THE IMPACT OF TRUE FIT® TECHNOLOGY ON MILLENNIAL CONSUMER

CONFIDENCE AND SATISFACTION IN THEIR

ONLINE CLOTHING PURCHASE

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This study examines the use of True Fit® technology by millennial consumers and its impact on consumer confidence and satisfaction with respect to online sizing. In the apparel industry, there is a lack of size standards among retailers, and as a result consumers will encounter frequent size variations in their clothing size. Difference sizing technology has been developed to address the sizing issue. One is True Fit® which unlike other sizing technologies, uses mathematical algorithms to compile large amounts of data from designers. The purpose of this study was to analyze consumer confidence and satisfaction after True Fit® has been used to make a sizing decision while online shopping. The technology acceptance model (TAM) was used as the basis for the theoretical framework for this study. TAM explores how current advances in technology are influencing consumers' behaviors and attitudes. The variables studies included perceived ease of use, perceived usefulness, attitude, intent to use True Fit®, confidence and satisfaction. The methodology used in the study is a quantitative method consisting of an online survey and a True Fit® task, where consumers were exposed to True Fit® prior to answering questions about the use of sizing technology. The results of the study suggest the dependent variable of confidence and satisfaction with the sizing technology was positively affected by the intent to use True Fit®. Thus, it can be inferred that consumers felt positively about adopting apparel size technology and that technology such as this would have wide application in the future.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In today's clothing, there are significant variations in clothing sizes across different

apparel brands. This is due to the many different fits, rises, varying lengths and different styles

on the market (Schwaab, 2017). In one store, a customer may be a size 4 and in the other a size

8, which makes it nearly impossible to find the right size for a customer among different brands.

This issue is frustrating for both retailers and customers, due to the lack of standardization in

clothing measurements.

Sizing standards were created in the United States before the 1940s to have set size

measurements in place for manufactures of military apparel (Petro, 2016). These size standards

were developed from 15,000 women who served in the U.S. Air Force and contained sizes 8 to

38 with tall, regular, and short gauges (Petro, 2016). This measured population only represented

about 8% of the total U.S. population at the time (Petro, 2016). As a result, the created standard

size measurement scale was not representative of the entire U.S. population. Since the 1940s, the

U.S. demographic profile has changed. American's have become heavier and more diverse and

brands have had to adjust their sizes to match that of their target customer (Schwaab, 2017).

Manufacturers no longer adhere to the sizing guidelines put in place in the 1940s and consumers

can find significant variations in sizing across retailers (Kinley, 2003). The practice of vanity

sizing, which is the practice of changing measurement specifications among garments which

allows consumers to fit into smaller sizes, has also created sizing confusion in garments

(Alexander, Connell & Presley, 2005). This large disparity suggest that consumers will

encounter frequent size variations among clothing sizes when shopping. Specifically, when

shopping for garments online since consumers are unable to try on garments before purchasing.

With the increased popularity of buying online, size issues create serious problems for retailers, which lead to increased return rates (Kim & Damhorst, 2010). This is because women can wear up to three different apparel sizes which makes it nearly impossible to buy the correct size the first time around. Murray (2016) and Marina, Connell, & Presley (2005) found that fit was the third most frequent reason for deciding not to purchase something online. By addressing the different size variations among garments, retailers would be able to retain more profit from the customers purchase by reducing return rates and increasing their confidence in the garment purchased.

One company, True Fit®, has attempted to tackle this sizing inconsistency. True Fit® is an online platform that is working to help shoppers find the correct size among thousands of brands and reduce return rates for companies (Schwaab, 2017). True Fit® has recognized that not all brands have the same customer. For example, the Abercrombie and Fitch customer is different than the Chico's customer and thus the size scales differ between the two retailers (Schwaab, 2017). To start, True Fit® collected initial data from 10,000 pairs of size 28 waist (size 6) women's jeans and found that in the waistband alone the size varied up to 5 inches, ranging from 27.5 inches to 33.5 inches (Schwaab, 2017). This extreme size difference has created a need for a way to find your size amongst the thousands of brands. True Fit® has attempted to fulfill this by compiling brand data from designers, such as measurements and fit specifications.

Rationale

Well fitted clothes are an important part of an individual's psychological and social well-being (Marina, Connell, & Presley, 2005). McVey (1984) found that when a clothing garment

fits poorly, a consumer feels that there is something wrong with their own body. This psychological effect on a person may cause a lack of confidence in purchasing goods online. Confidence can be defined as the mental state a consumer has where they mentally evaluate their purchase decision they have made (Heitmann, Lehmann, & Herrmann, 2007). When consumers purchase goods online, they are taking a risk that the clothing might not fit. A customer may order their "size" but if the garment does not fit properly, this may affect their confidence level in both the retailer and the garment they purchased.

A consumer's satisfactionlevel may also be affected. Satisfactionis defined as the fulfilment with the actual information search process (Creyer & Kozup, 2003). When a consumer is searching for goods to buy they use multiple tools to make their decision. Different channels have been found to influence one's satisfactionlevel and the use of a channel, such as online shopping, may influence a consumer's satisfactionlevel (Ives et al., 1983). Ultimately when they have completed the online shopping process, they will be satisfied or dissatisfied with the shopping process.

When consumers purchase goods online they are unable to touch or model the product in person which creates issues with texture, size and fit (Park et al., 2009). Kim and Damhorst (2010), found that the inability to try on clothing before purchasing online creates a perceived risk to the consumer due to the size problems that may occur. Furthermore, Park et al. (2009) found that the most frequent complaints about one's online purchase has been related to size and fit. Currently, only 12% of all apparel and footwear sales are made online due to the lack of confidence buyers have when shopping (Confidence Engine, n.d.). This percentage is extremely low in a 12 trillion-dollar apparel and footwear market worldwide (Confidence Engine, n.d.).

The fit of a garment is very subjective in nature and everyone differs in what they would classify as a well-fitting garment (Pisut & Connell, 2007). Factors that contribute to fit are comfort, aesthetics, and personal choice (Pisut & Connell, 2007). Included in personal choice would be fashion trends, cultural influences, age, sex, body shape, and lifestyle which all tend to change over a person's life (Brown & Gallagher, 1992). Due to this varying degree of choice, it has been extremely difficult for one sizing method to fit the needs of all consumers. Size charts try to fit the needs of the greatest number of the population with the fewest number of sizes (Gill, 2015). Also, following sizing standards is completely voluntarily which gives designers the liberty to size their product to best fit their customer (Kasambala, Kempen, & Pandarum, 2016). Due to this there are a wide range of sizes and scales on the market, which makes it extremely difficult for the customer to find the correct size online.

Different sizing technologies have been created to address the sizing issue. These technologies are online interfaces that assist customers in selecting the correct clothing size during their online purchasing process (Gill, 2015). Traditional sizing charts found online and most new sizing technologies use customer's measurements to select the correct size. True Fit® is different than other sizing interfaces in that, it is based on garments rather than on a customer's body measurements (Gill, 2015). True Fit® provides recommendations based on similarities in garments among previous customer purchases (Gill, 2015). The aim is to help customers find a similar fit to previous garments they have purchased.

The findings of the current study will help advance current research on apparel sizing technologies. Specifically looking at how consumers feel regarding satisfactionand confidence after using technology to make a decision when shopping online. The study will provide theoretical insights into how a consumer travels through the decision-making process when

shopping online and which factors are influential in their decision-making journey. From a managerial perspective, the results of the study will help provide insight into consumers clothing size selection process and whether new technology will aid in their decision-making journey. Incorrect clothing sizes are a major cause of return rates for companies, and using True Fit® may reduce returns and increase choice confidence in a customer's size selection.

Purpose of the Study

The primary purpose of this study is to investigate the influence that online sizing technology, True Fit®, has on consumer confidence in their sizing selection online and on their satisfactionin their search process. Additionally, the study will also look at factors that influence a consumer's online shopping behavior.

The objectives of the study are to 1) evaluate the perceived usefulness and perceived ease of use towards using True Fit® to select the correct clothing size online, 2) Evaluate consumer's attitude toward using True Fit® to make a sizing decision, 3) evaluate the actual use of True Fit® to shop online, and 4) analyze the effect that True Fit® has on consumer satisfactionand confidence in selecting clothing sizes online.

The technology acceptance model will be used to support the use of technology to aid in one's shopping experience. An extended version of the technology acceptance model will be used for the study to evaluate consumer's confidence and satisfactionafter using True Fit® to make a sizing decision online. We will rely on this extended model, to propose that consumers' search for information to make an apparel sizing decision while shopping online, in an effort to reduce the uncertainty associated with their online purchase and make their apparel sizing decision with a high degree of confidence (Flavián, Gurrea, & Orús, 2016). For this research,

achieving confidence in one's apparel sizing represents an approaching goal, related to positive outcomes, such as the correct size selected on purchase (Flavián, Gurrea, & Orús, 2016).

Assumptions

The researcher assumes that respondents will have had clothing size issue discrepancies in the past and would welcome new ways to solve these issues. The researcher also assumes that the customer has shopped online before and has a general understanding of the customer shopping journey online.

Operational Definitions

For this study, operational definitions are listed below to better explain the specific study.

Sizing technology- driven online interfaces that seek to assist consumers in achieving suitably fitting garments during the online purchasing process (Gill, 2014)

Fit- relates to the amount of physical comfort, psychological comfort, and appearance of the garment in relation to the body (Kim & Damhorst, 2010).

Satisfaction- the fulfilment with the actual information search process (Creyer & Kozup, 2003)

Confidence- mental state a consumer has where they mentally evaluate their purchase decision they have made (Heitmann, Lehmann, & Herrmann, 2007).

Limitations

Limitations may arise in this study, if some people do not feel comforTable in using sizing technology to make a sizing decision online or if they already are loyal to another sizing

method. Convenience and Snowball sampling method will also be used which may limit the

generalizability of the study.

CHAPTER 2

REVIEW OF LITERATURE

Overview

This chapter reviews the conceptual framework which is used to explain the consumer online shopping journey and how technology affects this decision-making journey. For this study, the variables confidence and satisfaction will be analyzed in relation to a customer's attitude after the use of True Fit®. The chapter begins with introducing different factors that a customer uses to make their purchase decision such as size scales, confidence, and online search process. Second, True Fit® technology is introduced as a way to increase consumer confidence in t online purchasing. Lastly, the chapter concludes with a discussion of the variables used in the study and their linkage in the research model.

Review of Literature

Online Purchase Process

The online purchase decision making process is a very dynamic and flexible process catered to each individual consumer (Karimi et al., 2015). This involves when a consumer progresses through a series of steps to purchase a product or service online. People who shop online do not follow the same shopping behavior as they would in traditional stores and retailers must adjust their retailing strategies to meet the needs of these customers. (Koufaris, 2002). The physical store has been transformed into a virtual store by moving the information technology from the background to the foreground for the customer (Koufaris, 2002). Previously, all technology was behind the scenes in the customer's shopping experience but, now is in the foreground to the customer, in the form of a retailer's website. Customers can search for goods

online while using all the features that the physical store offers. Features such as customer reviews, images, text, sizing guides, and shipping and returns all affect the customer purchase process and each customer's decision-making process may follow a different path in their online shopping journey (Karimi et. al., 2015). The quality of the search process can also affect the customer's purchase decision process, satisfaction and loyalty towards an online retailer's site (Zeithaml et al., 2002; Wolfinbarger & Gilly, 2003). One way for retailers to address the quality of the search process is to have more personalization options (Iqbal et al., 2003), which allows the retailer to cater the online search process to the individual needs of the customer (Thirumalai & Sinha, 2011). Personalization can be used in the online search process to make a decision on a purchase.

For this study, the online shopper will be both the shopper and the computer user (Koufaris, 2002). In online shopping, customers must judge a garment by the picture and text on the website because they cannot try on the garment before purchasing. They also must depend on a size chart or model images to make their best guess on the correct size to purchase (Kim & Damhorst, 2010). This creates much confusion for the customer about which size to purchase and has negatively influenced their apparel purchase intentions when shopping online (Kim & Damhorst, 2010). As a result, online shopping has been restricted in growth due to the increased risk of purchasing the incorrect size from a retailer.

Apparel Sizing

The size of a garment is communicated by the size labels found on the inside of the garment. When shopping online, customers will select the clothing they would like to purchase according to these size labels. Detailed size chart measurements are found on websites which

coordinate with the corresponding size. These charts show a brand's key dimensions and place customers in a grouping of measurements based off of their sizes (Gill, 2015). Customers can use the size charts to find the best size to address their fit needs in a garment. The development of these charts is said to create optimization in garment sizing with the fewest sizes for the greatest number of the population (Ibanez et. al., 2012). But, in the apparel industry, there is a general noncompliance of sizing standards by retailers. This is because optimization in garment sizing only focuses on balancing the population among sizes and does not focus on customer experiences (Gill, 2015). The charts are also limited to historical size data and, as a result, designers have strayed away from these traditional measurements found on size charts. Retailers and brands have a lack of confidence in the current size scale standard; therefore, it is common practice for manufacturers and brands to develop their own size specifications which are based on customer feedback, sales history, and intuition.

Vanity sizing has also begun to occur in brands due to the liberty of retailers and brands in sizing their own styles. This is when the same nominal size becomes bigger in physical size overtime, which results in a false interpretation of size for customers (Kennedy, 2009). These factors all create market differentiation for the designers who are each targeting their own individual size population which is made up of different lifestyles, incomes, and body shapes (Alexander et al., 2005). Retailers use this as a selling tool, rather than a negative point, to distinguish their brands from others (Pisut & Connell, 2007).

Lack of Confidence

Because of the varying degree of sizing between retailers and the lack of a universal size scale, consumers do not have confidence in the online sizing information that (Dusto, 2012).

Confidence in online shopping occurs when a consumer can properly evaluate their decision to purchase an item and they feel good about this decision. The feeling of uncertainty and low confidence occurs when consumers feel over-loaded with information (Heitmann, Lehmann, & Herrmann, 2007). Specifically, looking at an online consumer's size decision for this study, it appears they may not have confidence in their choice due to the varying degree of styles, sizes and garment fits from which they have to choose. Furthermore, a larger set of choices requires consumers to turn down more options which then increases anticipated regret in their sizing decision (Schwartz et al. 2002; Wathieu et al. 2002). This regret will lower one's confidence in their decision.

This lack of confidence in online sizing results from consumers being unsatisfied with how ready-to-wear fits, making it hard to make decisions about which size they are going to purchase online. Online retailers many times use models to display their garments because customers tend to prefer these over mannequins or the garments laid out flat to see how the garment fits the human body (Kim & Damhorst, 2010; Then & DeLong, 1999). However, most models used by retailers are very thin and do not match the typical customer (Kim & Damhorst, 2010). This can cause body discrepancies and dissatisfactionamong customers who are not the same shape or size as the model which creates a lack of confidence in the fit of the garment they are ordering online.

Fit of a Garment

The fit of a garment is associated with overall satisfaction with one's garment (Eckman et al., 1990). Frost (1988) stated that a consumer's opinion of a well-fitting garment includes physical comfort, psychological comfort, and appearance. Additional factors associated with fit

are varying fits, rises, lengths and styles which all contribute to the issues with apparel fit. Also, as demographics have shifted, brands have also shifted to meet the needs of their target customer (Schwaab, 2017). This creates considerable frustration for shoppers who consistently cannot buy the same item twice. Furthermore, brands use fit models to size their clothes (Schwaab, 2017). Fit models stay within an inch or less of their measurements to stay consistent in sizing but since there is not just one fit model for the entire clothing industry it is hard to stay consistent amongst designers (Schwaab, 2017). These issues create a perceived risk of shopping online because consumers can not try on garments to determine fit before purchasing (Cases, 2002). Consumers feel the risk of not getting the right size when first purchasing which creates a lack of confidence in their purchase. Based on these factors, all contributing to perceived risk with fit, Kim and Damhorst (2010) defined concerns with fit and size of a garment as an expectation of the shopper that their garment will fit them when purchased.

Return Rates Issue

One of the most important issues retailers focus on is the fit and the size of a garment. This is because it is one of the main reasons behind garment returns (Beck, 2000). The inability to physically try on clothing has resulted in online returns upwards of 50% for companies (Padelford, 2017). Also, products have inaccurate information online which leads to fit problems for customers, thus resulting in a return (Kim & Choi, 2002). Clothing items such as t-shirts, where fit is not of major concern, are ordered more frequently online (Ahn & Park, 2003). Items that require more customer involvement, such as fashion goods, tend to have higher return rates since fit is a higher determinant of selection (Ahn & Park, 2003; Kim & Choi, 2002). To solve this issue, customers will order multiple sizes from a retailer, try on the items, and then return the

sizes that do not fit (Dusto, 2012). Retailers are offering shipping promotions, such as free

shipping and returns, which encourages customers to take advantage of this. Forty-one percent of

consumers report they have ordered multiple sizes, and 60% of consumers say they won't even

order clothing online unless shipping and returns are free (Dusto, 2012). These free returns work

to the customer advantage and increases their confidence in ordering online. But, these return

rates have incurred massive costs for companies. By offering free shipping and returns, the

company must pay to get the product to the customer and then back from the customer if

returned. Online retailers could reduce return rates and increase profits by finding an effective

way to solve their customer fit issues. Online sizing technology has emerged as a way to combat

the fit sizing issue.

Apparel Sizing Technology

Due to different size scales being used by consumers, the ready to wear industry has

changed. When online shopping, customers face a large variety of brands and making a size

decision has become difficult. Online sizing interfaces have been developed to address the

changed apparel industry. These different types of interfaces allow consumers to engage with fit

online (Gill, 2015). These online interfaces come in multiple forms of technology, including

virtual fitting rooms, 3D body scanning, and sizing personalization systems (Table 1).

Virtual Fitting Rooms (VFR)

Virtual fitting rooms are a simulation of trying on clothing (Kramer, 2011). This

technology is like a video game version of a dressing room where consumers can see what the

clothing looks like on them before purchasing (Kramer, 2011).

It allows customers to try on clothing to see how the garment would fit or whether they would like the size, thus, allowing the customer to engage with clothing fit online just as they would in a store dressing room. FitYour® is an online virtual fitting room which uses a webcam to retrieve your image and then uses human gestures to allow the customer to try the garments virtually (Product Details, n.d.). Fits Me® uses shape-shifting mannequins which are created based on a person's actual body measurements (Overview, n.d.). Both, technologies allow the customer to visualize themselves in a chosen garment.

3D Body Scanning

Body scanning or 3D imaging, is being used in combination with fashion and e-commerce to create a virtual experience for consumers. Hewlett Packard uses an avatar platform called CeBit®, which uses the same technology as the movies to create a 3-D photo booth experience (Pedelford, 2017). This technology uses 64 separate cameras to scan the consumer and then compiles these images onto one single 3-D image. This image can then be customized by the consumer with hair, skin tone, and eye color, which are all specific to the customer. This technology also then connects with social media and past purchases so that the images can be shared among repeat online shopping trips. This type of technology cost upwards of $135,000 for retailers which creates limitations. A more reduced option is with smartphones. MatchMyFoot®, is a smartphone based application, which works directly through the smartphone to scan the consumer's feet using an in-device camera (Pedelford, 2017). These digital imprints are then matched with the correct size of the consumer, with the aim to deliver the correct size the first time around. Other platforms, allow consumers to upload 2-D photos of themselves which can create 3-D forms. An example of this is Metail's MeModel®, which is also a smart phone

application where users enter in personal information such as height, weight, hip, chest, and weight measurements, along with an image to create a 3-D figure (Gill, 2015). Although, this is 96% accurate, this platform does not consider the probability or possibility that customers actually know their measurements.

Sizing Recommendation Services

Recommendation services offer consumers a suggested size based on various factors such as past purchases, measurements, and preferences. Previous sizing technologies all focus on the customer's image and size measurements but do not consider past purchases or customers fit preferences. Some companies have attempted to compare these fit preferences for customers. This is a good alternative since sizing scales are not consistent among designers. Shoefitr® and Virtusize® both align previous purchases with the items in a customer shopping cart (Pedelford, 2017). Shoefitr® is a size recommendation service that uses various measurements inside shoes and compares them. The company was acquired by Amazon in 2015 to compete with other shoe retailers, but as a result Nordstrom stopped using the size recommendation service on their site (Lunden, 2015). Virtusize® is another recommendation service that uses past purchases and then overlays the garment silhouettes on the screen for the customer to compare the two different garments (How it works, n.d.). These services have helped retailers and consumers obtain better fit the first time.

True Fit®

True Fit® is also a size recommendation service. True Fit® assists in finding the correct size across thousands of available brands in online shopping (Schwaab, 2017). True Fit®'s goal

is to find similarities in fit between past purchases and recommend sizes for future purchases based on these similarities (Gill, 2015). The True Fit® process works first by using past purchases the customer has made. Then looking at these past purchases, evaluating which garments the customer has the most confidence in the size and fit. Factors such as where it hits you at the waist or where your favorite jeans sit are important factors in fit (Schwaab, 2017). Second, it evaluates whether these are similar brands the customer has worn before. Finally, it uses this fit knowledge in helping the consumer make a future purchase. This is done by using an extensive database which is made up of compiled manufacture and brand garment dimensions by specific style (Gill, 2015).

The difference in this platform, is that it is a system based on garments rather than relying on a customer's measurements (Gill, 2015). The online platform does this using personalization, somewhat like Pandora. Pandora is an internet radio station that allows customers to stream music and receive automated recommendations based on their preferences. The music system uses a specialized music genome to create an algorithm to organize music. True Fit® uses a clothing genome. A genome takes all the inheritable traits of something and uses it to create a sequence ("Genome," n.d.). True Fit®'s genome creates a mapped-out system which includes an individual's fit and style data ("Genome," n.d.). This data includes product specs and style attributes from millions of different clothing items ("Genome," n.d.). True Fit® has taken this personalized data system and applied it to apparel sizes. Like Pandora, the more you interact with True Fit®'s technology the more it learns about you and can suggest correct sizing matches (Binkley, 2012). By shopping at any partner site of True Fit®, a customer's data will be connected through the clothing genome and offer matches (Binkley, 2012). According to Forrester Research, consumers are looking for personalized capabilities when shopping and 62%

of online adults have chosen, recommended, or paid more for something that is personalized

(Silverman et al., 2015). Retailers who can provide personalized services are able to better know

their customer and position themselves to drive more sales. This approach to personalization is

very data driven and uses mathematical algorithms to compile large amount of data from

designers. The algorithms that are created calculate a customer's size and shape based on

information they have provided and then compares this to the specs of the garment they are

thinking of purchasing (Binkley, 2012). It then recommends a size and describes the fit of the

garment such as loose or tight in hard to fit areas such as the hips or bust.

Table 1. Evaluation of Different Sizing Technologies

Device	Description
Fit Your®	Virtual fitting room with use of a webcam
Fitsme®	Clothes-fitting simulation based on a person's actual body measurements
CeBit® (developed by Hewlett Packard)	3D model, takes 64 images and compiles into 1 3D avatar, simulates virtual clothing onto avatar
Match My Foot®	Creates 3D images of the user's feet based off digital images sent directly to smartphone
Metail's MeModel®	App that compiles user's measurements to produce a 3D model, 96% accurate
Shoefitr®	Footwear shoe recommendation service that uses measurements inside shoes and compares them.
Virtusize ®	Uses past purchases and then compares silhouettes in an overlay form
True Fit®	Size recommendation service that finds similarities in fit between past purchases and recommend sizes for future purchases based on these similarities

Conceptual Framework: Technology Acceptance Model (TAM)

The technology acceptance model, best fits the proposed study. This model looks at how

current advances in technology are influencing consumers' behaviors and attitudes (Rauniar,

etal. 2014). This model originated from the theory of reasoned action by Ajzen and Fishbein,

(1980) and was developed by Davis in 1986, to analyze computer intent to use. This model has

since evolved to include other forms of technology and will be used to look at sizing technology

for this study. This model is based on two main assumptions, perceived usefulness (PU), and

perceived ease of use (PEOU), which help determine consumers' intention to use True Fit®

sizing technology (Elkaseh, Fung, & Wong, 2016). These two variables are highly influential on

a consumer's ability to accept technology, specifically True Fit® for this study (Aljabari, 2016).

The TAM model is used to explain individual's acceptance behavior or attitude toward the use of

technology (Surendran, 2012). Park et al. (2009) uses the TAM model to show that when

individuals are presented with new technologies their PEOU and PU are dependent upon their

attitude.

For this research, the TAM model will be used to assess online shoppers' acceptance of

using True Fit® technology to find the correct size when shopping online. Since this technology

is relatively new, the TAM model is appropriate as it provides appropriate constructs for

predicting consumers' intention of using True Fit® to make a future apparel size decision.

Previous literature found the TAM model to be a parsimonious model by identifying only PEOU

and PU as key determinants of the individual toward the use of computer technology (Davis,

1989; Davis et al., 1989; Tong, 2010). But, TAM's parsimonious nature is also a key limitation

of the model (Venkatesh, 2000; Vijayasarathy, 2004). Therefore, a modified TAM model is

suggested for this study to better capture key beliefs that influence a consumer's attitude toward

using True Fit® to make an online sizing decision.

To explain intent to use behaviors and the hedonic nature of acceptance, the TAM model

has been extended with additional or alternative constructs. Kim and Forsythe (2009) used a

modified TAM framework in their study on virtual try-on technology. With this framework they

used two external variables, technology anxiety and innovativeness, that were not in the TAM

18

model but were expected to impact the virtual adoption process. The modified framework for this study, incorporates additional variables of confidence and satisfaction(Figure 1) expected to impact the technology adoption of True Fit®. The satisfaction construct was added to the original TAM to show an evaluation of a customer's experience with a service, which may be evaluated with either satisfaction or dissatisfaction by the customer (Kort & Gharbi, 2008). In an online context, satisfaction for a consumer is determined as usefulness of information received and the degree to which the consumer can use the information obtained prior to purchase (Pingol & Miyazaki, 2005; Chen &Tseng, 2011). The confidence construct is also added to the modified TAM to explain how individuals make rational decisions when making an online purchase (Zha, Li, & Yan, 2013). Through intent to use technology consumers can make a cognitive decision about a product that meets their need. This decision-making process will be based on one's confidence in their decision. Figure 1 represents the modified TAM model with the addition of these two variables.
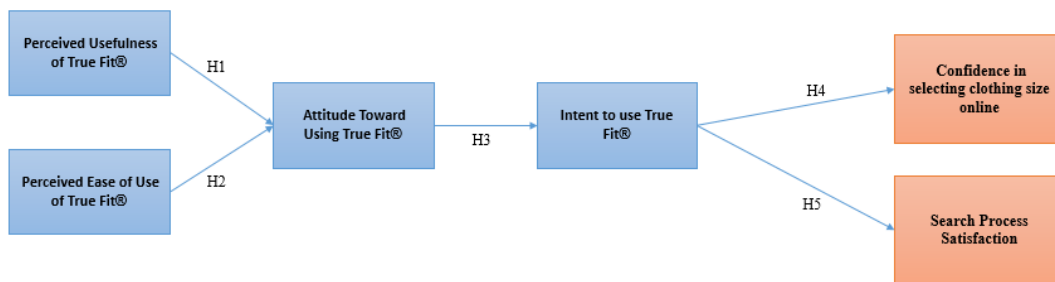

Figure 1: True-Fit Intent to use Technology Acceptance Model

Variables in the Study

TAM Variables

Perceived Usefulness and Perceived Ease of Use of True Fit®

The TAM model breaks down the attitude construct into two different variables,

19

perceived ease of use (PEOU) and perceived usefulness (PU) to better explain a consumer's computer intent to use behaviors to make a decision. In Davis' (1989) original model, he proposed that one's behavioral intentions to use a mainframe e-mail system and data editing system were the result of two beliefs, PEOU and PU (Rauniar et al., 2014). According to Davis (1989), PEOU is the degree to which the user expects the technology system to be free of effort, and PU is the user's assumption that the technology will increase their job performance on a task. For the present study, these terms can be defined more specifically as PEOU, the degree of ease felt by the consumer when utilizing technology to make a clothing size decision, and PU, as the degree to which a consumer believes a new technology will enhance their size decision process. A consumer's attitude toward True Fit®'s PU and PEOU are important indicators in their ability to accept the new sizing technology when shopping online. Both PU and PEOU have been shown to influence one's attitude toward using technology (Rauniar et al., 2014; Heijden et al., 2001; Van der Heijden, Verhagen, & Creemers, 2003). Thus, the proposed hypothesis is that PEOU and PU will both positively impact a consumer's attitude toward using True Fit® technology to make a sizing decision.

H1: PEOU positively impacts customer's attitude toward True Fit® technology.

H2: PU positively impacts customer's attitude toward True Fit® technology.

Attitude toward Using True Fit®

PU and PEOU, separately, are causes of attitude when utilizing the TAM model (Davis, 1989). Davis (1989) states that, one's overall attitude toward a given technology will affect their likelihood to adopt a new technology. A person's attitude will be displayed in their given behavior and how they respond toward the new technology (Dobb, 1947). For this study, attitude can be defined as tendencies of a consumer to respond in a particular way towards using a new

technology in a favorable or unfavorable way (Hassanein & Head, 2007). This definition, shows that a consumer's attitude in not obvious behavior but a disposition which then influences their behavior to act on something. Attitude is used as a mediating construct that exist between PEOU and PU and a consumer's intent to use True Fit® system before making a purchase online (Suki & Ramayah, 2010). Raunier et al. (2014) found that the more favorable one's attitude is toward using a system to make a decision, the more likely it is that the person will use the technology to make a decision or not. Additional, research has also found that one's attitude will lead towards actual intent to use a system (Fishbein & Ajzen, 1975; Doll & Torkzadeh, 1988; Kim & Forsythe, 2007; Fairouz, 2016). The proposed hypothesis for the study is that one's attitude will have a positive influence towards a consumer's actual intent to use True Fit® to make a clothing size decision.

H3: Attitude positively impacts customer's intent to use True Fit®.

Intent to use True Fit®

The mediator variable in the TAM is consumers' intent to use the technology. It is assumed that one's intent to use the technology is influenced by one's attitude of the system. Rogers (1995) found that one's attitude toward using a new technology influences their adoption. Thus, a customer's intent to use a new technology is a function of their attitude toward its use (Moore & Benbasat, 1991). Consumers will use True Fit® technology on a retailer's website to help make an apparel sizing decision. The intent to use True Fit®, ultimately should result in a positive effect on consumer's confidence and satisfaction in the recommended size given by True Fit® on a retailer's website. This is based on the theory of reasoned action, in which the TAM evolved from, which says that the more positive the attitude toward intent to use the more

likely they are to use the system (Ajzen & Fishbein, 1980). Previous studies also show that

technology intent to use helps provide choice assistance and influences a consumer's confidence

and satisfaction in their online purchase (Zha, Li, & Yan, 2013; Lee et al., 2011; Thirumalai, &

Sinha, 2011). Based off this support, the hypotheses that the intent to use True Fit® will have a

positive impact on both confidence in selecting a clothing size online and search process

satisfaction is proposed.

> H4: Intent to use True Fit® will have a positive impact on confidence in selecting
> clothing size online.

> H5: Intent to use True Fit® will have a positive impact on search process satisfaction.

Satisfaction and Confidence with True Fit® Technology

The dependent variables of satisfaction and confidence are measured after the intent to

use True Fit® on an online shopping website. These variables help a consumer evaluate their

shopping experience about selecting a clothing size that best fits their needs. Satisfaction is

defined as the fulfilment with the actual information search process (Creyer & Jozup, 2003).

Confidence is the mental state a consumer has where they mentally evaluate their purchase

decision they have made (Heitmann, Lehmann, & Herrmann, 2007).

Search-process satisfaction is defined by Creyer & Kozup (2003) as the satisfaction with

the information gained during the search process. After a consumer use's True Fit®, they are

given a recommended apparel size. This is created from information gathered from past apparel

purchases. This information will be used by customers to make their shopping decision regarding

clothing size choice. When consumers shop online, they perceive the value of their purchase

experience based off the satisfaction they receive from not just the product but also the shopping

decision process (Zeithaml, 1988). This is a key factor in the path-to-purchase for consumers and

satisfaction with the size of the garment will positively influence post-choice behavior

(Puccinelli et al., 2009; Heitmann et al., 2007).

Table 2. Summary of Variables

Variable	Description
Perceived usefulness	The user's subjective probability that the technology will increase their job performance on a task.
Perceived ease of use	The degree to which the user expects the technology system to be free of effort.
Attitude	Tendencies of a consumer to respond in a particular way towards using a new technology in a favorable or unfavorable way.
Intent to use	The action of using True Fit® on a retailer's website
Satisfaction	The fulfilment with the actual information search process.
Confidence	The mental state a consumer has where they mentally evaluate their purchase decision they have made.

Confidence in selecting a clothing size online refers to the belief that the consumers can

trust the size that has been recommended to them by True Fit®. There is a consumer confidence

gap which is created when the consumer does not feel confident that they will find their correct

size online. When consumers have confidence in their clothing size decision after shopping

online, this results in positive feelings toward their decision they have made. Furthermore, when

consumer's use effort to process the information presented, such as clothing size of a garment,

and then are able to make a decision, confidence will occur (Bettman et al., 1998). Confidence in

your clothing size is viewed as an important outcome of the apparel shopping process, showing

that the consumer has made the best decision in the clothing size selection (Flavián, Gurrea, &

Orús, 2016).

CHAPTER 3

METHODOLOGY

Overview

Due to the inconsistency of sizing among retailers, it is beneficial to find solutions to assist consumers in their clothing selection process. When consumers are shopping online they are unable to try on garments before purchasing, which makes it difficult to select the right size with satisfaction and confidence. True Fit® is a possible solution to these sizing issues. By using past consumer purchasing data, True Fit® suggests the correct size for the consumer. This research analyzes how a consumer responds after the use of True Fit® in their online sizing decision. An exploratory study was conducted for this research to validate the proposed research model and to test the proposed hypotheses. The study was designed using a quantitative method of a questionnaire. Participants were instructed to explore True Fit® before answering questions on their satisfaction and confidence levels of using such a technology. The primary objective of this methodology was to determine if there was a relationship between use of True Fit® and consumer's confidence and satisfaction with selecting the correct clothing size online. This method was appropriate for the proposed study because it allowed the participants to explore True Fit® technology and provided a method to collect results on their experience using True Fit® when shopping online.

Included in this chapter is the research method used to test the hypothesis, as well as the research design of the study. This includes the sample, instruments, and methods used in the study.

Hypotheses

This study is based on the created extended TAM model which was developed from

24

Davis's (1986) Technology Acceptance Model. Previous research on TAM was used to validate various types of information and communication technologies (Rauniar et al., 2014). TAM was also found to forecast individual adoption and voluntary intent to use technology (Rauniar et al., 2014). This study examines individual adoption behavior of online sizing technology when making a purchase decision. These variables included perceived usefulness of True Fit®, perceived ease of use of True Fit®, attitude toward True Fit®, search process satisfaction and confidence in selecting clothing size online. Based on these variables the hypotheses are as follows:

H1: PEOU positively impacts customer's attitude toward True Fit® technology.

H2: PU positively impacts customer's attitude toward True Fit® technology.

H3: Attitude positively impacts customer's intent to use True Fit®.

H4: Intent to use True Fit® will have a positive impact on confidence in selecting clothing size online.

H5: Intent to use True Fit® will have a positive impact on search process satisfaction.

Research Design

Instrument Development

A questionnaire (Appendix A) was created based on an extensive literature review and created using Qualtrics. Items were developed from a 5-point Likert scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*) in order to measure which were the most important variables to the participants of the study. The questionnaire was delivered in two sections. Section one of the questionnaire, was delivered to participants prior to their use of True Fit® and included survey items that surveyed the participant's current online shopping behaviors. Prior to answering the questions in section two, the participants were required to explore True Fit® on a

retailer's website and make sizing choice for a pair of jeans based on the online sizing technology. In the second section of the questionnaire, the participants were asked a series of questions that examined their intent to use True Fit® and how it influenced their confidence and satisfaction in using such a technology while selecting size online. This section included variables measured after the use of True Fit® and comprised of: PU, PEOU, attitude, intent to use, search process satisfaction and confidence (Table 3).

Variables Studied: TAM Variables

The TAM variables used in the study all were measured after the use of True Fit®. The participants were tasked to use the genome software to gain an understanding of the technology before answering any questions related to their experience. The variables measured were perceived usefulness of True Fit®, perceived ease of use of True Fit®, attitude toward using True Fit®, intent to use True Fit®, search process satisfaction and confidence in selecting clothing sizing online. This variable help assess consumer's attitude toward using technology to make a sizing decision.

Perceived Usefulness of True Fit®

Perceived usefulness was measured using six measurements. Two measurements were derived from Venkatesh and Davis (1996) and Moon and Kim (2001) which both adapted their measurements from Davis's original TAM model. This model showed both high reliability and validity, making them valid measures to use (Moon & Kim, 2001). Four measurements were also adapted from Chen et al. (2002) based on a composite reliability of .84. These measurements looked at the virtual stores and its components that entice a consumer to make a decision online.

Perceived Ease of Use of True Fit®

Perceived ease of use was measured through eight measurements. Two measurements are adapted from Butt, Chaudhry and Nasair (2016) based on their high reliability at .81 and .92 receptively. These adapted measurements focus on online shopping and providing the correct information. Measurements from Rauniar et al. (2014) will also be used. This study focuses on the deployment of new technologies which deemed appropriate for the study. Additional measurements for perceived ease of use are adapted from Chen et al. (2002) and van der Heijden et al. (2003) based on their previously found high reliability and validity. Modified language was used on these scales.

Attitude toward Using True Fit®

Attitude was measured through eight measurements. Attitude is derived from studies involving online shopping or social media, specifically focusing on online purchase intention for some studies (Butt, Chaudhry, & Nasair, 2016; van der Heijden, 2003; Chen et al., 2002; Vijayasarathy, 2004; van der Heijden et al., 2001). One's attitude involves one's ability to accept or reject a decision (Chen et al., 2002). This is an important variable in deciding whether one accepts or rejects the use of True Fit®.

Intent to Use True Fit®

Intent to use True Fit® was measured through seven measurements. Vijayasarathy (2004) study on consumer's intention to online shop based off the TAM model, provides reliable scales for three measurements. Three measurements were also adapted from Yoon and Kim (2007) and

one from Lee et al. (2011) based off their behavior intention to use measurements. For this study, behavioral intention to use can be inferred for intent to use since it is one's likelihood that they will use a given system. This is seen in the measurements presented, "I intend to use" and "I will frequently use" which show strength of intention.

Search Process Satisfaction

Satisfaction was measured through five measurements. Satisfaction is measured based on a consumer's size choice and if they are satisfied with the decision they made. Scales used for the study showed high reliability and validity for the variable satisfaction(Fitzsimons, 2000; Zhang & Fitzsimons, 1999; Flavián, Gurrea, & Orús, 2016).

Confidence in Selecting Clothing Sizing Online

Confidence was measured through nine measurements. Consumers use information gained in their search process to make their decision with a high degree of confidence (Flavián, Gurrea, & Orús, 2016). Confidence was measured after True Fit® has been used. The measurements were adapted from various sources which display high reliability and validity on measurements involving consumer confidence in their decision (Bruner, James, & Hensel, 2001; Urbany et al., 1997). The scales derived from Flavián, Gurrea, & Orús (2016) show reliabilities of .783 and .662 respectively. With .662 being considered accepTable based on the high uncertainty associated with online shopping which affect a consumer's confidence when making a purchase decision (Flavián, Gurrea, & Orús, 2016). Three measurements were adapted from Lee et al. (2011) study on mass customization online. These measurements had high reliability and validity.

Table 3. Review of TAM Variables and Measurements

Variable	Measurement	Reference
<u>Perceived usefulness of TF</u>	PU1 I find using True Fit® useful. PU2 True Fit® provides good quality information. PU3 True Fit® improves my performance in assessing clothing size online. PU4 True Fit® is useful for assessing clothing size online. PU5 Using True Fit® would make it easier for me to shop or find information. PU6 I find True Fit® very useful in my shopping or information seeking.	Venkatesh, & Davis, 1996; Moon and Kim, 2001; Chen et al., 2002
<u>Perceived ease of use of TF</u>	PEOU1 True Fit® provides sufficient size info. PEOU2 True allows me to select sizes easily. PEOU3 I find True Fit® easy to use. PEOU3 Interaction with True Fit® is clear and understandable. PEOU4 It would be easy for me to become skillful at using True Fit®. PEOU5 True Fit® is easy to use for clothing size. PEOU6 I can quickly find the clothing size I need on True Fit®. PEOU7 My interaction with True Fit® is clear and understandable. PEOU8 I find True Fit® flexible to interact with.	Butt, Chaudhry, & Nasair, 2016; Rauniar et al., 2014; Chen et al., 2002; van der Heijden et al., 2003
<u>Attitude Toward Using TF</u>	A1 I have a positive attitude toward True Fit®. A2 Using True Fit® is convenient. A3 Using True Fit® for shopping is a good idea. A4 I would like to use True Fit® for online shopping. A5 True Fit® is appealing. A6 True Fit® is convenient and easy to use. A7 I would have positive feelings towards buying a product after using True Fit®. A8 It would be a good idea to buy a product after using True Fit®.	van der Heijden, 2003; Chen et al., 2002; Vijayasarathy, 2004; Butt, Chaudhry, & Nasair, 2016; van der Heijden et al., 2001
<u>Intent to use TF</u>	U1 I intend to use True Fit® whenever appropriate to do my shopping. U2 I intend to use True Fit® frequently to do my shopping. U3 Probability that you will shop using True Fit® in the near future. U4 I will enjoy using True Fit®. U5 I will frequently use True Fit®. U6 I will recommend others to use True Fit®. U7 I plan to buy clothing using True Fit®.	Vijayasarathy, 2004; Yoon & Kim, 2007; Lee et al., 2011

Search Process Satisfaction after using TF	SPS1 I found the process of deciding which size to buy interesting. SPS2 I was satisfied with my experience of deciding which apparel size to choose. SPS3 I found the information search process frustrating. SPS4 After this information search process, I think I would make the right decision. SPS5 I am satisfied with my information search experience.	Fitzsimons, 2000; Fitzsimons, Greenleaf & Lehmann, 1997; Zhang & Fitzsimons, 1999; Flavián, Gurrea, & Orús, 2016
Choice Confidence in Clothing Size after using TF	CHC1 I felt confident when identifying one size that best matches my preferences. CHC2 I was convinced to find a size that best fulfills my needs. CHC3 I am confident in my choice. CHC4 I believe that I have made the right choice. CHC5 I am convinced about my size choice. CHC6 I am certain about my size choice. CHC7 I was able to select the perfect size. CHC8 I found it difficult to choose from all the sizes available. CHC9 It took too much time to select all the necessary choices I wanted.	Bruner, James, & Hensel, 2001; Urbany et al., 1997; Flavián, Gurrea, & Orús, 2016; Lee et al., 2011

Population

The population used for the study is online shoppers with specific focus on millennials, ages 18-34. This age range accounts for $1.3 billion in annual spending with $430 billion on discretionary products such as jeans (Bailey, 2015). Millennials closely follow brands and products through digital channels such as websites and social media (Bailey, 2015). This population is appropriate for the study since the focus of the study was a new technology on a retailer's website. The sample used for the study included college students in the Southwest, specifically, College of Merchandising, Hospitality and Tourism at University of North Texas, and Tarrant County College and consisted of undergraduate and graduate students. Additionally, data was also collected from family and friends of the researcher. This population fits the target demographics of millennials.

Data Collection

Participants of this current study were millennials between the ages of 18 and 34. The

questionnaire and instructions on how to test True Fit® were delivered at the same time to

participants via a self-administered online survey using Qualtrics. The researcher used two data

methods to collect data for the study. Convenience data collection methodology was used to

collect data from the students at the Southwest universities. On the other hand, snowball

sampling technique was used to collect data from friends and family of the researcher through e-

mail and social media networks of Facebook and Instagram. They were asked to participate and

to distribute to their social network. All participants were entered into a drawing for one of two

rewards, 5 $10 Target gift cards or 1 $50 Target gift card in order to entice them to take the

survey. Surveys that were not determined usable were removed from the sample population.

These surveys included participants not considered a millennial, ages 18-34, and any unfinished

surveys.

Data Collection Procedure

The 2-part questionnaire and task instructions were administered to the participants in a

3-step process which is detailed below by steps 1-3 (Figure 2). This process assisted the

researcher in gathering and measuring information on the variables used in the study. The

purpose was to test the hypotheses and to evaluate the outcomes after the methodology had been

conducted. The data collection procedure was designed based on the TAM, to test the

participants before using technology and after the use of technology. Step 1 is prior to the use of

True Fit® technology, Step 2 is the instructions to test True Fit®, and step 3 is the 2nd part of the

questionnaire where participants answer a series of questions based on their experience using True Fit® technology to make a sizing decision.

Steps 1-3

Step 1. The participants of the study were first asked a series of questions on their online shopping behaviors. These questions will act as indicators of consumer online shopping behavior before using True Fit® technology to make a purchase decision. These questions were measured using the 5-point Likert scale, multiple choice, and open ended questions.

Step 2. Participants were then asked to explore True Fit®. The instructions that were given to the participants was an attempt to model an online consumer shopping experience. In the test, the participants were directed to macys.com and given 6 choices of jeans to buy, 3 women's and 3 men's styles. The jean selections for the study were chosen based on customer best sellers on macys.com, as well as their brand partnership with True Fit® technology.
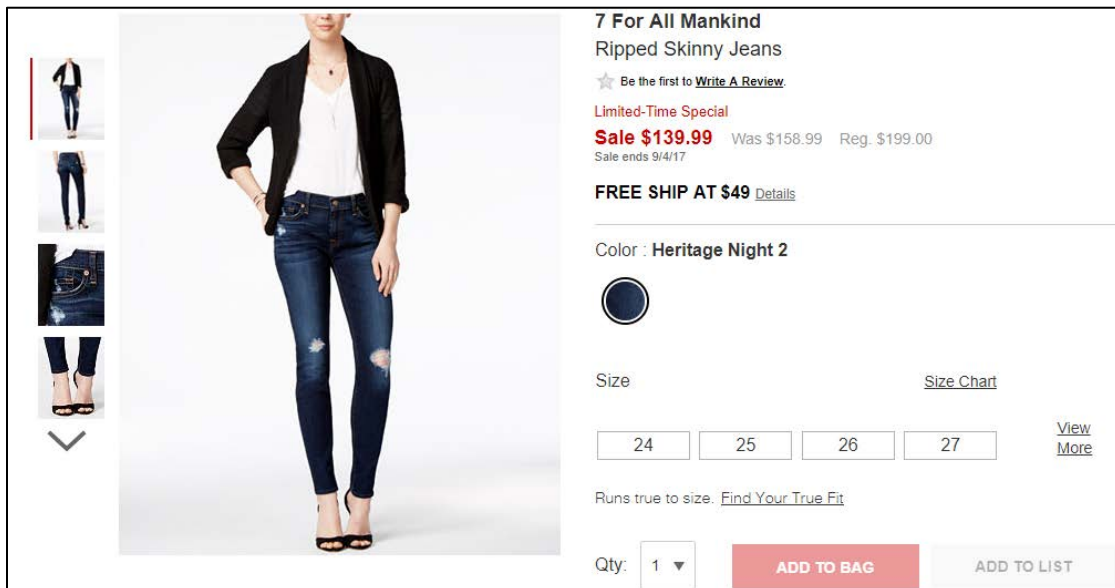

Figure 2. Jeans Homepage for 7 For All Mankind, Ripped Skinny Jean

Macy's was selected based on their target customer of the American middle class which wants quality products at reasonable prices (Bailey, 2015). Macy's also targets millennials as one of their target customers and has launched many brands, such as QMack, Maison Jules and Bar III, which specifically are geared towards millennials (Bailey, 2015).. Figure 2 demonstrates a Macy's jeans product page for 7 For All Mankind, Ripped Skinny Jean. This style is 1 of 6 styles that was given to the participants to select from for the test. Multiple styles, brand choices, and price points were given to the participants to avoid any bias associated with a style when answering the questions.

Once the participants, had successfully located their selected jeans from the 6 selections in the questionnaire, they were then asked to select "Complete Profile" which is located under your size selection and underlined. This is displayed in Figure 3. The complete profile link will direct the participant to the True Fit® sizing selection process, Figure 4. This process is made up of a series of questions based on past brand purchases. Participants were instructed to complete their sizing profile on True Fit® until a size was recommended to the participant, as illustrated in Figure 5. This is a 3-step process.
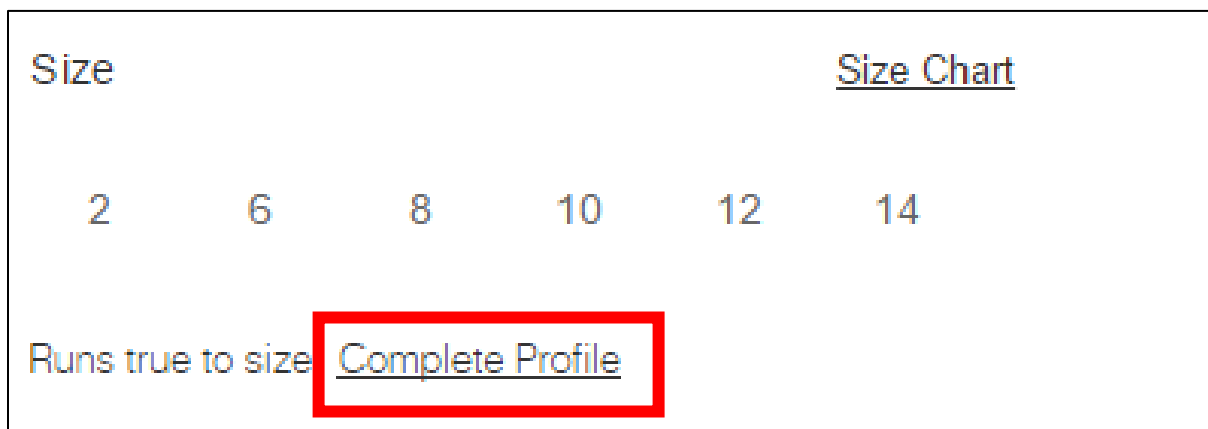

Figure 3. Consumers Directed to Select True Fit®
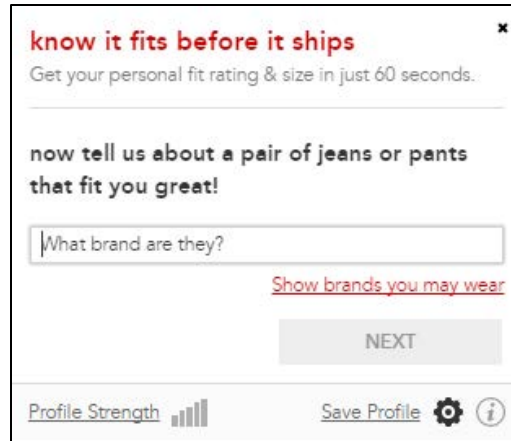
Figure 4. True Fit® Profile
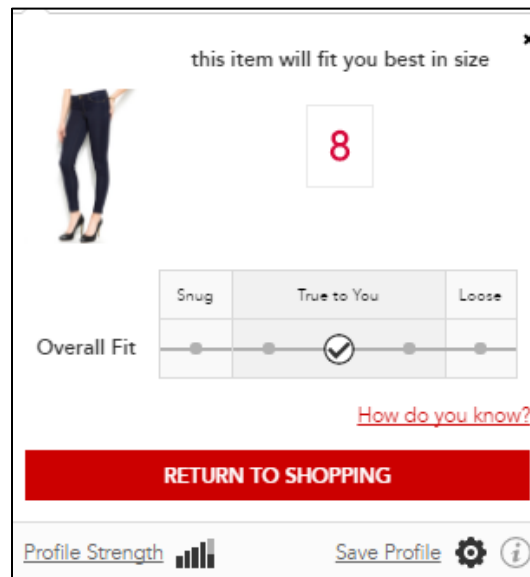
Figure 5. Image of Completed True Fit® Profile

Step 3. Once participants have taken part in the True Fit® test they were then directed back to the questionnaire where they were asked a series of questions based on the variables of perceived usefulness of True Fit®, perceived ease of use of True Fit®, attitude toward using True Fit®, intent to use True Fit®, search process satisfaction and confidence in selecting clothing size online. These questions were asked using a 5-point Likert scale for consistency.

The final questions are demographic questions to better understand the sampled population. Included in the demographic questions are gender, age, race, household income, education, and employment.

Figure 6. Outline of Data Procedure

Data Analysis

Descriptive Statistics

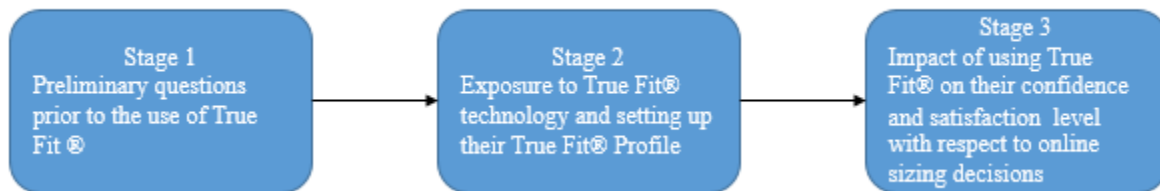Consumer demographic information is the final section of the questionnaire. These were measured for descriptive purposes, using close ended questions. Demographic values include gender, age, race, household income, education, and employment status. Gender was collected using a nominal scale 1) male, 2) female, and 3) transgender. Age used a ratio scale of 1) 18-25, 2) 26-34, 3) 35-54, 4) 55-64, and 5) 65 and over. Anyone below the age of 18 was not invited to participate in the study. Race included 6 categories 1) Caucasian/White 2) African American 3) Hispanic 4) Asian/Pacific Islander, 5) American Indian/Aleut, and 6) other which includes a blank for participants to enter their race in. Household income uses an ordinal scale under with 1) $25,000, 2) $25,000 - $29,999, 3) $30,000 - $34,999. 4) $35,000 - $39,999, 5) $40,000 - $49,999, 6) $50,000 - $59,999, 7) $60,000 - $84,999 and 8) Over $85,000. Education is measured using an ordinal scale with 1) vocational/technical school (2 year), 2) some college, 3) college graduate (4 year), 4) master's degree (ms), 5) doctoral degree (phd), 6) professional degree (md, jd, etc.), and 7) other with a blank space. Finally, employment will be measured on a

ratio scale with 1) none, 2) part-time, less than 20 hours /week, 3) part-time, 21 – 34 hours/week, and 4) full time, 35 or more hours/week.

Validity and Reliability of the Measurement

A factor analysis was performed on the instrument for data reduction purposes. In total, 6 variables were tested including perceived usefulness of True Fit®, perceived ease of use of True Fit®, attitude toward using True Fit®, intent to use True Fit®, search process satisfaction, and choice confidence. Loading factors were accepted with eigen values equal to or greater than one. Items with low factor loading were removed from the study. Cronbach's alpha score was accepted if it exceeds .70.

Hypothesis and Model Testing

Multiple regression was used for this study to show the relationship between multiple independent and dependent variables. The regression tested if one variable affects another variable. The closer to 1 the r² value is the better model and predictor the variable is for the study.

Data- Strengths and Weaknesses

One set of data was collected using a snowball sampling method. In this method, the researcher relied on participants to distribute to other people in their social network on a voluntary basis to get results. These participants had to meet the researchers target population and be deemed appropriate for the study. Snowball sampling has a reduced bias and allows the

researcher to reach other participants not already known. In snowball sampling, the researcher loses control of her target sample population and must eliminate any outliers in their research.

The other set of data was collected using convenience sampling. This type of sampling was drawn from a population that is readily available and was convenient to the researcher. Advantages of this techniques are that the population of millennials is easy to target at the university level. Disadvantages are that the sample is a non-probability sample because all students who did not attend the southwest university were excluded from the study sample. This population was very diverse and of multiple age ranges, thus determine appropriate for the study.

CHAPTER 4

FINDINGS AND RESULTS

Apparel sizing is an issue for consumers when shopping online. Consumers may not feel confident in making an apparel size decision when shopping on a retailer's website and may look for help in making their size decision. True Fit® is a sizing recommendation technology used by retailers to provide a personalized shopping experience (O'Shea, 2017). The technology can deliver highly accurate size recommendations for consumers while shopping online (O'Shea, 2017). The purpose of this study was to attempt to better understand consumers' confidence and search process satisfaction levels after the use of True Fit® technology to make an online apparel decision. The Technology Acceptance Model was used as a framework for the study. This model allowed a framework for six variables to be tested.

The data collected for the study consisted of 577 usable surveys compiled from an online survey taken in Qualtrics by online shoppers. The initial response included 791 total surveys. Surveys were removed because they were unfinished or did not fit the target population of millennials. The usable surveys accounted for 73% of the total surveys collected for this study. As stated previously, data was collected through both convenience sampling as well as snowball sampling techniques. The researcher, distributed the survey to family and friends via a personalized e-mail. The researcher also posted on the social media accounts of Instagram, Facebook, Nextdoor and Linkedin. The population included personal connections and various social media groups of which the researcher was a member. The second method was convenience sampling. Students from a four year U.S. university and community college, both located in Southwest United States, were sent the survey via an online link and asked to participate. Both groups of samples were eligible to win a selected number of Target gift cards

for their participation in the study. All participants were sent the same surveys and included task instructions for True Fit®. Participants of the study had to be between the ages of 18 to 34 years and an online shopper. A preliminary question was asked, "have you ever done online shopping", and 100% of the respondents used in the study had online shopped before. The subject population consisted of men and women, age 18 and above, who were online shoppers. The data was gathered over a 3-month period between the months of July 2017 and September 2017.

The first section describes the consumer demographics, which is then followed by a factor analysis of the six variables in the TAM model. Factor Analysis is employed to show where the variables have natural connections. Finally, a multiple regression is preformed to show the relationship between the independent and dependent variables.

Characteristics of Respondents

Consumer Demographics

Utilizing a descriptive statistics frequencies reports, the demographic characteristics of survey respondents were analyzed as displayed in Table 6. The participants were 82.5% females, 16.5% males and 1% transgender. The age range of the respondents consisted of 62.22% 18-21, 23.74% 22-25, 9.53% 26-30, and 4.51% 31.-34. The ethnicities were highly diverse with the highest percentages at, 49% White/Caucasian American, 19.6% Hispanic American, 15.3% African American, and 8.80% Asian American. The income of the respondents was made up of 27%, under $25, 000, and also 27% they did not know or care to respond. The remaining survey participants were between income levels of $25,001 and over $115,001.

The age group of the sample population were millennials, ages 18-34. The millennial population is appropriate for this study because they are the largest age group in the United States, made up of 80 million people which is more than baby boomer and generation X combined (Millennials vs Gen X, n.d.). Millennials are the largest population in US history, and are reaching prime working and spending years (McGee, 2017). This population is more affected by technology, economics, and globalization and as a result have inherited different behaviors and experiences than other generations (McGee, 2017). They use the convenience of online shopping and mobile devices to fulfil their needs and 67% of millennials preferring to shop online rather than in person (Wallace, 2017). This generation prefers the convenience of online shopping and use the internet to do research and make purchases. Personalized experiences also appeal to this generation. They are looking for services that tailor to their needs and make recommendations for them (McGee, 2017).

Table 4. Demographic Characteristics of the Respondents

Variables		Frequency (N=577)	Percent
Gender			
	Male	95	16.50%
	Female	476	82.50%
	Transgender	6	1.00%
Age			
	18-21	359	62.22%
	22-25	137	23.74%
	26-30	55	9.53%
	31-34	26	4.51%
Ethnicity			
	Asian American	51	8.80%
	African American	88	15.30%
	Bi/Multi Racial American	15	2.60%
	Hispanic American	113	19.60%

Variables		Frequency (N=577)	Percent
	Native American	3	0.52%
	White/Caucasian American	288	49.90%
	International Student Visitor	11	1.90%
	Other	8	1.40%
Household Income			
	under $25,000	159	27.60%
	$25,001-$35,000	40	6.90%
	$35,001-$45,000	26	4.50%
	$45,001-$55,000	21	3.60%
	$55,001-$65,000	25	4.30%
	$65,001-$75,000	18	3.10%
	$75,001-$85,000	17	2.90%
	$85,001-$95,000	16	2.80%
	$95,001-$105,000	18	3.10%
	$105,001-$115,000	28	4.90%
	Over $115,001	51	8.80%
	I don't know or I don't care to respond	158	27.40%

Other External Variables

Table 5 summarizes other descriptive statistics measured from the respondents. These were asked to gain a better understanding of the demographic being tested. All respondents were found to have shopped online before. Respondents were also asked about their previous retail experience; 61% has worked retail before and 39% had not. Finally, they were asked how often they shop online; 43.3% indicated they shop monthly, 28.9% shop every other month, 14% shop about once a week, 7.6% about 2-3 times a week and the lowest percent at 6.1% about daily.

Table 5. Descriptive Statistics of the Respondents

Variables		Frequency (N=577)	Percent
Do you have clothing retail experience?			
	Yes	352	61.00%
	No	225	39.00%
Have you ever done online shopping			
	Yes	577	100.00%
	No	0	0.00%
How Often do you shop online?			
	About Every Other Month	167	28.90%
	About Monthly	250	43.30%
	About Once a Week	81	14.00%
	About 2-3 Times a Week	44	7.60%
	About Daily	35	6.10%

Preliminary Data Analysis

Factor Analyses

Data reduction techniques were initially applied to the variables of perceived usefulness of True Fit®, perceived ease of use of True Fit®, Attitude toward using True Fit®, intent to use True Fit®, confidence in selecting clothing sizing online, and search process satisfaction in order to show how many dimensions there are in one underlying construct. After the initial exploratory factor analysis was performed on the 6 different variables, the variables were then separated by independent, moderating, and dependent variables to further extract the underlying components of each variable. This allowed for the factors that appeared divergent in the original factor analysis to be removed from these variable measurements to ensure each of the independent, moderating, and dependent variables addressed each variables core issues.

Independent Variables

A factor analysis was preformed to extract the independent variables of the study. The factor analysis of the scale revealed two items, perceived ease of use of True Fit® and perceived usefulness of True Fit® all whose eigen-values were greater than 1. These two factors explained 74.11% of the total variance of the independent variables. As shown in Table 6, factor 1, perceived usefulness of True Fit®, was made up of five items, 1) True Fit® provides good information about sizing, 2)True Fit® improves my performance in assessing clothing size online, 3) True Fit® is useful for choosing clothing size online, 4) True Fit® makes it easier for me to shop or find information about fit, and 5) I find True Fit® very useful in my shopping or search for size information. The standardized factor loading for this item was between .676 and .859. The scale was found to have a Cronbach's Alpha of .928, which showed very high reliability. Factor 2, perceived ease of use of True Fit®, was found to have 7 items. These items included 1) True Fit® provides sufficient size information, 2) True Fit® allows me to select sizes easily, 3) I find True Fit® easy to use, 4) Interaction with True Fit® is clear and understandable, 5) It would be easy for me to become skillful at using True Fit®, 6) I can quickly find the clothing size I need on True Fit®, and 7) I find True Fit® flexible to interact with. This standardized factor loadings were in the range of .664 to .830 with a Cronbach's Alpha of .931, showing that this scale is highly reliable.

Table 6. Factor Analysis of Independent Variables

Factor Items	Factor Loading	% of Variance	a
Factor 1: PU of True Fit®		40.07%	0.928
True Fit® provides good information about sizing	0.676		
True Fit® improves my performance in assessing clothing size online	0.834		
True Fit® is useful for choosing clothing size online	0.755		

43

Factor Items	Factor Loading	% of Variance	a
True Fit® makes it easier for me to shop or find information about fit	0.832		
I find True Fit® very useful in my shopping or search for size information	0.859		
Factor 2:PEOU of True Fit®		34.04%	0.931
True Fit® provides sufficient size information	0.664		
True Fit® allows me to select sizes easily	0.724		
I find True Fit® easy to use	0.804		
Interaction with True Fit® is clear and understandable	0.83		
It would be easy for me to become skillful at using True Fit®	0.778		
I can quickly find the clothing size I need on True Fit®	0.745		
I find True Fit® flexible to interact with.	0.769		

Moderating Variables

The moderating variables of Attitude toward using True Fit® and Intent to use True Fit® were also factor analyzed. After preforming the factor analysis two variables were extracted using a varimax rotation. These factors explain 80% of the variance of the entire scale. Factor 3, attitude toward using True Fit®, was found to have 5 items ranging from .727 to .827 with a Cronbach's Alpha of .931. These items included 1) I have a positive attitude toward True Fit®, 2) Using True Fit® is convenient, 3) Using True Fit® for shopping is a good idea, 4) I would like to use True Fit® for online shopping, and 5) True Fit® is appealing. This accounted for 40.18% of the total variance.

Factor 4, intent to use True Fit®, was found to have 5 items extracted accounting for 39.82% of the overall variance with a Cronbach's alpha of .939. These items ranged from .753 to .887. The items included were 1) I intend to use True Fit® whenever suitable to do my shopping,

2) I intend to use True Fit® frequently to do my shopping, 3) I will enjoy using True Fit®, 4) I

will recommend others to use True Fit® and 5) I plan to buy clothing using True Fit®.

Table 7. Factor Analysis of Moderating Variables

Factor Items	Factor Loading	% of Variance	a
Factor 3: Attitude toward using True Fit®		40.18%	0.931
I have a positive attitude toward True Fit®	0.821		
Using True Fit® is convenient	0.827		
Using True Fit® for shopping is a good idea	0.838		
I would like to use True Fit® for online shopping	0.727		
True Fit® is appealing	0.811		
Factor 4: Intent to use True Fit®		39.82%	0.939
I intend to use True Fit® whenever suiTable to do my shopping	0.809		
I intend to use True Fit® frequently to do my shopping	0.887		
I will enjoy using True Fit®	0.764		
I will recommend others to use True Fit®	0.753		
I plan to buy clothing using True Fit®	0.856		

Dependent Variables

A factor analysis was preformed to extract the two dependent variables of confidence in

selecting clothing sizing online and search process satisfaction. Using a varimax rotation, the

factor analysis found that only one factor loaded for the two variables. A second analysis was

done using a fixed number of factors set at two for this analysis, to try and extract the variables.

This found a factor loading with high cross loading and low eigen values of less than .6. In a

study done by Matsunaga (2010) he found that items should be retained if loading is greater than

.5-.6. This study did not meet the recommended criteria by Matsunaga. Thus, revealing that the

variables of confidence in selecting clothing sizing online and search process satisfaction form

only one factor for the study. This relationship is supported by a study by Goodboy and Myers

(2007) who found that there is a positive relationship between the constructs of confidence and satisfaction. Trickett and Moos (1972) combined two satisfaction items relating to confidence due to their content similarity and high inter correlations. Additionally, Marsh and Yeung (1999) would argue that the term satisfaction is subject to chameleon effects. Meaning that the term satisfaction takes on the context of the items in which they appear. For example, an item, "I feel good about myself" may have multiple interpretations based on the context of the survey. If the survey respondents are being asked about their academic status then the respondents are more likely to respond to this item in terms of how they feel about themselves academically (Marsh & Yeung, 1999). This analysis supports the context on our study where respondents were asked about their satisfaction in the context of using True Fit® to make a size decision. Based on Marsh and Yeung's (1999) study one can conclude that the respondents would answer satisfaction questions based on the context of the study, thus answering the questions based on their intent to use True Fit® as well as their confidence in using True Fit®.

Based on this supporting literature, the new dependent variable formed for this study is Factor 5, Confidence and Satisfaction after using True Fit® to make an apparel decision online and includes 10 items ranging from factor loading values of .726 to .9. The factor items include, 1) I will look for other websites that use True Fit in future, 2) I found the process of deciding which size to buy, using True Fit®, interesting, 3) I was satisfied with my experience of deciding which clothes size to choose using True Fit®, 4) Using True Fit® will help me make the right size decision, 5) I am satisfied with my True Fit® experience, 6) I felt confident when identifying one size that best matches my preferences after using True Fit®, 7) I was convinced that I was able to find a size that best fulfills my needs using True Fit®, 8) I am confident in my

size choice after using True Fit®, 9) I believe that I have made the right size choice after using

True Fit®, and 10)I am certain about my size choice after using True Fit®.

Table 8. Factor Analysis of Dependent Variables

Factor Items	Factor Loading	% of Variance	a
Factor 5: Confidence and Satisfaction after the use of True Fit®		72.63%	0.956
I will look for other websites that use True Fit in future	0.726		
I found the process of deciding which size to buy, using True Fit®, interesting	0.73		
I was satisfied with my experience of deciding which clothes size to choose using True Fit®	0.873		
Using True Fit® will help me make the right size decision	0.868		
I am satisfied with my True Fit® experience	0.865		
I felt confident when identifying one size that best matches my preferences after using True Fit®	0.898		
I was convinced that I was able to find a size that best fulfills my needs using True Fit®	0.876		
I am confident in my size choice after using True Fit®	0.91		
I believe that I have made the right size choice after using True Fit®	0.903		
I am certain about my size choice after using True Fit®	0.85		

The factor analysis found that the variables of confidence in selecting clothing sizing

online and search process satisfaction were testing the same underlying constructs and must

therefore be analyzed together. A new hypothesis is thus proposed to measure the created

variable of confidence and satisfaction with using True Fit® to make an apparel decision online.

This will be represented by H4. Figure 7 shows the updated model with the new hypothesis for

the study. The hypotheses for the study now include:

H1: PEOU positively impacts customer's attitude toward True Fit® technology

H2: PU positively impacts customer's attitude toward True Fit® technology

H3: Attitude positively impacts customer's intent to use True Fit®

H4: Intent to use True Fit® will have a positive impact on confidence and satisfaction after the use of True Fit®.
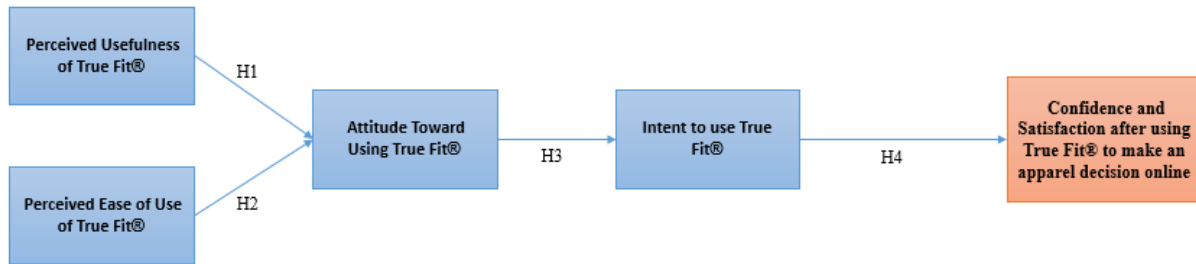

Figure 7. Modified Technology Acceptance Model

Regression Analysis

To test the strength of this study's hypotheses, linear regression analysis was performed on the initial hypotheses of H1, H2, and H3 using variables developed from the scores in the factor analysis. This was done to determine the relationship between the independent variables and dependent variables in the study.
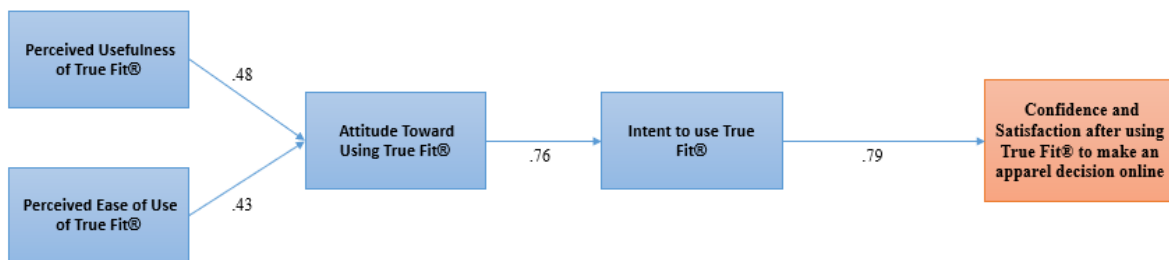

Figure 8. Research Model with Regression Analysis

The independent variables of perceived ease of use of True Fit® and perceived usefulness of True Fit® were used to predict attitude toward using True Fit® (the moderating variable). The regression analysis showed that yes, there is a relationship between the two variables with an adjusted R^2 value of .726 and $p < .000$. Showing the relationship between the independent and

moderating variable is positive. The independent variables of PEOU and PU in the equation are able to predict 72.6% of the variance in the variable of attitude. The most powerful predictor of attitude toward using True Fit® is perceived ease of use of True Fit® with beta value of .477. The other predictor of perceived usefulness of True Fit® had a beta value of .429. Showing that both H1, PEOU positively impacts customers attitude toward True Fit® technology, and H2, PU positively impacts customer's attitude toward True Fit® technology are supported for this study.

The significance of this equation was also tested between the moderating relationships of attitude toward using True Fit® and Intent to use True Fit®. Table 11 shows how attitude explains 56.9 % variance in customer's attitude toward actual intent to use the sizing technology. Showing that there is a positive relationship between attitude and intent to use with a significance value of p<.000. Therefore, hypotheses H3 is supported for the study.

The moderating variable of intent to use True Fit® was then tested with the new variable of confidence and satisfaction. Table 6 shows the significance of this equation is p< .000 with a variance of 62.3% in predicting customer's intent to use and confidence and satisfaction after using True Fit®. Thus, the new hypothesis, H4 is supported in the study.

Table 9. Results of Regression Analysis

	Adjusted R-Square	Beta	Sig.	Hypo
Regression Results Explaining Attitude toward using True Fit®				
H1) PEOU-Attitude	.726	0.429	0.000	*supported*
H2) PU-Attitude		0.477	0.000	*supported*
Regression Results Explaining Intent to use True Fit®				
H3) Attitude-Intent to use	.569	0.756	0.000	*supported*
Regression Results Explaining Confidence and Satisfactionafter the use of True Fit®				
H4) Intent to use-Confidence/Satisfaction	0.623	0.79	0.000	*supported*

Significance of Equation: p<.01

CHAPTER 5

SUMMARY AND DISCUSSION

The purpose of this study was to investigate the influence that online apparel sizing technology, specifically True Fit®, had on consumer confidence in their sizing selection online and on their satisfaction in their search process for the correct size. This study was conducted because apparel sizing standards were originally established in the 1940s to create a standard size scale for manufactures but these established sizes did not accurately represent all customers. Most brands today establish their own size systems based on their ideal customer which is derived from one fit model and then transformed into multiple sizes (Ashdown & Loker, 2017). With the lack of standardization, consumers have a hard time selecting the correct clothing sizes. True Fit®, specifically, helps a consumer select an apparel size online by analyzing past apparel size purchases from specific brands that they had previously purchased. This is achieved by using a large set of connected fit and style data which is compiled from thousands of apparel brands consisting of product specs and style attributes (Confidence Engine, n.d.). This current study uses the Technology Acceptance Model to look at specific variables of PEOU, PU, attitude, intent to use, confidence and satisfaction, of a consumer after using True Fit® to make an apparel size decision online. The study confirms the robustness of the TAM, which is used in the context of apparel sizing technology.

The results of the data analyses suggest that the dependent variable of confidence and satisfaction with the sizing technology was positively affected by the intent to use True Fit®. Thus, it can be inferred that consumers felt positively about adopting apparel size technology and that technology such as this would have wide application in the future. The results of this study are consistent with the findings of the previous studies which had used the TAM model to

evaluate consumer perceptions and intent to use technology (Cho & Fiorito, 2009; Ha & Stoel, 2009; Lee, Fiore, & Kim, 2006; Moon & Kim, 2001).

The original factor analysis suggested the dependent variables of confidence and satisfaction should be combined to form one variable. To further develop the research, an additional regression analysis was performed on the dependent variables of satisfaction and confidence by extracting individual statements that were believed to measure the dependent variables. Figure 9, shows the modified TAM for these variables. The additional hypotheses of H4a and H4b were created to represent these statements.

H4a Intent to use True Fit® will have a positive impact on confidence in selecting clothing size online.

H4b Intent to use True Fit® will have a positive impact on search process satisfaction.
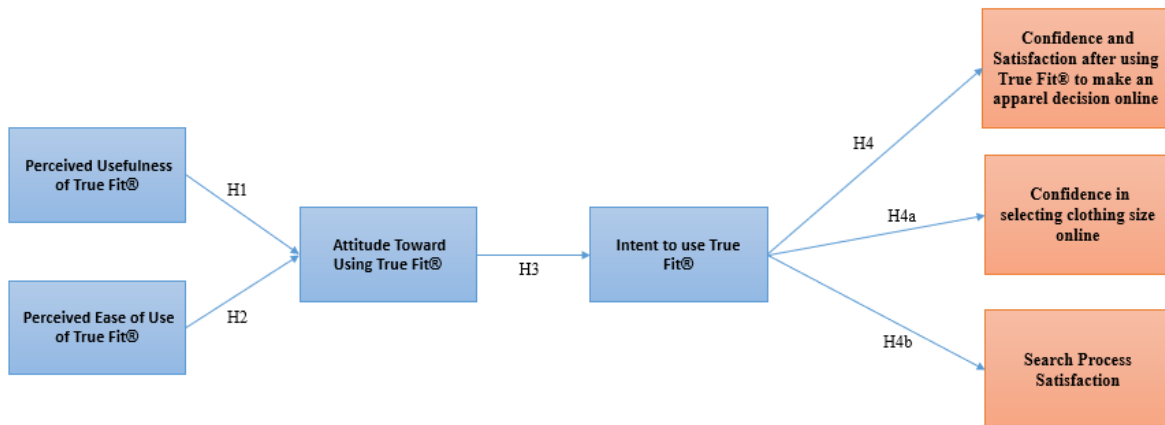

Figure 9. Modified Technology Acceptance Model

The statements pulled for the outcome variables, asked customers directly if they were confident or satisfied with their intent to use True Fit® in their sizing selection, which makes them appropriate to use for the dependent variables in the regression analysis. The statement, I am confidence in my size choice after using True Fit®, showed that yes, there is a positive relationship between confidence and intent to use True Fit® (r^2=0.457, p< .000). The statement, I

was satisfied with my experience of deciding which clothes size to choose using True Fit®, also showed that there was a positive relationship between the variables of satisfaction and intent to use True Fit® (r^2=0.469, p< .000). The results of the regression can be found in Table 10. Based on the additional regression analysis, hypotheses H4a and H4b are also supported in the study. In this additional analysis, all statements which did not directly address confidence or satisfaction were removed. This additional regression analysis showed that confidence and satisfaction can separately be strong predictors of intent to use True Fit® to make a size decision.

Table 10. Results of Additional Regression Analysis

Regression Results Explaining Confidence and Satisfaction after the use of True Fit®	Adjusted R-Square	Beta	Significance	Hypothesis
H4a) Intent to use-Confidence	0.457	0.677	0.000	*supported*
H4b) Intent to use-Satisfaction	0.469	0.686	0.000	*supported*

Interpretation of Results

Perceived Ease of Use and Perceived Usefulness of True Fit®

The independent variables of PEOU and PU of True Fit® were measured in the study. PEOU can be defined as an indicator of the cognitive effort needed to learn and use new technology and PU is a person's subjective assessment of the new technology and how it is related back to a specific task (Gefen et al., 2003). Both, PEOU and PU, suggested significant positive effects on one's attitude. In terms of the significant standardized beta values, PU equaled .477 and PEOU equaled .429. Thus, based on the results it can be concluded that while both are significant, PU is a stronger direct predictor of attitude than PEOU. The results can be attributed

to the primary age group of the respondents surveyed for this paper. The participants in the study were all millennials within the age group of 18-34. This age group has grown up using technology to make decisions and tends to feel comfortable using new technology. With the increasing availability of technology, any new technological advance has to be useful to the end consumer. Consumers will decide if the new technology fits their needs. PU is an important predictor of intended technology intent to use and therefore one can infer that consumers will use True Fit® when selecting a size online in the future.

To further support the current study, many of the participants also responded to an open-ended question in the survey. The respondents noted that True Fit® was easy to setup and use and that the system was intuitive. The majority of the respondents, 76.1%, also noted that the time taken to setup True Fit® was reasonable. These responses further support the second hypotheses, indicating that the vast majority of the survey participants were influenced by the perceived ease of use of the technology and had positive attitudes toward using the technology to make a clothing size decision.

Attitude toward True Fit® and Intent to Use True Fit®

The moderating variables of Attitude towards True Fit® and Intent to use True Fit® were measured by the hypothesis H3. Attitude is an individual's predisposition to respond in a favorable or unfavorable way towards something (Ajzen & Fishben, 1980). The TAM states that one's attitude toward intent to use a system will determine actual intent to use the technology (Davis, 1989). The model proposed and validated in the study hypothesized that the construct of attitude would mediate the construct of intent to use. The path coefficient between the two constructs was significant, suggesting a strong relationship ($\beta = .756$). The result suggests that if

a consumer's attitude is favorable toward True Fit®, then this will influence their eventual intent to use. Consumers will look at technology in terms of how well it improves their performance, is effortless, and whether it is an enjoyable experience (Davis et al., 1992). If their experience is not enjoyable then they will be unlikely to use it again in the future. Thus, the sizing technology should result in positive attitudes for the customer and if the consumer is happy then they will use the sizing technology and most likely recommend it to others as well.

Confidence and Satisfaction after the Use of True Fit®

The dependent variables of confidence and satisfaction were combined to create one variable based on an exploratory factor analysis. These results indicate that consumers believe that confidence and satisfaction are measuring the same underlying construct. Based on the information presented previously, individuals tend to base their satisfaction decisions on the context of the study (Marsh & Yeung, 1999). Participants in this study were asked about their satisfaction levels in the context of True Fit® intent to use. It can be inferred that participants felt both confident and satisfied in using True Fit® which resulted in one construct. This new construct, confidence and satisfaction after using True Fit® to make an apparel purchase decision online, can thus be defined as the degree of confidence consumers feel about the overall intent to use True Fit® when shopping for apparel online. This construct is supported by a strong positive relationship between intent to use and the construct of confidence and satisfaction(β =.79). This relationship is an indicator that after consumers used True Fit® to make a sizing decision, they were confident in the sizing technology and satisfied in the size they chose. Thus, it can be inferred that confidence and satisfaction play significant roles in an individual's willingness to adopt technology. If consumers feel confidence and satisfaction in the size they

selected on a retailers e-commerce site then they are more likely to purchase the product. This could result in increased sales and less cart abandonment for retailers.

Implications and Recommendations

Sizing for consumers has been an issue due to the vast degree of fits, rises, varying lengths and different styles available in apparel (Schwaab, 2017). Designers do not follow one standard size standard, which creates an extreme issue for consumers when shopping online. Consumers argue that fit is the #1 reason for returning items (Nieder, 2016). Consumers feel more comfortable buying brands that they have purchased in the past because they feel confident in the fit of the garment. Additionally, 58% of consumers would purchase more if they could count on the clothing to be the correct size (Nieder, 2016). Thus, given the dynamic nature of the retail industry as well as importance of online sizing, the current study is a step towards providing an insight of the use and acceptance of sizing technology. With online sizing being a hindrance to shopping online, especially when consumers are having a hard time buying the right size and do not feel confidence in buying a brand that they have not previously purchased. The results of this study suggest, that after using technology to aid in size selection consumers felt more confidence and satisfaction in their sizing decision. True Fit® matches previously purchased brands to current purchases, so that the customer can feel both confidence and satisfaction in their size decision.

The research supports all hypotheses. The results of the study suggest that there is a strong possibility that consumer could be open to using online sizing technology while shopping for clothing online. Millennials feel comfortable using technology, with 74% believing new technology makes life easier (Rutherford, 2014). This generation is shifting the way consumers

shop by making 54% of all their purchases online (Blumenthal, 2016). Participants of the study

also suggested that this may change the way people shop in the future. The internet is no longer

considered a niche technology and the amount of retail sales continue to grow, with a steady

growth in retail sales from $231 billion in 2012 to a predicted $370 billion in 2017 (Abramovich,

2014). The millennial consumer is leading this increased intent to use, and as more and as more

consumer choose to shop online, they will look for support in online shopping. Respondents of

the study indicated they shop often with 43.3% shopping online monthly, 28.9% shopping every

over month and 14% shopping about once a week. With this in mind, the results of this study

suggest the need for retailers to have sizing technology on their e-commerce site. Consumers felt

more confident and satisfied after using the technology to make a size decision which, therefore

can lead to increased sales for the retailer and less returns. In support of these findings, additional

open-ended questions were asked of the survey participants, where sizing was found to be a

major issue for consumers when shopping online. A response from one participant said

"Sometimes finding pants can be difficult, size charts can differ from brand to brand. For

instance, in the Free People brand I'm a size 29 and it fits perfectly but then I'll try a size 29 in

Levi and can't even put it over my thighs." This supports the need for retailers, to look at online

sizing in a more holistic manner in the future.

Retailer Implications

From a managerial standpoint, True Fit® can be used by both customers and retailers in

the future to better fit the sizing needs of their customers. Based on the summarized responses

with issues related to fit, it is clear that respondents have a hard time selecting the right size of

clothing when shopping online. It is important to understand consumer's attitude toward using

technology to help find the right clothing size when shopping online. The results of the study demonstrated strong support for consumers' confidence and satisfaction n using True Fit® to make a size decision. When shopping online many consumers only shop based on their brand loyalty. This is because they know what sizes to buy and understand the fit of these brands. This may be because consumers are averse to trying new brands in which they do not feel confident in the fit. True Fit® can help reduce the barrier to entry for retailers in which the customer does not have previous brand loyalty. When customers see True Fit® on a retailer's website, they may be less averse to trying a new brand due to the confidence they have in True Fit® matching them with the correct size. This is because if someone has used a specific technology before, they are most likely to use it again if they have confidence and satisfaction in the new technology. In addition, this may lead to reduced return rates for the retailers. Currently, 40% of all apparel purchased online is returned; True Fit® works to reduce these return rates by up to 35% (True Fit®, n.d.). This is a significant number that can help managers grow profit. Further recommend for retailer purposes, is to analyze their current size scale system. If their size scale does not fit the needs of most customers, then implementing sizing technology into their online e-commerce platform can help their customers feel more confidence and satisfaction in the sizing decision they are making while shopping on their website.

Academic Implications

From an academic standpoint, this study utilized an extension of the TAM model to analyze consumer adoption of sizing technology. An extension of Davis' (1989) original TAM has been seen in various formats of research. This study expands the TAM using the variable of confidence and satisfaction. This variable is added to the model to show the degree of confidence

and satisfaction that consumers feel when using technology to make a clothing purchase. A strong, positive relationship was found between intent to use and confidence and satisfaction. This is an important measure because if an individual adopts a new technology, then they are suggesting that they are willing to use it in the future.

This study was also able to predict attitude using the independent variables of PEOU and PU. Attitude is displayed in an individual's given behavior (Dobb, 1947), thus suggesting that consumer's attitude will be positive or negative based on their experience using True Fit®. Furthermore, due to the continued advancement of technologies and increasing online shopping, researchers need to examine other variables that may impact an individual's attitude. The additional independent variables of enjoyment and entertainment value are recommended. Previous studies have used these independent variables to predict attitude and intent to use (Lewis & Loker, 2014; Ha & Stoel, 2009; Kim & Forsythe, 2008; & Forsythe, 2009; Yu & Damhorst, 2015). These variables could act as additional predictors of attitude in the TAM.

This research model and methodology can be recommended to examine additional sizing technologies used by apparel manufacturers. This study looked specifically at True Fit® technology but, analyzing additional technologies, as referenced in Table 1, can provide a greater understanding into how technology aids a consumer's shopping experience.

Limitations and Further Research

Limitations in generalizing the results of this study include, first, the population sampled. Two methods were used to collect data. The first was convenience sampling, taken from a specified group at a Southwest U.S. university. The second was snowball sampling, which was collected via social media and consisted of friends and family of the researcher. This method of

sampling is not generalizable to the entire US population due to the restricting age range of 18-34 years old. Although the research is restrictive to this population, it does give insight into what the millennial population, who is highly influenced by technology, thinks about using technology to aid them in their apparel shopping decisions online. It is recommended to expand the study into additional age groups to better understand the entire US population.

The second limitation is the methodology used in the study. The research was conducted using a quantitative online study. The participants were given a question set, where specific variables were tested. Mixed methods could be used for future research. This could include a focus group in addition to a questionnaire. With the focus group, additional variables could be identified based on what the customers are looking for when using technology and shopping online. As a result, the research model may change based on findings from the focus group.

The third limitation is the scales used in the study, which were adaptations from previous studies done on technology. These scales were adapted to meet the needs of this study. One cannot be 100% sure that the scales used measured exactly what was being asked. Future studies, could create original scales to measure the different variables of the study. By creating additional variables, the researchers could ensure the correct variables were being tested.

APPENDIX

SURVEY INSTRUMENT

Hello Everyone:

As a part of my thesis work at the College of Merchandising, Hospitality and Tourism at the University of North Texas, I am conducting a survey to investigate consumer intent to use online apparel sizing technology. The study is supervised by Dr. Sanjukta Pookulangara, Associate Professor in the college. This study aims to gain a better understanding of consumers' confidence and satisfaction in using sizing technology when shopping online. Your participation in this study may provide insight in understanding the use of sizing technology to make sizing decisions when shopping online. Your participation is voluntary and confidential. The survey will consist of approximately 70 questions about your online shopping behavior before and after the use of online clothes sizing technology.

You need to be 18 years or older to participate in this study. Please understand that your participation is voluntary and all the responses will be kept confidential and no foreseeable risks are associated with participation in this study. If you are a student, your decision to participate or to withdraw from the study will have no effect on your standing in this course or your course grade. Your refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue your participation at any time without penalty or loss of benefits. Also, you do not have to answer any questions that may be asked. By participating in the survey, you have granted your consent. This survey will take approximately 18-20 minutes of your time. It is suggested that you complete the survey at home with access to your closet

If you agree to provide your name and email address at the end of the survey, you will be prompted to enter a drawing for a chance to receive one of ten $10 Target gift cards." The winner will be selected randomly by using the Statistical Package for the Social Science (SPSS) software. There is no foreseeable risk in entering to win.

I would like to thank you for taking the time to fill out the survey. If you have any questions concerning this project, please do not hesitate to contact my faculty advisor at (940) 565-2436. You can also click here to get a copy of the consent form. This research project has been reviewed and approved by the UNT Institutional Review Board (940-565-4643). You may contact the UNT IRB with any questions regarding your rights as a research subject for this study. In addition, you may print this page for your record.

Sincerely

Dr. Sanjukta Pookulangara   Jacqueline Parr
Associate Professor   Graduate Student
CMHT   CMHT
University of North Texas   University of North Texas

The Impact of True Fit® Technology on Consumer Confidence and Satisfaction in their Online Clothing

Q1. Have you ever done online shopping?

○   Yes (1)
○   No (2)

Q2. How often do you shop online?

○   About Every Other Month (1)
○   About Monthly (2)
○   About Once a Week (3)
○   About 2-3 Times a Week (4)
○   About Daily (5)

Q3 Do you ever have any issues with your clothing fit? Please explain.

Q4 What brands consistently fit you? Type Answer below.

Q5 Please answer the questions below with reference to your experience in online shopping for clothing.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I like to shop online. (1)	○	○	○	○	○
I will buy online in the future. (2)	○	○	○	○	○
I often consider buying online. (3)	○	○	○	○	○

Q6 Please select an apparel sizing system you have used in the past.

- ○   1. Fit Your®
- ○   2. FitsMe®
- ○   3. Virtusize®
- ○   4. True Fit®
- ○   5. MatchMyFoot®
- ○   6. Metail's MeModel®
- ○   7. Shoefitr®
- ○   I have never used an apparel sizing system

Condition: 4. True Fit® Is Not Selected. Skip To: True Fit Exercise

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Q7   **You will now be asked to complete an exercise of using sizing technology, called True Fit®, before answering additional questions. Please read the instructions below before proceeding. The purpose is to have you use an online tool to find the correct clothing size from an online retailer. Macy's have been selected as the retailer for this exercise. DO NOT CLOSE THE QUESTIONNAIRE. Clicking on your selection will take you to macys.com, once you have played around with True Fit® please come back to questionnaire.**

Instructions:

Step 1. Please select 1 of the 6 jeans styles below from macys.com that you would be most likely to purchase online?

Step 2. Once you have selected your top style please use True Fit® to select your size. True Fit® is located under the sizes and reads "Complete Profile." Or "Find Your True Fit.". Select Complete Profile to begin True Fit® process. You will be able to save your profile for the future as well.

○   (1)

○   (2)

○   (3)

○   (4)

O   (5)

O   (6)

Step 3. Once you have received your size and fit suggestion you are done with the exercise!
Please proceed back to original questionnaire to complete study.

Q8 Please answer the questions below based on your time with using True Fit®					
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
It took too much time to select all the necessary choices I wanted with True Fit®. (1)	O	O	O	O	O

Q9 Please answer the questions below based on your ease of use with True Fit®.					
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
I think I will find using True Fit® useful. (1)	O	O	O	O	O
True Fit® will provides good information about sizing. (2)	O	O	O	O	O
True Fit® will improve my performance in assessing clothing size	O	O	O	O	O

online. (3)	○	○	○	○	○
True Fit® will be useful for choosing clothing size online. (4)	○	○	○	○	○
Using True Fit® would make it easier for me to shop or find information about fit. (5)	○	○	○	○	○
I will find True Fit® very useful in my shopping or my search for size information. (6)	○	○	○	○	○

Q10 Please answer the questions below based on the usefulness of True Fit®.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
True Fit® will provide sufficient size information. (1)	○	○	○	○	○
True will allow me to select sizes easily. (2)	○	○	○	○	○
I found True Fit® easy to use. (3)	○	○	○	○	○
Interaction with True Fit® is clear and understandable. (4)	○	○	○	○	○
It will be easy for me to become skillful at using True Fit®. (5)	○	○	○	○	○
I can quickly find the clothing size I need on True Fit®. (6)	○	○	○	○	○
I find True Fit® flexible to interact with. (7)	○	○	○	○	○

Q11 Please answer the questions below based on your attitude of True Fit®.

	Strongly	Disagree	Neutral (3)	Agree (4)	Strongly

	Disagree (1)	(2)			Disagree (5)
I will have a positive attitude toward True Fit®. (1)	❍	❍	❍	❍	❍
Using True Fit® will be convenient. (2)	❍	❍	❍	❍	❍
Using True Fit® for shopping will be a good idea. (3)	❍	❍	❍	❍	❍
I think I will like to use True Fit® for online shopping. (4)	❍	❍	❍	❍	❍
True Fit® is appealing. (5)	❍	❍	❍	❍	❍

Q12 Please answer the questions below based on your intent to use True Fit®.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
I think I will use True Fit® whenever suiTable to do my shopping. (1)	❍	❍	❍	❍	❍
I think I will use True Fit® frequently to do my shopping. (2)	❍	❍	❍	❍	❍
I think I will enjoy using True Fit®. (3)	❍	❍	❍	❍	❍
I think I will recommend others to use True Fit®. (4)	❍	❍	❍	❍	❍
I plan to buy clothing using True Fit®. (5)	❍	❍	❍	❍	❍
I think I will look for other websites that use True Fit® in future. (6)	❍	❍	❍	❍	❍

Q13 Please answer the questions below based on your satisfaction with True Fit®.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
I found the process of deciding which size to buy, using True Fit®, interesting. (1)	○	○	○	○	○
I was satisfied with my experience of deciding which clothes size to choose using True Fit®. (2)	○	○	○	○	○
After the True Fit® exercise, I think I would make the right size decision. (3)	○	○	○	○	○
I am satisfied with my True Fit® experience. (4)	○	○	○	○	○

Q14 Please answer the questions below based on your confidence with using True Fit®.					
	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Disagree (5)
I felt confident when identifying one size that best matches my preferences after using True Fit®. (1)	○	○	○	○	○
I think I was convinced to find a size that best fulfills my needs with True Fit®. (2)	○	○	○	○	○
I think I am confident in my size choice	○	○	○	○	○

after using True Fit®. (3)	○	○	○	○	○
I think that I have made the right size choice after using True Fit®. (4)	○	○	○	○	○
I think I am certain about my size choice after using True Fit®. (5)	○	○	○	○	○

Q15 I am:
- ○ Male (1)
- ○ Female (2)
- ○ Transgender (3)

Q16 I am _____ years old.

Q17 To what ethnicity do you most identify with?
- ○ Asian American (1)
- ○ African American (2)
- ○ Bi/Multi Racial American (3)
- ○ Hispanic American (4)
- ○ Native American (5)
- ○ White/Caucasian American (6)
- ○ International Student Visitor (7)
- ○ Other (8) _____

Q18 Indicate total household income:
- ○ under $25,000 (1)
- ○ $25,001 - $35,000 (2)
- ○ $35,001 - $45,000 (3)
- ○ $45,001 - $55,000 (4)
- ○ $55,001 - $65,000 (5)
- ○ $65,001 - $75,000 (6)
- ○ $75,001 - $85,000 (7)
- ○ $85,001-$95,000 (8)
- ○ $95,001-$105,000 (9)
- ○ $105,001-$115,000 (10)
- ○ Over $115,001 (11)
- ○ I don't know or I don't care to respond (12)

Q19 Do you have clothing retail experience?
- ○ Yes (1)

    ❍   No (2)

Q20 Was the time taken to setup your True Fit® profile reasonable?
    ❍   Yes (1)
    ❍   No (2)

Q21 Do you have any additional comments about True Fit®?

Q22 If you would like to be entered into a drawing for 1 of 10, $10 Target gift cards? Please click link below to direct you to new survey. Please leave your e-mail address. This will only be used for award purposes. Thanks!
    ❍   https://unt.az1.qualtrics.com/jfe/form/SV_e2NMIOP9EaJYF7f (1)

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