACT

*Effectuation emerged as an entrepreneurial decision-making model especially applicable in uncertain environments. Despite the emphasis on environmental uncertainty as an important contextual factor, other contextual factors that support or undermine the applicability of the effectuation approach have not received much attention in entrepreneurship literature. To address this void in the literature and enhance the comprehensiveness of effectuation theory, we introduce buyer dependence and industry regulation as contextual factors and examine them in relation to the four underlying constructs of effectuation (i.e. flexibility, experimentation, affordable-loss, and pre-commitments). We propose that effectuation approach to entrepreneurship is less feasible when firms are buyer-dependent and operate in highly regulated environments. We examine the proposed relationships using examples from the COVID-19 pandemic. The COVID-19 pandemic created the uncertain environment in which effectuation approach is applicable and anecdotal evidence from the pandemic helped us gain a wider perspective on effectuation theory and its application.*

**Keywords:** Effectuation, entrepreneurship, buyer dependence, industry regulation, COVID-19 pandemic

## INTRODUCTION

Do entrepreneurs need to follow the rational making decision-making model? According to effectuation theorists, there is an alternative decision-making model that offers a substitute to the traditional rational decision-making model (i.e., causation). It involves a dynamic and interactive decision-making process, especially applicable in uncertain environments. Effectuating entrepreneurs focus on what can be achieved in the short term with the resources at hand, utilizing pre-commitments, and experimenting with new products and processes within the constraints of what the entrepreneur can afford to lose (Fisher, 2012; Sarasvathy, 2001). Effectuation theory has gained traction as a relatively novel approach in entrepreneurship in the last decade (Sarasvathy, 2001). However, despite growing interest, effectuation theory lacks comprehensiveness and context (Arend, Sarooghi, & Burkemper, 2015; Reymen, Andries, Berends, Mauer, Stephan, & Van Burg, 2015). Although some recent studies have looked into contingency factors such as organization size that affect the effectuation process, information is still limited, and there is a lack of a full understanding regarding circumstances under which effectuation logic is applicable (Arend et al., 2015; Sarasvathy, 2001).

This paper extends effectuation theory by introducing customer dependence and industry regulation as contextual factors. We propose that the effectuation approach to entrepreneurship is less feasible when firms are buyer-dependent and operate in highly regulated environments. Buyer dependence involves systems designed around the customer with significant resources and a long-term commitment to the customer (Dwyer, Schurr, & Oh, 1987; Mishra, Sinha, & Koul, 2017). This move reduces the dependent firm's flexibility, limits their ability to experiment with other business models, and increases potential losses (i.e., affordable loss). Pre-commitments to the buyer also limit options to work with other firms. Similarly, in highly regulated environments, firms are subject to strict rules and regulations that govern their operations. Therefore, their flexibility and ability to experiment are limited. Regulations often require long-term planning and regulate pre-commitments, limiting options to effectuate (Damanpour & Schneider, 2006; Fisher, 2012; Urban, 2018). Therefore, we propose that both buyer dependence and industry regulations reduce the entrepreneur's ability to effectuate. An overview of effectuation theory will be provided below, followed by propositions regarding its relationship to contextual factors of buyer dependence and environmental regulation. Examples are provided from the turbulent COVID-19 pandemic environment in a post-hoc analysis. However, anecdotal evidence does not provide empirical support and, therefore, future studies should empirically test the proposed relationships.

## **THEORETICAL BACKGROUND**

### **Effectuation and Causation as Alternative Decision-Making Models in Entrepreneurship**

Traditional decision-making models (i.e., causation) based on economic theories dominated entrepreneurship literature until the introduction of the effectuation concept, which offered a paradigm shift (Perry, Chandler, & Markova, 2012). From a causation perspective, the future is predictable and systematic evaluation is necessary to determine whether an opportunity is worth exploiting (Fisher, 2012; Sarasvathy, 2001; Venkataraman, 1997). The traditional view is based on the rational decision-making model where first a goal is set, and then alternative ways to reach the goal are identified. Next, the utility of each alternative decision is evaluated, and the probability of each alternative occurring is calculated. Finally, the alternative with the highest expected value is chosen and implemented (Cabantous & Gond, 2011; Keeney 1982).

The implicit assumption of predictability in the causation approach proposes that results can be estimated via superior forecasting ability (Roach, Ryman, & Makani, 2016; Sarasvathy, 2001). The assumption of predictability brings with it planning, long-term focus, and profit maximization goals. The traditional view postulates that an entrepreneur proceeds with predefined goals or objectives and engages in systematic evaluation of alternatives, with profit maximization being the ultimate goal. The dominance of this predictive view can also be seen in traditional textbooks, where historical market data is used to build models and scenarios in an attempt to predict the future and decide on the course of action (Read, Song, & Smit, 2009).

Sarasvathy (2001) offered effectuation as an alternative cognitive problem-solving approach especially applicable in uncertain environments and differentiated it from the traditional causation model. An entrepreneur following the effectual decision-making approach

focuses on what he or she can control rather than focusing on pre-determined goals. Such innovative minds also use the means and resources that are available at hand, accept uncertainty and remain flexible in order to change direction when necessary. Such entrepreneurs also agree with the fact that the future is unpredictable and focus on the short term rather than the long term. In addition, they also emphasize strategic alliances rather than competition and focus on limiting loss (i.e., affordable loss) rather than maximizing profit (Dew, Read, Sarasvathy, & Wiltbank, 2009; Perry et al., 2012; Sarasvathy, 2001).

Effectuation perspective shifts attention from forecasting and long-term planning to a focus on the present and what can be achieved within the current means of the entrepreneur (Read & Sarasvathy, 2005). The means of the entrepreneur include the resources as well as the relationship and networks that he or she has access to (i.e., pre-commitments). Effectuators do not make calculated, long-term decisions under perfect and predictable conditions, but instead, they focus on what is achievable within their current means and constraints under uncertain and dynamic conditions, with a focus on the short term. Because the future is not predictable, entrepreneurs focus on what they can afford to lose instead of focusing on maximizing profits at the end (Arend et al., 2015).

Rational planning underlies causation, whereas effectuation is associated with emergent strategies (Harms & Schiele, 2012). The entrepreneur can set or change direction when conditions change by focusing on what is achievable with the existing means while keeping an eye on the loss that is affordable (Arend, 2015). The effectuation approach allows the entrepreneur more control and flexibility when faced with contingencies. Effectuation theory deals with how enterprising individuals “make it happen” under tremendous uncertainty and ambiguity within their existing means (Read et al., 2016). In this perspective, entrepreneurs are creators rather than discoverers of opportunities (Steyaert, 2007). Entrepreneurship is viewed as an open-ended process, and the results/end states are unforeseen and often multiple (Steyaert, 2007). Therefore, effectuation theory suggests that entrepreneurs have numerous options regarding the results they can achieve in the long run. They are actively engaged in the decision-making process in reaching one of the possible results.

In sum, effectuation focuses on the short term versus the long term, “given set of means rather than goals,” “affordable loss rather than expected returns,” “strategic alliances rather than competitive analyses,” “exploitation of contingencies rather than exploitation of preexisting knowledge,” and “controlling an unpredictable future rather than predicting an uncertain one” (Sarasvathy, 2001; Chandler, DeTienne, McKelvie, & Mumford, 2011). Research over the years has identified four main sub-dimensions of the effectuation construct, including experimentation, flexibility, affordable loss, pre-commitments (Sarasvathy, 2001; Chandler et al., 2011). These sub-dimensions will be discussed below.

### **Underlying Constructs of Effectuation**

Effectuation is a multidimensional formative construct consisting of affordable loss, need for flexibility, experimentation, and pre-commitments as sub-dimensions (Chandler et al., 2011) which will be discussed below.

### ***Experimentation***

Effectuation logic departs from the traditional view where the entrepreneur evaluates alternatives and chooses an opportunity. Instead, it proposes that entrepreneurs take an active part in creating the opportunity. Especially under conditions of uncertainty, means or ends are not predetermined but instead constructed in the entrepreneurial process as the entrepreneur moves along (Steyaert, 2007). Effectuators avoid detailed planning and prediction. Instead, they experiment with options (Sarasvathy, 2001). They follow an iterative process where they experiment with a model, and if desired outcomes are not achieved, the model is refined (Andries, Debackere, & Van Looy, 2013; Reymen et al. 2015; Sarasvathy, 2001). The effectuation approach leaves multiple paths open to the entrepreneur where entrepreneurs can follow different paths to identify, exploit and create opportunities depending on their circumstances (Fisher, 2012).

### ***Flexibility***

Predicting the future becomes particularly challenging in uncertain and dynamic environments (Dew et al., 2009). When effectuators remain flexible, “the need for prediction is greatly reduced” (Sarasvathy, 2001, p.252). By staying flexible, entrepreneurs can take advantage of opportunities as they arise and change direction when necessary instead of committing to pre-existing goals and following rigid plans (Wiltbank, Dew, Read & Sarasvathy, 2006).

### ***Affordable Loss***

An effectuation perspective postulates that the entrepreneur exploits contingencies and utilizes the given set of means, resources, relationships, strategic alliances, and networks that are available with a focus on what he/she can afford to lose. Affordable loss concept is an alternative to the profit maximization emphasis that dominates the effectuation approach (Dew et al., 2009; Sarasvathy, 2001). Predicting the future, an essential component of the causation approach, becomes unnecessary when entrepreneurs can keep failures manageable (i.e., minor and quick).

Focusing on containing the losses allows entrepreneurs to engage in experimentation, affords flexibility as well as opens up new possibilities. When an experiment fails, the entrepreneur can change the course of action since the losses are contained (Chandler et al., 2011). Rather than trying to reach an ultimate goal, the entrepreneur shapes the future of the venture by making optimal decisions given the means available, experimenting with them, and focusing on what he/she can afford to lose in an unpredictable, uncertain environment (Dew et al., 2009).

### ***Pre-commitments***

Effectuation theory postulates that instead of engaging in formal planning, entrepreneurs proceed with available resources, envision possible opportunities, and take advantage of them through partnerships (Andries et al., 2013; Sarasvathy, 2001; Sarasvathy, Dew, Read & Wiltbank, 2008). Effectuation logic is based on the assumption that the entrepreneur can shape and co-create the environment through engaging in relationships with a network of partners and stakeholders (Dew et al., 2009). Pre-commitments allow entrepreneurs to access resources that they need to grow as well as help them control the future (Sarasvathy, 2001). Entrepreneur's social and business networks and the trust they develop with network partners are critical resources. They help the entrepreneur control uncertainty, discover and take advantage of

dynamic market opportunities (Evers & O’Gorman, 2011; Galkina & Chetty, 2015). Following a review of the underlying constructs of effectuation, the researchers discuss contingency factors that affect the entrepreneur’s ability to effectuate.

### **Effectuation and Contingency Factors**

Early studies defined the theory of effectuation and its constructs. In more recent years, researchers turned their attention to contingency factors affecting the effectuation process. Uncertainty is a well-known contingency factor in effectuation theory since the theory is built on the assumption of uncertainty. The effectuation theory postulates that effectuation logic is especially applicable in uncertain environments. Organization size is another contingency factor examined in relation to effectuation, although in a limited number of studies and mostly within the innovative framework (Roach et al., 2016). Causation is applicable in established markets and corporate settings where incremental innovations are developed (Grimm & Amatucci, 2013). In contrast, the effectual approach was argued to be suitable for small firm characteristics in new product development (Berends, Jelinek, Reymen, & Stultiens 2014). The argument for the effectuation approach in smaller firms is that they enjoy greater flexibility and that product innovation is resource-driven in small firms, as suggested by effectuation theory (Berends et al., 2014; Van de Vrande, De Jong, Vanhaverbeke, & De Rochemont, 2009; Yap & Souder, 1994). It is also suggested that new ventures may switch from an effectuation to a causation approach as they grow and start emphasizing planning, standardization, and structure (El Hanchi & Kerzazi, 2020). Despite the expansion of effectuation research, there have been limited studies examining the contextual factors beyond uncertainty and organization size that affect effectuation. In the next section, this theoretical framework discusses buyer dependence and industry regulation as factors that affect the entrepreneur’s ability to effectuate.

### ***Buyer Dependence and Effectuation***

Buyer dependence can be defined as the extent to which “a partner provides important and critical resources for which there are few alternatives” and implies a necessity (“have to”) to stay in the relationship (Mishra et al., 2017, p.60). The need to remain in the relationship arises from the fact that the buyer-dependent firms design their systems to serve the buyer, increasing switching costs and limiting their flexibility and ability to serve other customers (Mishra et al., 2017). Any switch will require significant investments and time to change the operations or business models (Plambeck & Taylor, 2007). Hence, the entrepreneur will not be able to respond quickly as suggested by the effectuation theory. Higher switching costs also increase potential losses and limit the entrepreneur’s ability to experiment with other options or business models. Buyer dependence requires a long-term commitment, which further restricts the ability to effectuate (Berends et al., 2013). As suggested by the effectuation theory, limited and short-term obligations allow entrepreneurs to contain their risks and keep any loss short-lived (i.e., affordable loss). Resource dependence theorists suggest that buyer-dependent firms are highly vulnerable to economic and policy shifts of the single customer (Pfeffer 1982; Thompson 1967; Venkataraman et al., 1990). Buyer dependence makes firms vulnerable to changes in the strategies and priorities of the customer, limiting their ability to contain losses (Venkataraman et al., 1990).

In addition, the effectuation theory postulates that the entrepreneur’s social and business ties (i.e., pre-commitments) are critical resources in the effectuation process (Andries et al.,

2013; Sarasvathy, 2001; Sarasvathy et. al., 2008). Pre-commitments provide access to resources, help entrepreneurs create and discover opportunities, and control the environment (Evers & O’Gorman, 2011; Galkina & Chetty, 2015). Buyer dependence limits the breadth of the entrepreneur’s network and pre-commitments. Commitment to a single customer requires significant resource commitment and long-term commitments to that customer, reducing the entrepreneur’s flexibility and ability to experiment with different customers and business partners as well as products and business models. Therefore,

*Proposition 1: There is a significant negative relationship between customer dependence and effectuation.*

### ***Industry Regulations and Effectuation***

It is well known that external environmental factors affect the success and failure of firms. An environment offers opportunities and challenges to the entrepreneur. Entrepreneurs need to understand which situations are favorable and unfavorable for them to succeed (Ansoff, 1987; Wiltbank et al., 2006; Zahra, 1993). There have been calls from researchers to examine the role of environmental conditions in the effectuation processes. However, studies on the same have been scarce (George, Parida, & Wincent, 2016; Urban, 2018). Researchers still do not know much about how environmental factors affect the effectuation process or under which conditions an effectuation approach is applicable (Arend et al., 2015).

There are compliance costs associated with industry regulations. Research has shown that these costs are especially challenging for small entrepreneurial firms (Bailey & Thomas, 2017). Potential for losses increase with compliance costs (i.e., affordable loss) and reduces the entrepreneur’s ability to effectuate. Constraining industry standards and regulations also limits the entrepreneurs’ flexibility and ability to experiment (Fisher, 2012). New firms which are usually “resource-constrained” have difficulty allocating resources, such as time and capital to managing “onerous regulatory processes” (York & Venkataraman, 2010, p.459). When they do, they are very limited in what they can afford to lose since their resources are already scarce. Regulations are also likely to limit whom entrepreneurs can cooperate and work with (i.e., pre-commitments), restricting the entrepreneurs’ network and access to resources. Regulated environments reduce opportunities for innovation and, therefore, reduce chances for experimentation, which is necessary for effectuation (York & Venkataraman, 2010).

In sum, effectuation is difficult to implement in such highly regulated environments since entrepreneurs are subject to strict rules and regulations that govern their operations. In regulated environments, entrepreneurs will not have the flexibility and the ability to experiment with different products and business models. They need to function within the confines of their permitted areas of operation. In particular, implementing short-term plans becomes problematic as entrepreneurs may have time-consuming procedures to follow. Therefore:

*Proposition 2: There is a significant negative relationship between industry regulation effectuation.*

### ***Post-Hoc Analysis: COVID-19 Pandemic and Effectuation***

Researchers have suggested that the effectuation approach is especially applicable in uncertain environments such as the one created by the COVID-19 pandemic. The year 2020 has been marked by Coronavirus (COVID-19), which has been declared as a pandemic by the World

Health Organization. COVID-19 spread rapidly worldwide, as there were reported cases in almost every country by the first quarter of 2020, affecting governments, industries, businesses, entrepreneurs, and employees alike. The COVID-19 pandemic created an uncertain, unpredictable, and constantly changing environment, which entrepreneurs had never experienced before, with challenges ranging from a decline in customer demand due to movement restrictions and unemployment to broken supply chains (Tan, 2020; Tartar, 2020). Customer demand was uncertain due to increasing unemployment rates and certain firms going out of business or filing for bankruptcy. How long the pandemic would last and its economic consequences were unknown. Entrepreneurs were scrambling to utilize their resources to create new opportunities.

The effectuation theory provides a framework to help understand how some organizations used the effectuation logic to survive and even thrive in the environment caused by the COVID-19 pandemic and why some firms could not effectuate. In the following section, the researchers will discuss examples to elaborate on the concepts discussed above. Observations provide anecdotal evidence and insight, allowing the researcher to gain a wider perspective. However, the observations do not provide support for cause and effect relationships or lead to inferences. Future studies should empirically examine the relationships proposed in this study. While it will take some time for scholars to fully understand and evaluate the effects of COVID-19 on the economy in general and businesses in particular, it is important for management scholars to utilize the information at hand. The next section examines the above propositions regarding the COVID-19 pandemic based on anecdotal evidence from published news.

### **Implementing the Effectuation Logic – An example**

A small mom-and-pop bakery located in Dallas, Texas, is a good example of a business that implemented the effectuation approach during the pandemic to keep its doors open and survive. Bisous Bisous is a bakery specialized in French-style pastries famous for its macarons and croissants. Most of their croissant sales were previously wholesale to other businesses before the COVID-19 pandemic. With the wholesale business diminished due to the pandemic and stay-at-home orders in effect, the owners had to think outside the box to recoup some of their losses and survive. Chef/owner Andrea Meyer and her husband updated their website in a few days to focus on e-commerce so that customers could order online and avoid crowds in the store. In doing so, they used their creativity and utilized resources as suggested by effectuation theory (i.e., technical knowledge and skills to build a website). They ramped up their freezer to oven offerings after some experimentation with new products. They realized that as more Americans turned to eat at home, people would prefer freezer to oven products to enjoy at home. They not only kept their existing customers but also started gaining new customers with their creative freezer to oven offerings. In addition, by selling directly to the customer through their website, they avoided intermediaries, such as UberEats, Doordash, and others that take 30% of their earnings. Chef/owner Andrea Meyer says that the frozen products keep them busy and employees paid (Adams, 2020a; Adams, 2020b; Gubbins, 2020; Hall, 2020). They launched a kit as Mother's Day 2020 approached that allows people to make the caramel-pecan cinnamon rolls that they are famous for at home, which is another creative solution that they innovated.

Chef/owner Andrea Meyer realized through social media that many of her customers searched for ingredients such as sugar, flour, and other baking pantry essentials during the early days of the pandemic. Since their production had been reduced, they had hundreds of pounds of those ingredients sitting in their kitchen. She started selling one-pound containers of sugar, flour,



bread flour, cake flour, and yeast for a small fee to recoup her costs. This experience showcases an example of utilizing resources at hand to create opportunities, as suggested by the effectuation theory. She gained new customers and strengthened her existing clients' loyalty by helping them access items that they could not find elsewhere during such a difficult time. By asking her customers to share their purchases on social media with a Bisous Bisous hashtag (#), she leveraged her clients' pre-commitments as outlined by the effectuation theory. Their loyal customer base spread the word through social media, and local newspapers such as *The Dallas Morning News* and *The Dallas Observer* keep them in the headlines and their customers coming.

The owners of Bisous Bisous display the effectuation principles by 1) being flexible with their business model and putting more emphasis on online business, 2) experimenting with new products and being creative in offering freezer to oven products, 3) utilizing their means and resources such as building the e-commerce website, selling unused ingredients to customers, and 4) using pre-commitments such as social media, customer base, newspapers to keep them current and 5) short term focus is displayed by the fact that they had to do all this in a very short period with the sudden onset of the COVID-19 pandemic in the United States without existing long term plans. Bisous Bisous is an example of a small business where owners implemented all the underlying factors of the effectuation logic and kept its doors open during an uncertain time.

However, many other businesses in the United States could not switch their businesses around primarily because they were not as flexible. They did not have opportunities to experiment. In some cases, their pre-commitments turned into disadvantages rather than advantages. The next section discusses factors that affect the ability of the entrepreneur to effectuate and gives examples from the Covid-19 pandemic.

### **Buyer Dependence during the COVID-19 Pandemic**

One of the groups that were hit hardest during the pandemic was the suppliers of the restaurant industry. Farmers who were dependent on the restaurant business were among the hardest hit. They found it difficult to replace the restaurant demand with individual customer demands because their systems were built around the restaurant industry and could not switch to a different business model. Selling directly to households and other customers brings supply chain and distribution challenges. For example, "before the pandemic, the Dairymen's processing plant in Cleveland would produce three loads of milk, or around 13,500 gallons, for Starbucks every day." By April 2020, the Starbucks order was down to one load every three days, and they were left with milk they did not know what to do with at the end of the day (Yaffe-Bellany & Corkery, 2020).

Suppliers tried to find amicable alternatives to replace the restaurant demand. For example, Shay Myers, a third-generation onion farmer in Oregon and Idaho, started redistributing onions from 50-pound sacks into smaller bags that could be sold in grocery stores. He also started freezing as much of his product for future sale as his limited cold-storage capacity allowed. Despite these efforts, he still had to let tens of thousands of pounds of onions decompose in waste (Yaffe-Bellany & Corkery, 2020).

Shifting distribution from businesses to individual consumers can be challenging because, in some cases, it requires reconfiguring complex supply chains and dealing with new storage and distribution requirements (de Sousa, Durisin, & Jha, 2020). For example, in many dairy processing plants, machines are designed to package dairy products such as shredded cheese in large bags intended for wholesale and sale to restaurants. Switching packaging from

wholesale to retail-friendly containers in a short period is difficult, if not impossible, and requires million dollars of investment (Yaffe-Bellany & Corkery, 2020).

Anecdotal evidence from the COVID-19 pandemic suggests that customer-dependent firms did not have the flexibility and the ability to experiment with different markets, products or customers. In cases where switching costs are high, the potential loss is also increased for the entrepreneur (i.e., the loss is not affordable) (Mishra et al., 2017). Switching to a new business model takes time, knowledge and requires the entrepreneur to find the right people and develop contacts, which all take time. Therefore, customer dependence is likely to limit the entrepreneur's network and resource access.

While some suppliers of the restaurant industry were suffering, others found ways to survive and even thrive. For example, Chris Newman, owner of Sylvanaqua Farms, a small permaculture operation that sells and delivers directly to consumers as well as restaurants and wholesale, was able to turn his business around. Newman, a former software engineer, had set up his website for direct orders of meat and eggs earlier on while also selling to wholesalers. As soon as social isolation began, his online orders increased rapidly (Mak, 2020). Megan Brown, another boutique farmer, is also doing remarkably well (Yaffe-Bellany & Corkery, 2020). What these two farmers have in common is a diverse customer base and online presence. They were not customer-dependent and had alternatives. During this pandemic, farmers who sell directly to households (i.e., multiple customers) or both households and businesses were faring better than farmers who were dependent on a single industry or customer (i.e., restaurants or food service operations). In sum, anecdotal evidence from the pandemic suggests a negative relationship between buyer dependence and effectuation which should be tested in future empirical studies. It should also be added that most of the attention in the news focused on the food industry, and the proposition should be tested in other industries and the food industry.

### **Industry Regulation during the COVID-19 Pandemic**

Industry regulation appears to have limited the entrepreneur's ability to effectuate during the pandemic. For example, livestock farmers are required to process their meat at USDA-inspected facilities (Splitter, 2020). The number of USDA-approved facilities is few in some states, and in addition, many were closed due to the spread of COVID-19 among workers and inspectors. This occurrence caused an obstacle for farmers switching from selling to restaurants to individual customers. Farmers were left with cattle in their hands that they could not process (Splitter, 2020).

Another example is the Food and Drug Administration (FDA) regulating hand sanitizer as over-the-counter drugs. With the onset of the COVID-19 pandemic in the United States, hand sanitizer was in short supply in hospitals, healthcare facilities, and households. This provided an opportunity for producers of distilled alcoholic beverages because making hand sanitizer is simple, although dangerous, and distilleries are equipped and trained to handle alcohol in a safe manner (Friedlander, 2020). However, they could not begin production due to Food and Drug Administration (FDA) regulations. They could only start production after March 27, when FDA announced, "entities not currently regulated as drug manufacturers can produce hand sanitizer if they follow an FDA-dictated approach" (Lammi, 2020). The Alcohol and Tobacco Tax and Trade Bureau (TTB) also issued guidance that reduced regulatory requirements and some taxes. Distilleries could only switch their operations and take advantage of this opportunity after some restrictions were lifted and FDA guidance was revised. FDA regulations also applied to

ventilators that were in short supply and high demand during the pandemic. On March 22, 2020, FDA announced that they would work with manufacturers. FDA “implemented drastic regulatory changes to allow automakers and other non-medical manufacturers” to start producing ventilators.

Overall, effectuation is difficult to implement in such highly regulated environments since entrepreneurs are subject to strict rules and regulations that govern their operations. Entrepreneurs operating in regulated environments will not have the flexibility and the ability to experiment. In particular, implementing short-term plans becomes problematic as entrepreneurs may have time-consuming procedures to follow. In addition, rules and regulations are also likely to affect the partnerships that entrepreneurs can form and networks that they can be a part of, limiting their pre-commitments. In addition, if meeting rules and regulations require significant investments, entrepreneurs cannot afford to experiment with different options, and their flexibility is reduced. Therefore, industry regulations are likely to have a negative relationship with the entrepreneur’s ability to effectuate. Future studies should empirically test these relationships in different industries.

## CONCLUSION

The effectuation theory proposes that organizations survive and succeed by experimenting with new products, methods, or ways of doing business, being flexible and changing course when necessary, taking risks that are commensurate with what they can afford to lose, utilizing their pre-commitments to succeed, and focusing on what is achievable in the short term with the resources at hand (Arend, Sarooghi, & Burkemper, 2015; Chandler et al., 2011). Researchers have suggested that an effectual approach is especially applicable in uncertain environments such as the one created by the COVID-19 pandemic. This study indicates that buyer dependence and industry regulations reduce the entrepreneur’s ability to effectuate.

Grimm and Amatucci (2013, p.59) propose effectuation as a “powerful alternative to the expensive, time-consuming planning process which may inhibit quick responses to temporary windows of opportunity that require immediate attention.” Anecdotal evidence from the COVID-19 pandemic supports this view. It also suggests that entrepreneurs who could respond quickly to the changing dynamics in the environment and effectuate survived and even benefited from the pandemic. This study suggests effectuation as a process that is particularly suitable for businesses that are not customer-dependent and are not subject to government rules and regulations.

Buyer dependence requires significant investment to meet the demands of the client and reduces flexibility and profitability (Hewitt-Dundas & Roper, 1999; Pfeffer 1982; Thompson 1967; Venkataraman et al., 1990). Having multiple buyers provide firms with greater options and more room to be flexible and experiment as well as limit losses in the case of the buyer losing business. Industry regulation is another factor that determines the entrepreneur’s ability to effectuate by reducing flexibility and experimentation (Damanpour & Schneider, 2006; Urban, 2018). Rules and regulations require long-term planning and limit the firm’s ability to change course when opportunities or threats arise, and limit flexibility. They also limit the entrepreneur’s ability to experiment because they should operate with the boundaries of the rules and regulations.

Although effectuation theory gained ground as a novel entrepreneurship approach, it still lacks context and comprehensiveness (Arend et al., 2015). This study extends the focus of

effectuation theory beyond the individual by examining contextual factors as they relate to the environment in which effectuation approach is applicable. Hence, this study addresses a gap in effectuation literature and enhances its comprehensiveness. In addition, the uncertain environment provided the Covid-19 pandemic offered the uncertain environment in which researchers can make observations. This study also has important implications for practitioners. Most textbooks in management focus on the rational decision-making process and making long-term plans. On the other hand, the effectuation theory proposes a different approach to decision-making in the entrepreneurial process. This study suggests that effectuation theory may be the best approach for the entrepreneur to follow depending on the contingency factors. Previous research has emphasized the importance of having multiple options and letting circumstances determine the path (Berends et al., 2014).

### **DIRECTIONS FOR FUTURE RESEARCH AND LIMITATIONS**

According to Arend et al. (2015, p.639), the effectuation theory “appears to be missing several units” and comprehensiveness. Majority of the studies in the field of effectuation focus on the individual decision-making process and studies that examine the effect of circumstances on the applicability of effectuation approach are limited. This paper extends the focus of effectuation theory beyond the individual by examining contingency factors as they relate to the environment in which effectuation takes place, as suggested by Arend et al. (2015). Future studies should examine other contextual factors and how they facilitate or hinder the application of the effectuation approach. They should also look beyond the individual and examine factors that affect decision making approaches at the organization level. Berends et al. (2013), for example, suggest product development in smaller firms is different than in corporations and that effectuation approach is more common in smaller firms. Effectuation approach can be applied beyond individual decision making and beyond entrepreneurship. Future studies can apply effectuation theory in all areas of business where decision making process is involved (i.e. marketing, product development).

This study contributes to the literature by utilizing the information at hand provided by the COVID-19 pandemic to advance our understanding of the effectuation process although it is not an empirical study. Despite that fact that confirmation bias is a limitation of the anecdotal method (Evans,1993), informal verbal reports provide clues regarding areas of study that warrant systematic and controlled research. In that vein, the objective of this study is to propose relationships to be tested. The COVID-19 pandemic provides a unique opportunity to examine effectuation theory in a real, turbulent environmental setting. As suggested by Arend et al. (2015, p.642), effectuation theory is “difficult to test as a stand-alone conceptualization” since “respondents are unlikely to comprehend the subtleties involved.” The observation approach allows the researcher to gain a wider perspective. However, there is no data yet that can be used to test the relationships proposed in this study due to the regency of the pandemic. Future research should empirically test the proposed relationships in this study when more data from the COVID-19 pandemic is available.

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# **SUPPLY CHAIN DISRUPTION: U.S. AND CHINA TRADE**

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## **ABSTRACT**

*At the outset of the 2018 Trade War between the U.S. and China, it was expected that an increase in tariffs would stimulate modifications to a significant number of supply chains. The tariffs, a form of supply chain disruption, represent an increase in costs without a corresponding increase in quality and encourage a shift in supply chains toward countries that do not have such a cost. The authors conducted an exploratory survey with U.S. manufacturers to identify whether or not these changes were actually occurring. The research showed that by and large changes were not being made. Most U.S. manufacturers made few modifications to their supply chains once the tariffs were announced and imposed. This led to the conclusion that the perceived risks of supply chain disruptions created an inelastic response to price increases. The costs of doing nothing, and accepting the tariff cost increase, therefore, were seen as less risky than modifying supply chains. To further investigate the lack of changes, the authors conducted a second exploratory study. Through in-depth interviews, the authors identified three primary reasons that supply chain shifts had not been made, and three categories of reactions that manufacturers had to the increased tariffs.*

## **INTRODUCTION**

We live in an uncertain world that is open to unpredictability due to natural and man-made disasters, terrorist attacks, economic crises, and the list goes on (Tang, 2006). Many successful firms have attempted to mitigate the risks of this unpredictability and vulnerability by implementing various supply chain strategies, such as not making rapid changes to their supply chains, establishing mutually beneficial, long-term relationships with suppliers, or focusing on increased revenue or cost reductions, etc. (e.g., Tang, 2006). However, some of these strategies may hinder firms from making needed changes when disruptions occur.

Supply Chain disruptions, or unplanned events that interrupt the flow of goods in a supply chain (Craighead, Blackhurst, Rungtusanatham, & Handfield, 2007) are a major source of risk and can be very costly (Blackhurst, Craighead, Elkins, & Handfield, 2005; Riddalls & Bennett, 2002). Disruptions, which can take many forms, are also becoming more expensive and more likely given the increased globalization of supply chains (Blackhurst et al., 2005). Previous literature has discussed natural and man-made disasters, along with fires and other accidents, as a source of risk that can be mitigated (e.g., Steckle & Kumar, 2009). Other research has examined supplier insolvency (Grötsch, Blome, & Schleper, 2013), supply uncertainty (Tomlin, 2006),



strikes and fraud (Grötsch et al., 2013), and terrorism (Sheffi, Rice, Fleck, & Caniato, 2003), but little research has been done to examine the impact of cost pressures, such as tariffs.

Cost pressures are a source of disruption risk. Chopra and Sodhi (2004) categorize various supply chain disruptions into nine primary buckets, one of which is procurement risks. The authors describe procurement risks as “unanticipated increases in acquisition costs” resulting from changes such as exchange rate fluctuations or price hikes that suppliers put into place.

One example of cost pressure comes in the form of the recent increase in tariffs between the United States and China, and reveals a unique supply chain disruption risk. Input cost changes and opportunities originally drove the shifting of manufacturing from the United States to China. So long as quality and consistency could be maintained, U.S. manufacturers that took advantage of lower labor costs in China and other low-cost labor nations gained a significant cost advantage over their domestic competitors. Whether they were first movers seeking this advantage, manufacturers trying to defend their profit margins, or driven to these offshoring practices by competitors, a significant amount of U.S. products are now made in these lower input cost countries. While changes in overseas lifestyles and development have gradually diminished these gains and labor rates in China have risen significantly, there is still a market-driven motivation to keep manufacturing in these nations (Chu, Zheng, & Wong, 2016). Thus far, these market forces and the weakening of trade barriers have driven manufacturers’ decisions and alone would not indicate any need for change.

However, in early 2018, the United States attempted to shrink its current trade gap between imports and exports (see Figure 1 for a timeline of events in current the U.S. – China Trade war). The political administration blamed this gap on market forces driving manufacturing overseas as well as supposedly unfair trade policies in China (Selmi, Errami, & Wohar, 2020). Their solution to this problem was to impose significant tariffs on imports to the United States. Regardless of the motivations of the United States government, these tariffs represented a real input cost increase to U.S. manufacturers. It was, however, an artificial cost that was imposed on the market, rather than a market forces-driven cost increase. Thus, the U.S. administration could change this policy and erase or increase the cost at any time. While long-term trends and economic development create largely predictable changes in costs over a long period of time, the artificial nature of U.S. trade policy cost increases in 2018 means traditional economic theories may not adequately predict how supply chains will react. The question is, when market force pressures from cost increases dictate a change in a supply chain, will a firm take action and why? Our initial hypothesis was that, yes, cost pressures would dictate a change.

We took a two-step approach to begin to test this hypothesis. First, we conducted an exploratory survey of U.S. manufacturers. The primary purpose of this exploratory research was to gauge initial responses to the events that had transpired in the current China – U.S. trade war. We conducted this survey from the period between August and October of 2018, as noted on the timeline of events. In this survey, respondents answered questions about their reactions to these changes in U.S. trade policy. These questions were aimed at revealing the actual changes to supply chains made in the time period when the increase in U.S. tariffs was proposed and then implemented.

Second, we conducted interviews with thirteen manufacturers in person and over the phone to acquire more details about how manufacturers perceive these increased costs and their long-term plans for their supply chains. The interviews, primarily conducted between December 2018 and February 2019, were conducted to help us better understand some of the results we saw in the survey and to dig deeper into U.S. manufacturer responses to the tariffs and cost pressures. The overall impression we saw in the respondents of both surveys and interviews was that risk mitigation was more important than input cost reduction. We highlight these results in the remainder of this paper.

**Figure 1**  
**U.S. – China Trade War Timeline with Exploratory Research Dates**  
**Adapted from: Timmons (2020)**

<b>April, 2017:</b>	U.S. and China agree to 100-day plan for trade talks
<b>January 22, 2018:</b>	U.S. Tariffs imposed on imported washing machines and solar panels
<b>March 8, 2018:</b>	U.S. orders 25% tariffs on steel and 10% on aluminum
<b>April 2, 2018:</b>	China imposes tariffs of up to 20% on 128 U.S. products
<b>April 3, 2018:</b>	U.S. unveils plans for 25% tariffs on \$50 billion Chinese imports
<b>April 4, 2018:</b>	China responds with plans of tariffs on approx. \$50 billion of U.S. imports
<b>June 15, 2018:</b>	U.S. levies 25% tariffs on \$34 billion of Chinese imports to go into effect July 6
	U.S. announces 25% tariffs on additional \$16 billion of goods
	China responds with tariffs on \$34 billion of U.S. goods
<b>July 10, 2018:</b>	U.S. unveils plans for 10% tariffs on \$200 billion of Chinese imports
<b>August, 2018:</b>	First exploratory data collection begins
<b>August 1, 2018:</b>	U.S. orders July 10 tariffs to increase to 25%
<b>August 7, 2018:</b>	U.S. releases list of \$16 billion of Chinese goods to be taxed by 25%
	China retaliates with 25% duties on \$16 billion of U.S. goods
<b>September 24, 2018:</b>	U.S. 10% tariffs on Chinese products kick in
	Rate to increase to 25% on January 1, 2019
	China taxes \$60 billion of U.S. goods
<b>October, 2018:</b>	First exploratory data collection ends
<b>December 1, 2018:</b>	U.S. and China agree to 90-day halt on new tariffs
	U.S. postpones January 1, 2019 increase to tariffs
<b>December 2018:</b>	Second exploratory data collection begins
<b>February 2019:</b>	Second exploratory data collection ends

## THEORETICAL BACKGROUND

The existence of disruptions in supply chains has been examined in a number of ways, though most take a “high-level” view and help provide a bigger picture (Tang, 2006). Previous research has primarily been focused on what can be described as non-price disruptions, such as acts of terrorism or natural disasters (e.g., Sheffi et al., 2003; Steckle & Kumar, 2009). These events force a firm to shift their supply chain, rather than act as a motivator to shift from one viable supply chain configuration to another (i.e., Bode, Wagner, Petersen, & Ellram, 2011; Craighead et al., 2007)

Since all supply chains are considered inherently risky and disruptions are considered unavoidable, most recommendations are focused on the mitigation (i.e., reducing the impact) rather than the elimination of disruptions (Tang, 2006; Tomlin, 2006). Research has identified three strategies that firms can use in the face of supply chain disruptions.

- *Mitigation tactics* happen when firms have a plan in place and take action, in advance of a disruption, to reduce the impact of the potential disruption (Tomlin, 2006). These proactive tactics focus on avoiding risk and reducing the probability the event will occur (Grötsch et al., 2013). In this circumstance, manufacturers are called upon to perform a supply chain rationalization that would mitigate both internal and external causes of disruption. However, risk mitigating rationalizations are rarely used/implemented, regardless of their benefits. Since “no one gets credit for fixing problems that never happened,” (Tang, 2006 p 36) this is understandable.
- Firms can also utilize *contingency*, or reactive, *tactics*. With contingency tactics, although the firm may put plans in place in advance of a disruption, the firm only takes action if and when a disruption actually occurs (Grötsch et al., 2013; Tomlin, 2006).
- Finally, firms can take a more *passive approach*. In this case, firms aren’t planning ahead and only take action when a disruption occurs, though that action is often chaotic and aimless (Grötsch et al., 2013). This third strategy is more of a passive acceptance strategy, and despite being the “default strategy even when it is not appropriate, the strategy of doing nothing in the face of a disruption has had little attention” (Tomlin, 2006 p 640).

From a cost pressure perspective, basic economic theory indicates that when costs and complexities increase, producers will seek out lower-cost alternatives where they are available. We have seen this general trend play out among manufacturers given a long enough timespan (Johnson, 2006). Once producers become aware of lower-cost suppliers or more profitable customers, market forces pull them toward decisions that shift their supply chains. The alternative is to risk loss of market share to competitors or even the deletion of members of the supply chain. But what exactly is the timeframe for such shifts? To delay altering the supply chain would risk absorbing unnecessary costs and delays, but too rapid a change could cause unnecessary disruptions and complexities.

This dilemma has come to the forefront in the most recent changes to United States Trade Policy. Tariffs on imports to the United States, especially from China, have risen or been imposed on products that previously lacked tariffs. The same is true of U.S. goods bound for China. Given these conditions, market forces would urge supply chains to shift production to lower tariff-inducing or lower total cost locations if possible. The speed of this shift, however, might defy market forces depending on the risks and rewards manufacturers perceive.

The same is true with customers when the price of the products they purchase changes. Basic economic theory dictates that when price goes up, demand goes down, and vice versa. However, depending on customers’ attitudes towards the product, a change in price can have a varying effect on their demand. This concept, derived from price elasticity, complicates the changes in purchasing behavior following a change in costs.

We can apply this concept of elasticity to the reactions made by manufacturers in the wake of changing U.S. trade policy. While the general trend of market forces will gradually shift supply chains, the speed at which manufacturers react to those changes can be complicated by their supply chains' perceived risk of disruption. This supply chain elasticity may allow for some acceptance of risk or it may reveal a low tolerance for disruption.

### **EXPLORATORY STUDY 1**

In our initial study, we hoped to see evidence of firms utilizing a more proactive or reactive approach to the supply chain disruption caused by the change in U.S. trade policy; this could mean taking actions that would be indicative of the impact of supply chain elasticity. If the evidence showed many manufacturers were currently in the process of shifting their supply chains away from China, it would indicate their supply chains were elastic and responsive to cost pressures of a margin present in the increases in the tariffs. However, if there was evidence of few manufacturers making efforts to decouple their supply chains from China (a more passive approach), it would indicate their supply chains were inelastic and less responsive to cost changes of at least this level. To better understand the elasticity of these supply chains, and examine the 'tipping point' of cost increases (which is related to the risk aversion of the managers of a particular firm), we conducted an exploratory survey of U.S. manufacturers.

#### **Methodology**

Contemporary supply chain management thinking places more power in the hands of consumers to shift supply chains (Doorey, 2011). Power has also been shifting toward retailers rather than manufacturers. However, that power has focused on cost and quality issues rather than disruption or risk issues. The ability to satisfy an order from a retailer is the responsibility of the manufacturer, not the retailer. The retailer simply demands that it be done, and if it is not done, they will choose an alternative manufacturer. Therefore, while the motivation to shift supply chains originates from retailer and consumer power, the actual decision-makers for these actions are the manufacturer. There are exceptions of course, as retailers and other members of the supply chain exert pressures to rationalize their supply base. However, with all other factors being neutral, it is still the manufacturer who chooses what supplies to buy, where to buy, and who to buy from. Knowing this, and in order to minimize double-counting, U.S.-based manufacturers were sought out as respondents for this study. We also wanted to focus on smaller manufacturers, given they would likely be more impacted by cost pressures than larger, potentially multi-national corporations.

Given the rapidly changing nature of the ongoing trade war between the U.S. and China and contemporary political events, the simplest and quickest method was to use an internet search for manufacturers. We started by searching Google for "manufacturers in \_" and then typed in the name of a city. This generated a list of websites for manufacturers in that city. We then visited those websites to search for publicly available email addresses. Once one was found, we utilized a cold-emailing strategy and sent a standardized email containing a link to a survey to each manufacturer on our list.

The primary goal of the survey was to get the quickest response possible, due to the nature of the trade war. Survey questions were written in order to capture both attitudinal views and behavioral changes that took place during the initial stages of the U.S. and China trade war. The aim was to get an initial, general understanding of what changes the trade war was creating in U.S. manufacturing firms and to gauge whether these firms planned on making changes to their supply chains in the future. We also wanted to get a better understanding of how U.S. manufacturers felt about the U.S. trade policies, and whether they were deemed to be helpful or hurtful.

The initial survey email was emailed to over 1,000 email addresses and we received a total of 100 respondents. Of these 100 respondents, 89% worked for manufacturers of 500 or less employees, tying into our desire to connect with smaller U.S. manufacturers. The respondents were also spread fairly evenly throughout the U.S.: Northeast (16%), Northwest (26%), Midwest (27%), South (14%), Southwest (14%), and manufacturers with locations in multiple U.S. regions (13%).

The survey covered two specific time points in order to gauge the changes that were taking place. The first time frame was 2017, prior to President Trump's initial tweets and announcements of additional tariffs to China which took place in early 2018. The second time frame was as of July 2018. The trade policy changes began in the early part of 2018, but threats of imposing tariffs did not begin until March, were not ordered until May, and were not put into effect until July (see Figure 1 for a more complete timeline of events). We collected data between August and October 2018, giving manufacturers some time throughout the beginning of 2018, to formulate a plan and begin to react to this artificial cost increase. Finally, we also asked questions regarding the firm's plans for the future regarding overseas markets / supply chains in order to gauge if the firms were planning ahead and just hadn't made changes yet, or whether they would take a more passive approach to these cost pressures.

## Results

The results of our survey indicate that only small changes occurred in the supply chains of U.S. manufacturers in the period between calendar year 2017 and July 2018. Manufacturers taking our survey were asked whether they had made any changes to their volumes of international sales and/or imports and the markets or origins of these products; only a small percentage acknowledged any changes to their volume had occurred. When looking at imports, 82% of our respondents indicated that they currently imported goods from overseas. Of those, only eight manufacturers (9.8%) said they had decreased their imports. None indicated an increase. Of those eight manufacturers, only two made a significant decrease (i.e., 25% or more). Although few had made actual decreases in their imports, ten manufacturers (12.2%) did indicate they had shifted to more domestic suppliers, three (3.4%) shifted to non-China overseas suppliers, and three (3.4%) had moved to suppliers closer to home (such as Mexico and South America). When asked what has driven the current changes to import policy, 33 manufacturers (40%) indicated the changes made to their imports were due to tariff changes and 9 manufacturers (11%) specifically indicated they were pursuing lower input costs.

When looking at exports, 96% of our respondents indicated that they currently exported goods to overseas customers. Of those, three manufacturers (3.1%) indicated they had actually increased their exports by a small percentage, while only one manufacturer indicated a small decrease in exports. Although only a small number of manufacturers made actual changes to the volume of exports, there were some shifts happening. When asked about changes to their overseas markets, seven manufacturers (7.3%) indicating that they were pursuing customers in Europe, three manufacturers (3.1%) indicated they were moving toward more non-China Asian countries, and 2 manufacturers (2.1%) indicated they were pursuing more sales in South America. When asked what has driven these changes, only 12 manufacturers (12.5%) indicated it was due to tariff changes and 6 (6.3%) specifically noted it was to lower their landed costs.

What may be more striking is the number of manufacturers that indicated they would not be making any changes in the future. From an import perspective, 44 manufacturers (54%) indicated they saw no changes coming to their manufacturer's imports in the future, while only 31 manufacturers (37.8%) indicated they would seek to move to other suppliers such as domestic suppliers (18 or 22.0%); non-China Asian suppliers (11 or 13.4%); and near-source supplies such as in Mexico and South America (2 or 2.4%). From an export perspective, the results are even more significant. We found that 67 manufacturers (69.8%) had no plans to change anything regarding their overseas markets, while only 23 indicated they would seek to shift suppliers to other geographical regions such as non-China Asian markets (5 or 5.2%), European markets (12 or 12.5%), and South American markets (4 or 4.2%).

In addition to looking at the changes that were being made, we also wanted to identify how respondents felt about the overall U.S. trade policy and the impact it was having on their firms both in the short and long term. When asked about how U.S. trade policy was impacting their business in the short-term, manufacturers initially appeared to be ambivalent (3.57 mean on a 7-point Likert scale). However, when we dug a little further into the data, we found that manufacturers were actually fairly polarized in their opinion. Some indicated that they felt the trade policy was helping (25% responded agree or strongly agree) and others indicated that the trade policy was not helping (37% responded disagree or strongly disagree). When asked about the long-term, we initially see what appears to be that same ambivalence (4.25 mean on a 7-point Likert scale). Upon further analysis, we again see that polarization between those who felt the trade policy was helping (42% responding agree or strongly agree) and those who felt it was not helping (29% responding strongly disagree or disagree). Although there are similar results in the short- and long-term in general, it does appear that there is a bit of a shift toward optimism with more respondents feeling that long-term policy will be beneficial.

This attitudinal scale is the closest data point to capturing the tipping point of price elasticity discussed earlier. The subjective predictions by decision makers regarding future events would modify the perceived risks of taking a more passive approach to these changes. Such levels of optimism that trade policy would change, either by reverting to pre-trade war tariff levels or by creating other favorable conditions, would create a greater level of inelastic reactivity to these artificial cost pressures. In such an attitudinal level of optimism, the complexity of making any supply chain changes would be perceived as riskier than accepting the (perhaps temporary) cost increase.

## STUDY 1 DISCUSSION

When reviewing the results of exploratory study 1, we found that although many supply chain alternatives exist, relatively few manufacturers stated that they had actually made use of any of these options. It appears they were taking a more *passive approach* to the U.S. trade policy. As such, we sought to further understand why these options were not being taken advantage of; why weren't manufacturers shifting their supply chains in response to the cost pressure of the increased tariffs? One reason could be that a much higher percentage of respondents stated that current U.S. trading policy would improve their position in the long-term, a complete reversal of the tariffs' short-term impact. Another was an as-yet-unconfirmed response from several manufacturers that indicated the Chinese government was actually "paying for the tariffs."

During informal discussions we had with a few manufacturers after study 1, some informed us that their suppliers had not increased costs despite the tariff increases. They explained that the Chinese government was paying the difference between normal costs before the tariff increase and what the cost would be for purchased and manufactured items after the tariff increase. We discovered no evidence for such payments, though repeatedly heard this rumor. One respondent suggested that the rumor came from the increase in the export VAT in China and the devaluing of the RMB, along with access to cheap loans, all done shortly after the implementation of U.S. tariffs. In addition, many Chinese manufacturers accepted lower margins. The result was an either modestly increased or largely unchanged price. This would eliminate any cost-based motivation to shift a supply chain and severely impact the conclusions of both this paper and other research. The conclusion of most firms we talked to was that this was a temporary measure meant to keep U.S. customers buying from Chinese firms until the U.S. government eliminated the tariffs. However, from a theoretical standpoint, it can be considered an external factor that cannot be reliably counted upon in the case of future cost-based disruptions and was not present in a significant amount of respondents' answers. Its impact may have been less literal than perceptive. Even if no subsidies from the Chinese government were actually paid to Chinese firms, U.S.-based firms believed it to be happening. This perception modified attitudes about tariff increases and may have affected decisions. Its literal cost impact is not fully known, and it might be quite pervasive, but it was either not done to enough of a scale or delayed in implementation long enough that many U.S. manufacturers still saw tariff-based cost increases.

The attitudes respondents had toward trade policy itself might have impacted the decisions made by those manufacturers who had been affected by these changes. The first attitude would be that the policies themselves, while potentially increasing costs, would be beneficial if they caused an improvement in Chinese trade policies. The hostile nature of U.S. manufacturers trading with Chinese manufacturers has been well-documented (e.g., Holmes, McGrattan, & Prescott, 2015; Lu & Koehn, 2015; Selmi et al., 2020). Whether the attitude that current U.S. trade policies will improve conditions for U.S. manufacturers in China is perceived from an internal strength or the actual effectiveness of U.S. tariffs in changing trade relations to

improve U.S. manufacturers' positions is unknown. However, in an informal interview, one manufacturer stated they were confident in their own ability to improve their status, but that they were pleased the U.S. government was standing up to a perceived hostile government in China. The manufacturer interviewed also stated that they believed the changes in U.S. trade policy were temporary. This attitude could affect how U.S. manufacturers reacted to changes, and may have led to decisions that would not align with traditional market force predictions. A personal or pervasive sense of nationalism could also lead to theoretically irrational behavior where self-sacrifice is considered a matter of national pride or necessity. Many of these discussions indicated what could be considered a form of nationalism and a desire to see "victory" in this "trade war."

One manufacturer stated they were willing to absorb higher costs in the short-term if it meant greater market access or a fairer playing field in the long-term. This fits with the attitudes discussed earlier, that the negative effects and perhaps the tariff increases themselves were temporary. The perception, then, of whether or not these changes would benefit or harm, be permanent or temporary, could be responsible for the lack of changes we found to be present in supply chains despite such a significant cost disruption. The tipping point for managers deciding to make a change could then shift toward a more inelastic position in relation to a decision maker's subjective optimism and even nationalism, which are subjective points that often go against what traditional studies have analyzed as rational and quantifiable decision making.

The cause for this lack of change might be more complex than simple reactions to tariffs, however. Roughly one-third of all respondents stated that tariff changes drove their changes in suppliers, if they made any changes at all. The desire to pursue lower input costs and a catch-all 'other' category took up the remainder. This reveals the robustness of existing supply chains. Economic factors such as rising wages among the Chinese workforce or increasing transportation costs might be more significant drivers toward changing supply chains than U.S. trade policy. Volatility in these markets has proven to be significant, so perhaps changing tariffs are seen as just another form of volatility?

The actual shift away from Chinese-based suppliers that market forces would predict might not have occurred yet, as our survey revealed that only 12.2% of manufacturers shifted to using more U.S.-based suppliers in 2018 and less than 4% have shifted to non-China Asian suppliers. However, their interest in moving suppliers in the future is significant. The numbers move up to 22% of manufacturers desiring to shift to using more U.S.-based suppliers in the future, and 13.4% desiring to shift to non-China Asian suppliers. The increase to non-China suppliers is more than triple actual changes, showing a strong potential for investment in other Asian nations. Near-source suppliers such as Mexico and South America fared far worse, with only 3.4% shifting to near-source suppliers in 2018 and even less interest in doing so in the future, with only 2.4% claiming they plan to do so. The key driver seems to be tariff changes, with almost half claiming this as the reason for these changes or planned changes. However, plans for changes do not equate to actually making changes. The significant gap between actually shifting suppliers and planning to do so reveals either the difficulty in doing so or the reluctance to consider the tariffs to be permanent. So, while the increase in interest in shifting suppliers away from China is large, the total numbers are not. Many manufacturers are continuing to utilize their existing supply chains, and while their plans might change, the actual execution of those plans has yet to occur. If these manufacturers continue to display inelasticity in responding to tariffs, it might be unlikely that they will shift their supply chains any time soon.



The same seems to be true regarding exports, but with larger numbers. Only 1% of the respondents to our survey claimed they planned to increase sales in China, while 0% claimed they already have. Europe seems to be the market of interest, as 7.3% claimed they have pursued more European export markets in 2018 and 12.5% claim they intend to do so in the future. The increase was 3% to 5% for non-China markets, with similar increases in Africa and South America. The respondents overwhelmingly claimed, however, that they would not change their export policies, with 83.3% claiming to have made no changes and 69.8% claiming they will make no changes in the future. Tariffs do not seem to be a significant driver of these changes, with only 16% claiming tariffs as drivers of these changes, a much smaller number than the drivers for shifting suppliers. This could be because American manufacturers have more options for suppliers than for export markets when it comes to shifting their supply chains away from China, or it could mean that manufacturers do not see danger in the long-term impact of Chinese tariffs on U.S. goods, since so many manufacturers expressed optimism for their future trading positions.

Given the subjective nature of managers' reactions to the tariff increases, we decided that an online survey was insufficient to understand their impact. Therefore, it was determined that in-depth interviews would be necessary to provide further details and nuance, and to shine a light on our survey data.

## **EXPLORATORY STUDY 2**

For exploratory study 2, we had two primary research questions: 1) Why weren't manufacturers shifting their supply chains in response to the cost pressure of the increased tariffs? 2) If manufacturers weren't shifting supply chains, were there other decisions or actions being taken to offset the cost pressure disruption?

During the process of emailing the survey to respondents, many firms replied to share personal opinions regarding the trade war. These responses came unprompted, and so their willingness to discuss the circumstances made them preferred candidates for further interviews. As such, we utilized a convenience sample of local manufacturers and those who had replied to the initial survey email with added comments for study 2. We interviewed 13 respondents, twelve via phone and one in person (Table 1). All respondents were manufacturers with operations or offices within the continental United States. All respondents had taken the online survey before the interviews were conducted. While a list of questions was used to probe respondents, respondents often volunteered additional information that was not initially sought after, but that offered insights into their firms' reactions and plans regarding the tariff increases.

<b>Table 1</b> <b>QUALITATIVE INTERVIEWS</b>	
<b>Pseudonym</b>	<b>Industry</b>
Taylor	Food Ingredients
Ben	Door and Truck Parts
David	Plastics
John	Packaging and Shipping
Betty	Safety Apparel and Workwear
Bob	Tree Nut Food
Deb	Contract Leather Bag / Garments
Jacob	Simulator Machines
Justin	Chocolates
Jason	Aluminum Materials
Kelly	Steel Tank Fabricator
Bill	Engine Remanufacturer
Michael	Apparel

The interviews reinforced some discoveries made in the initial survey, namely that U.S. manufacturers are not fully decoupling their supply chains from China. This seems to indicate a more passive response to the U.S. tariffs and the China trade war (i.e., “doing nothing” (Tomlin, 2006)), as noted above. During our interviews, we identified three principal reasons for this seemingly passive response that were not revealed in our initial survey, to help us answer our first research question:

1. A general ‘cost inflation’ has become accepted by most manufacturers
2. Shifting to the United States is not feasible
3. Non-Chinese manufacturing cannot match China’s current quality levels

Inflation alone can be blamed for a general increase in the costs of goods, and this certainly includes the costs of purchased materials. Gas prices and general logistics costs, including costs of regulatory compliance, were all the examples of environmental cost pressures respondents discussed. Tariff costs were apparently less of a concern than these other inflationary pressures. One manufacturer quoted: “I think there’s a minor, hard to determine impact [of tariffs], but I don’t think it’s a real significant impact for us at this time” (Michael). This is especially true for manufacturers with diverse supply chains, where Chinese-originating goods represent only a portion of total costs of goods sold. Since customers in these supply chains are apparently used to annual price increases of a marginal amount, few firms expressed concern that these tariffs would cause major customer pushback.

Some manufacturers shared that they understood the reasoning behind the tariffs, and were beginning to utilize more U.S.-based manufacturing. One manufacturer quoted: “I would say since the trade wars began there’s probably at least \$500,000 worth of tooling that we otherwise would have sourced in China that we have instead sourced domestically in the United States” (Dave). But these were the exception, not the rule. Instead, manufacturers who chose to

decouple their supply chains from China and use U.S.-based suppliers did so according to their own unique situations. A general frustration was shown, however, that most manufacturers understood it to be infeasible to do so. One told us: “The problem is there’s not a lot of domestic manufacturing options that are viable in place currently. In the long term we’ll probably see more of that manufacturing take place in areas that are not impacted by the tariffs” (John). U.S. labor costs, and the fact that many of these industries have not operated domestically for years, remain barriers to reshoring U.S. supply chains.

If the goal, however, was to punish China for its unfair trade practices and to shift supply chains anywhere else, the tariffs seem unable to do so. While countries like India, Malaysia, and Indonesia have been highlighted as possible low labor cost alternatives, our respondents expressed doubt that quality standards could be maintained outside of China or the US. “Our business is primarily B2B and so many of those customers already have tried and true sources. Their customer and retail consumer will not tolerate a variance in materials so we’re pretty much tied to our current sources” (Deb). This quote is indicative of the greater circumstance we discovered. Currently, supply chains are too engrained to be easily modified, which makes the risk of quality problems, or a disruption from shifting supply chains, to be perceived as more costly than accepting a marginal increase in costs due to tariffs.

Despite these reasons for not decoupling supply chains, we also wanted to understand other actions or decisions that were being made in response to the disruption. We began to notice three ways in which U.S. Manufacturers are actually responding to the U.S. trade policy. These responses give the appearance of passivity (i.e., not making changes to the supply chain), but they show there are decisions being made in response to the supply chain disruption. The three responses we found were: 1) Intentionally passing costs on to customers; 2) Relying on previous relationships; and 3) Researching a shift in suppliers. These themes are highlighted in Table 2 with representative quotes from various respondents.

The first theme, pass costs on to customers, likely stems from the idea that a general cost inflation has become widely accepted in manufacturing. This theme is noted in the quote from Betty when she says that “we are seeing the price of products rising which obviously we pass along to our end users.” This approach will work as long as customers are willing to accept the higher prices for their products. Once customers start to balk at the rising prices, these manufacturers will have to find another way to respond to these cost pressures.

The second theme, relying on previous relationships, may be the most passive of all of the responses. This response likely stems from the fact that shifting suppliers may not be feasible, whether it is due to quality issues, or lack of supplier choice. This is highlighted in the quote by Deb (Leather bag / garments manufacturer). Instead of shifting suppliers, these manufacturers have a reliance on their supply partners. They focus on the long-standing relationships that they have with their customers or suppliers, and do not seek to make changes to their current supply chains.

The final theme, researching a shift in suppliers, was seen in several of the respondent interviews. These manufacturers are attempting to find alternative suppliers, with most looking to shift more domestically. However, there are barriers to switching. As Ben stated, “As far as the suppliers, we are looking into local foundries, but the cost is significantly greater to produce steel products in the United States at the time being.” These manufacturers want to shift supply chains, but are hindered, at least for the time being. What we find interesting about this theme is that it is setting up these manufacturers to take a more contingency approach (plan ahead and make changes) if another supply chain disruption occurs in the future.

**Table 2**  
**SELECT QUOTES HIGHLIGHTING THREE RESPONSES**

<b>Interviewee (Pseudonym)</b>	<b>Industry</b>	<b>Representative Quote</b>
<b>Theme 1: Intentionally pass costs on to customers</b>		
Betty	Safety apparel and workwear	This year there have been some more tariffs and we are seeing the price of products rising which obviously we pass along to our end users. We do purchase both directly from overseas manufacturers and then through distributors as well. We know it's imported products, but we haven't made any changes into how we purchase. There's no hard and fast plan for anything.
Deb	Leather bag / garments	Most of our suppliers probably had enough stock of original material before the tariffs hit. They've moved through a lot of that dead stock or back stock and now they're having to reorder from their suppliers in China so now the tariffs are actually be enforced and hit on whatever containers are getting in now. In September and October there was a flurry of emails saying, "Hey we're going to hold prices as long as we can." But now even in the last week I have four or five [emails] in my inbox from distributors, even if we only buy from them once every five years, saying "You should know next time you order everything's going to go up between 8, 15, 25 percent depending on what it is."
<b>Theme 2: Relying on previous relationships</b>		
Deb	Leather bag / garments	We're a little bit tied to what's available to us. We're a soft goods manufacturer. We cut and sew private label for other large companies. Our business is primarily B2B and so many of those customers already have tried and true sources. Their customer and retail consumer will not tolerate a variance in materials so we're pretty much tied to our current sources. The changes would be if I took on another large retail brand for manufacturing and they had needs that pushed us overseas for sourcing materials. As of right now, that's not going to happen.
Justin	Food Manufacturer	Interviewer - Did you make any changes in 2018 regarding overseas customers? Why or why not?  Response: No. I can't think of any. A lot of the international business at this point is going to be based a lot more on a long-standing relationship that we have with a customer. When we say that we sell in Japan what we typically mean is that we have a customer in Japan that does distributor or retails our product for us.
<b>Theme 3: Researching a shift in suppliers</b>		
Ben	Door and Truck parts	We're trying to have other foundries do our casting for us, locally. We have to get all of our tooling redone because we can't get our tooling back from the foundries overseas.  As far as the suppliers, we are looking into local foundries but the cost is significantly greater to produce steel products in the United

**Table 2**  
**SELECT QUOTES HIGHLIGHTING THREE RESPONSES**

<b>Interviewee (Pseudonym)</b>	<b>Industry</b>	<b>Representative Quote</b>
		States at the time being. I kind of see the theory behind this trade war. I read stories all the time about once defunct foundries that are refiring all the time. So, I see a little bit of hope, and I see the long-term goal of it. And if it works as planned it should help everybody. I think in the long run it'll bring a lot of industry back to the United States. In the meantime, at the beginning it's very difficult.
Dave	Plastics	<p>To counter that, we're actually looking to acquire more tool making capability in the United States. On the production side, the issues with China are the added costs and the timing and delivery and whatnot for production parts and we've been given much more opportunity to produce more production parts here in the United States as our customers are OEM customers are looking to resource some other work from China back into the United States.</p> <p>We still use the same suppliers, but we're trying to decrease them. I would say since the trade wars began there's probably at least \$500,000 worth of tooling that we otherwise would have sourced in China that we have instead sourced domestically in the United States.</p> <p>We still work with partners that we've worked with in Asia. We've worked with them for 20 years. We'll still maintain a relationship, but the majority of our efforts in the next year are to build our domestic supply base for what was otherwise being sourced in China.</p>
John	Packaging and Shipping	<p>Well they're looking at domestic manufacturing. The problem is there's not a lot of domestic manufacturing options that are viable in place currently. In the long term we'll probably see more of that manufacturing take place in areas that are not impacted by the tariffs. Yeah, probably they're shifting further south into Vietnam and Thailand.</p> <p>I would say it's certainly shifting toward even the North American collaboration between Mexico and Canada. Although we're seeing a lot of tension rising along that Mexican/US Trade relations as well. There's a lot of churn in that process that we're seeing and a lot of it is from our perspective is just educating our customers into what the current state of affairs may be. And then letting them really kind of make their decisions based upon current climate. It's very difficult to forecast based upon what the future agendas may be.</p>
Justin	Food Manufacturer	We are exploring the possibility from sourcing from countries that are not subject to tariffs. The item that we can get out of China is

**Table 2**  
**SELECT QUOTES HIGHLIGHTING THREE RESPONSES**

<b>Interviewee (Pseudonym)</b>	<b>Industry</b>	<b>Representative Quote</b>
		a small pinewood box and it's possible to get a pinewood box from a lot of different places in the world. The prospect of looking to other sources for that box is beginning to get more attractive as tariffs on Chinese goods imported in begins to look more likely.

## DISCUSSION AND FUTURE RESEARCH

The goal of our survey was simply to prove a hypothesis: will the trade policies that would, on paper, incentivize a shift in supply chains toward countries with lower input costs create actual changes? In the short-term, we can declare that not to be the case. Instead, we discovered the tipping point that would result in changes to a supply chain lies in the combination of both quantifiable cost pressures and the perceived risks of decision makers, resulting in a non-uniform, inelastic response to supply chain disruptions. Further studies could, however, prove that initial hypothesis true. One interviewed manufacturer stated that we should call them in a year, and then they would consider making changes, but they expressed no interest in even thinking about such a decision until that time.

The fact that so few of the survey respondents showed a significant change in their supply chains based on recent changes to U.S. trade policy should be further researched. Possible theories for why should be proven, but at this point our survey and interviews only allow us to speculate on subjective levels of optimism, perceived risk, and nationalism. If, like those manufacturers we interviewed, they believe that these changes are temporary and only need to be waited out, then a similar survey might be performed in future years to determine if the results are still the same. If the new tariffs are still in place, the results might be different as manufacturers realize the permanency of these tariffs. If they are not, then the perception that they were temporary will have justified the lack of changes. Questions regarding these perceptions could also be included. Our survey question asked about their long-term perceived strengths and most respondents expressed optimism toward the future. Proving that perceived optimism justified or false would yield interesting insights.

The goal of a similar survey might be to examine the effectiveness of such trade policies in driving global policy. If the goal of these tariffs was to shrink the U.S.-China trade gap and to convince U.S. manufacturers to shift manufacturing away from China as a way to negotiate better trade agreements, our survey reveals, in the short-term, that this has not been accomplished. Since this insight was not the primary goal of our survey, a more robust survey that focuses on this question could potentially reveal further details. If policy were the goal, then the impact of the Chinese government's modifications of the export VAT and devaluing their currency in response to the tariffs to support Chinese exporting firms should also be explored. Our survey only revealed the attitudinal impact of these de-facto subsidies, but their actual cost

impact and long-term viability could be explored. Tariff alleviating subsidies as a strategy in a “trade war” could be a useful analysis, and its presence, or lack thereof, would certainly impact the decisions of those in private enterprise who could be impacted by such government policy decisions.

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