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This study investigates the potential for adoption of self-service technologies (SSTs) in the apparel retail environment. The importance of motivation factors (e.g., intrinsic vs. extrinsic) for adopting SSTs in the apparel retail environment is explored as is the moderating effect of familiarity in potential SST adoption.

Data were collected via a self-administered questionnaire completed by undergraduate students at a large southeastern university. A total of 494 usable questionnaires were collected. Respondents were predominantly female (82.6%), and ages ranged from 18 to 57 years, with an average age of 22 years. The majority of participants were Caucasian/White and majoring in a business-related field. Measures were based on the existing literature and assessed using a 7-point Likert-type scale and a 7-point semantic differential scale. Because many apparel retail settings do not currently offer self-service technology, participants were provided a definition of SST and an apparel shopping scenario involving the use of SST prior to completing the survey.

Structural equation modeling technique was employed via a LISREL 8.8 to test the hypotheses. Results obtained for the main effect of the conceptual model revealed a χ^2 of 1283.14 ($df = 339$; $p < .001$), GFI of .84, AGFI of .81, CFI of .98, RMSEA of .075, NFI of .97, NNFI of .97, and $\chi^2 / df = 3.79$. A χ^2 of 115.97 ($df = 9$; $p < .001$), GFI of .96, AGFI of .70, CFI of .99, RMSEA of .157, NFI of .99, NNFI of .91, and $\chi^2 / df = 12.89$ was revealed for the moderating effect.

Results indicated that individuals who perceive SSTs to be personally enjoyable are likely to display a favorable attitude toward using SSTs in the apparel retail environment. In contrast, individuals with a general fear of using technology are less likely to exhibit a favorable attitude toward using SSTs. Regarding the extrinsic motivation factors, perceived usefulness was an important element affecting attitudes toward using SSTs. Results further suggested that individuals who believe that using SSTs would be personally enjoyable and would make the shopping task more efficient are likely to use SSTs when shopping for apparel products. Findings also indicate a significant moderating effect of familiarity with using SSTs on the relationship between technology anxiety and attitudes toward using SSTs. In other words, the influence of technology anxiety on attitudes toward using SSTs tend to be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.

This study contributes to the growing knowledge base about consumers' shopping behaviors in relation to SSTs, and fills a gap in the literature about the potential for SST use in the apparel retail shopping environment. Findings can aid apparel retailers looking to enhance their service offerings by providing an additional means for customers to purchase merchandise in the store. Future research is needed that applies the model to different populations, different types of SSTs, and relative to different types of apparel retailers.

SELF-SERVICE TECHNOLOGY: AN INVESTIGATION OF THE POTENTIAL
FOR ADOPTION IN APPAREL RETAIL SETTINGS

by

Sooeun Cho

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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of
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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	vi
LIST OF FIGURES	vii
CHAPTER	
I. INTRODUCTION.....	1
Statement of the Research Problem	1
Background.....	3
Service Classification.....	4
Types of Self-Service Technologies	6
General Consumption Using Technology.....	10
Gaps in the Research.....	15
Research Purpose and Objectives	18
Significance of the Study	19
Definition of Key Terms.....	21
Organization of the Dissertation	24
II. LITERATURE REVIEW.....	25
Theoretical Foundations.....	25
Attitude-Behavior Relationships.....	25
The Theory of Reasoned Action	27
Theory of Planned Behavior	34
Technology Acceptance Model	35
Self-Service Technology.....	46
SST and Consumer Behavior.....	47
SST and Business to Business	50
Conceptual Model.....	55
Hypothesis Development	58
Summary	70
III. RESEARCH METHODOLOGY	71
Research Purpose and Objectives	71
Instrument Development.....	72
Measures	73
Stimuli and Pretesting the Instrument.....	81

Sample and Procedure.....	83
Statistical Analysis.....	84
Summary.....	85
IV. DATA ANALYSIS	86
Description of Sample and Responses.....	86
Measurement Model Analysis	88
KMO Test and Bartlett's Test of Sphericity.....	89
Psychometric Properties.....	98
Structural Model Analysis and Hypotheses Testing.....	102
Test of Main Effects (Core Model).....	102
Test of Moderating Effects of Familiarity with using SSTs	107
Suggestions from Modification Indices	111
Summary.....	113
V. CONCLUSIONS.....	114
Discussion.....	114
Conclusions and Recommendations	127
Implications.....	131
Limitations and Suggestions for Further Research.....	133
REFERENCES	135
APPENDIX A. SURVEY QUESTIONNAIRE	153
APPENDIX B. APPROVAL OF INSTITUTIONAL REVIEW BOARD (IRB) FOR THE USE OF HUMAN PARTICIPANTS IN RESEARCH	160

LIST OF TABLES

	Page
Table 1. Categories and Examples of SSTs in Use	7
Table 2. Definition of Key Terms	21
Table 3. Studies Reviewed Related to TRA.....	33
Table 4. TAM Studies Identified in a Review of Extant Literature	44
Table 5. Self-Service Technology (SST) Studies Identified in a Review of Extant Literature.....	53
Table 6. Sources of Scales.....	78
Table 7. Descriptive Statistics, Reliability, and Correlation Summary for Constructs (Pretesting, N=58)	82
Table 8. Demographic Information	87
Table 9. KMO Test and Bartlett's Test of Sphericity	89
Table 10. Structural Equation Modeling Goodness of Fit Summary (N=494)	92
Table 11. Completely Standardized Factor Loading.....	95
Table 12. Measurement Validity and Reliability	97
Table 13. Descriptive Statistics, Reliability, and Correlation Summary for Constructs (N=494)	101
Table 14. Results of Structural Equation Modeling (SEM), Main Effects	103
Table 15. Results of Structural Equation Modeling (SEM), Main Effects	106
Table 16. Results of Structural Equation Modeling (SEM), Moderating Effects	109
Table 17. Results of Structural Equation Modeling (SEM), Moderating Effects	111

LIST OF FIGURES

	Page
Figure 1. Estimated Amount Spent Using SSTs in the U.S.	11
Figure 2. Increased Percentage of Amount Spent Using SSTs in the U.S.	12
Figure 3. Global Usage of Self-Checkout Solutions (left) and Retail-Based Kiosks (right) in 2007.....	13
Figure 4. Usage of Self-Checkout Solutions vs. Retail-Based Kiosks in 2007.....	14
Figure 5. The Theory of Reasoned Action Model.....	29
Figure 6. The Theory of Planned Behavior	35
Figure 7. Technology Acceptance Model (TAM).....	37
Figure 8. Conceptual Model.....	57
Figure 9. Intrinsic Motivation Factors, Extrinsic Motivation Factors, and Attitude toward Using SSTs	63
Figure 10. Attitude toward Using SSTs and Behavioral Intention.....	65
Figure 11. Moderating Effect of Familiarity	69
Figure 12. Original (left) and Adjusted (right) Path Models for the Main Effect	104
Figure 13. Original (left) and Adjusted (right) Path Models for the Moderating Effect	108
Figure 14. Intrinsic Motivation Factors and Attitude toward Using SSTs.....	117
Figure 15. Extrinsic Motivation Factors and Attitude toward Using SSTs.....	120
Figure 16. Attitude toward Using SSTs and Intention to use SSTs in the Apparel Retail Environment	121
Figure 17. Moderating Effects of Familiarity on Relationships between Intrinsic Motivation Factors and Consumers' Attitudes toward Using SSTs.....	124

Figure 18. Moderating Effects of Familiarity on Relationships between
Extrinsic Motivation Factors and Consumers' Attitudes toward
Using SSTs.....127

CHAPTER I

INTRODUCTION

Chapter I introduces the dissertation topic and includes seven major sections: (1) Statement of the Research Problem; (2) Background; (3) Gaps in the Research; (4) Research Purpose and Objectives; (5) Significance of the Study; (6) Definition of Key Terms; and (7) Organization of the Dissertation.

Statement of the Research Problem

Over the past ten years, self-service technology (SST) use has increased rapidly. Today, technology-based service plays a significant role in the retail environment (Dabholkar & Bagozzi, 2002). Compared to traditional forms of service typically provided by a person, technology-based service is a service that customers use independently, without employee interaction. According to Meuter, Ostrom, Roundtree, and Bitner (2000), such technologies have been termed “self-service technologies,” or “SSTs.”

SSTs take a variety of forms and can be found in a wide range of environments. The most widely known SSTs are the self-service checkouts at grocery stores, self-service gasoline pumps, online banking, as well as Automated Teller Machines (ATMs), telephone-based technologies, various interactive voice response systems, direct online connections and Internet-based interfaces, and interactive free-standing kiosks. These service-related innovations can provide unique value to consumers. Fleming and Artis

(2010) suggest that by using SSTs, consumers become involved in unique shopping experiences and that SSTs promote customer satisfaction and retention.

Customers can often control the design, purchase, as well as consumption of goods and services without the aid of an actual employee. A recent report issued by IHL Consulting Group indicated that consumers spent over \$775 billion using self-service kiosks in 2009 alone (*IHL Consulting Group, 2009*).

Self-service technology is used widely in many retail industries, particularly in the supermarket industry. Using SSTs, consumers can save time, money, and enjoy the benefits that SSTs provide, including a more satisfactory shopping experience (Bitner, 2001; Meuter et al., 2000). But the advantages of SSTs are not just for consumers. By adapting various self-service technologies, such as self check-out, companies can improve their service quality, productivity, and reduce the overall costs of service (Curran & Meuter, 2007; Doyle, 2007; Zeithaml & Gilly, 1987). By adopting new technologies like SSTs, companies can stay competitive by minimizing overhead costs related to personnel and capital expenditures.

Since the advent of SSTs, retailers have made dramatic changes to how they offer their services and products (Elliott & Hall, 2005). According to Honebein and Cammarano (2006), in the short term, companies can reduce costs per transaction by using SSTs, and, in turn, can offer consumers lower prices. Honebein and Cammarano (2006) further state that if consumers are satisfied or successfully engaged in a company through SSTs, they are less likely to switch to a competitor. Therefore, companies can strengthen customer loyalty with SSTs. However, as MacDonald and Smith (2004) note,

companies must train employees to the extent that they must accept SSTs, acquire appropriate knowledge of these technologies, and encourage customers to use them. To provide maximum customer service and customer satisfaction, managers also need to be trained to design and integrate the right mix of these technologies (MacDonald & Smith, 2004).

Although self-service technology is becoming an important part of the retail industry, as well as the daily lives of consumers, little is known about how such technologies provide competitive advantage to a retailer, or what makes them appealing to consumers specifically within an apparel retail environment. Therefore, this research addresses these gaps by providing insight into four key issues. First, it examines the antecedents that drive consumers' intentions to use SSTs in the apparel retail environment. Second, it explores intrinsic and extrinsic motivation factors of consumers' attitudes toward SSTs. Third, it investigates why consumers may or may not purchase apparel through SSTs. Finally, this study explores the importance of familiarity with regard to SSTs, and specifically how familiarity with SSTs moderate the relationship between motivation factors and attitude toward SSTs within the apparel retail environment.

Background

Self-service technology has been defined broadly by Meuter et al. (2000) as “technological interfaces that enable customers to produce a service independent of direct service employee involvement” (p. 50). The use of SST has also impacted the meaning of “service,” to the extent that consumers are often required to change their shopping

behavior to use an SST. It is also possible that some consumers may not view SSTs, such as an automated checkout, as a “service,” believing that SSTs do not provide the same level of service as one gets when interacting with a salesperson (Dean, 2008). Traditionally, service was provided by employees for customers. However, the meaning of service as something personal has been radically altered by technology, particularly in terms of how service is conceived of and developed. Different service delivery types (technologies) have now been introduced in many different retail environments and industries, such as airlines, banking, travel, hotels, and general retailing (Meuter et al., 2000).

Service Classification

Considering the potential for adoption of SSTs in the apparel retail environment, it is important to understand how services are classified by goods, and why consumer demographic (individual) differences and certain innovation characteristics vary in terms of their influence on potential adoption behavior. According to Bell (1981, 1986), goods are classified separately from services. More recently, researchers (e.g., Hsieh & Chu, 1992) include service as a part of the classification scheme of goods while others continue to separate service from goods in research (Grove & Fisk, 1983; Hsieh & Chu, 1992; Kotler, 1980; Lovelock, 1980, 1983; Lovelock & Yip, 1996; Shostack, 1977; Silpakit & Fisk, 1985).

Lovelock (1983) developed one of the most significant service classification efforts to date. Included were implications for the relationship between service organizations and their customers based on a set of classification criteria. As a theoretical model,

Lovelock's (1983) work would influence much research on service classification for the next several years (Cunningham, Young, & Gerlach, 2008).

Self-service technologies, or the so called technology-based services, have surfaced relatively recently, so have yet to be fully examined for their theoretical implications. Ford and Etienne (1994) proposed a simple framework that did not limit service to that which is provided by traditional person-to-person interaction. Based on Lovelock's (1983) criteria for classifying services, Dabholkar (1994) proposed a theoretical classification scheme based on who delivers the service, where the service is delivered, and how the service is delivered. An improved version of Lovelock's classification scheme, Dabholkar's (1994) framework was believed to be more applicable to multiple service industries. Dabholkar (1994) also provided a suggested outline for the examination of market segmentation and positioning when firms use technology-based offerings. After Dabholkar (1994), researchers such as Meuter et al. (2000) have attempted to classify SSTs based on analytic comparisons of customer satisfaction with personal-based and technology-based service. Meuter et al. (2000) distinguished between SSTs using two factors: (1) SST purpose, such as for customer service versus transactions, and (2) the technological method, such as via interactive telephone or Internet. It is important to note that Meuter et al. (2000) emphasize technological medium and treat customers as partial employees (Cunningham et al., 2008). Ultimately, updating Lovelock's theoretical model will provide insight into the implications of SST for defining what service means in the marketplace.

Types of Self-Service Technologies

Because of the rapid development of technology, Meuter et al. (2000) suggest that most service related activities, such as package tracking, bill paying, questions regarding accounts, etc., are now performed through SSTs. Consumers also use SSTs for direct transactions, such as to evaluate, purchase, and exchange resources with companies without any interaction with actual employees. Moreover, many consumers find it efficient to use videos or CDs as a type of SST, such as that provided by tax preparation software.

According to Meuter et al. (2000), previous research on SSTs primarily focuses on a single technology in a given study. They also note that early studies such as Bateson (1985) or Langeard, Bateson, Lovelock, and Eiglier (1981) focus primarily on low-technology self-service, such as hotel vending machines, room service, and early forms of ATMs. Meuter et al. (2000) thus sought to update the literature by addressing newer types of technology interface, such as telephone-based technologies, voice response systems, direct online connections, Internet-based interfaces, and interactive free-standing kiosks. They consider the types of technologies used relative to customers' use of them in self-service transactions and the purpose for using specific types of technology (see Table 1).

Currently, electronic kiosks, the Internet, mobile devices, and the telephone are the most popular SSTs found in the retail setting (Information Technology and Innovation Foundation, 2010). According to the Information Technology and Innovation Foundation (ITIF), electronic kiosks are stand-alone solutions which provide information or services

to customers. The most popular form of electronic kiosk is the Automated Teller Machine (ATM). Through ATMs, customers can check balances as well as withdraw and deposit money. By using optical character recognition (OCR) technology, newer ATMs can also scan checks to process deposits in real time (ITIF, 2010). Consumers also receive a printed image of a deposit as a record. By eliminating the deposit envelope, banks can reduce transaction costs up to 75 percent. Newer ATMs can also reduce operating costs by using deposited cash for withdrawals.

Table 1: Categories and Examples of SSTs in Use

Purpose	Interface			
	Telephone/Interactive Voice Response	Online/Internet	Interactive Kiosks	Video/CD
Customer Service	<ul style="list-style-type: none"> • Telephone Banking • Flight Information • Order Status 	<ul style="list-style-type: none"> • Package Tracking • Account Information 	<ul style="list-style-type: none"> • ATMs • Hotel Checkout 	
Transactions	<ul style="list-style-type: none"> • Telephone Banking • Prescription Refills 	<ul style="list-style-type: none"> • Retail Purchasing • Financial Transactions 	<ul style="list-style-type: none"> • Pay at the pump • Hotel Checkout • Car Rental 	
Self-Help	<ul style="list-style-type: none"> • Information Telephone Lines 	<ul style="list-style-type: none"> • Internet Information Search • Distance Learning 	<ul style="list-style-type: none"> • Blood Pressure Machines • Tourist Information 	<ul style="list-style-type: none"> • Tax Preparation Software • Television/CD-based Training

Source: Meuter, M.L., Ostrom, A.L., Roundtree, R.I., & Bitner, M.J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50-64.

Another popular form of electronic kiosk is the airport kiosk. Most airlines now rely on kiosks to provide customers with boarding passes, reducing the number of paid employees required at ticketing counters. Such kiosks, which usually have touch screen displays, magnetic stripe card readers, and bar code scanners are found in airports around the world. By using these kiosks, customers can check their flight information, change or upgrade their seats, modify their reservation, and purchase a ticket. According to the ITIF (2010), companies can greatly reduce costs by using such kiosks. For example, the cost of checking in a passenger via a kiosk is only \$0.14 cents while it costs approximately \$3 via an airline agent (ITIF, 2010). Besides cost savings, airlines can offer more control over the departure and arrival process to the customer. By using kiosks, passengers can spend less time waiting in lines, for example, newer kiosks allow passengers to tag checked baggage themselves, rather than requiring an agent to handle this transaction. Newer kiosks can also forward travel documents to government officials, so travelers can save time while reducing inconvenience (ITIF, 2010).

Self checkout is another popular form of electronic kiosk. There were over 90,000 self-checkout systems available globally as of 2008 and this number is expected to quadruple by 2014 (ITIF, 2010). By using self-checkout systems, customers can scan, bag, and pay for their items on their own. Both consumers and companies benefit by using self checkout systems. For example, consumers save waiting time in line, which is one of the most frequent complaints made by consumers. Companies can also offer lower costs to the consumer by reducing labor costs. Kiosks are not just for retailers, some libraries have introduced self-checkout systems that patrons can use to borrow books and

pay library fines (ITIF, 2010). In addition, there are many other types of electronic kiosks, such as self-pay gasoline pumps, self-pay parking and tolls, vending machines, as well as kiosks for ordering food, such as those found at Sheetz gas stations.

Most consumers have easy access to the Internet due to widespread computer ownership. Among the variety of self-service technologies offered by the Internet, online banking is one of the most popular. Today, most banks offer some level of online banking, including bill payment, checking account balances, and fund transfer and 63 percent of all Internet users in the United States use online banking (ITIF, 2010).

Retailing, or e-commerce, is another popular Internet SST application. Consumers can purchase products whenever or wherever they want, thanks to the Internet shopping mall. ITIF (2010) notes that two-thirds of U.S. consumers use the Internet to search information before they go to an actual store to purchase an item. Additionally, by using the Internet, companies substitute physical goods for digital goods, such as e-books, online movies, and downloaded music. Moreover, consumers can often purchase products at a lower price this way than at an actual store.

With highly developed technology, many companies also use the Internet as part of their customer service. For example, consumers may see a pop-up message that allows them to talk with a customer service representative while they are searching for information on a product. Many websites also have a link to click to chat with a live employee who can answer questions. Some shipping companies, such as United Parcel Service (UPS), provide tracking numbers that allow the customer to check where the items are located in transit and when they can expect to receive them (ITIF, 2010).

Online product customization, ticketing, and reservations are other forms of Internet-based self-service technology.

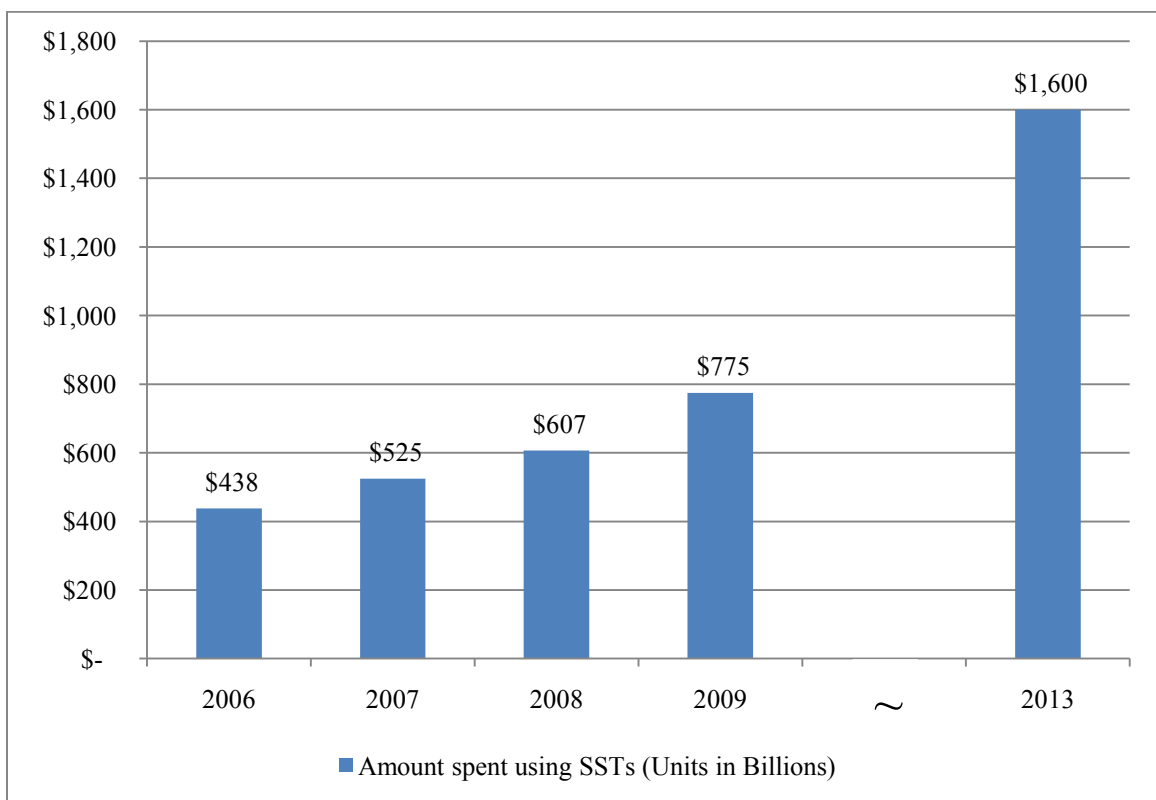
With the recent introduction of Apple's iPhone and other smart phones such as Blackberry, mobile devices have become one of the most important channels for delivering self-service applications (ITIF, 2010). Like kiosks, smart phones provide services by interacting with online applications, so consumers can search product information including price checks, purchase a product, make a mobile payment, and conduct mobile bank transactions. Moreover, research firm Juniper predicted that commercial or financial transactions through mobile phones will exceed \$587 billion by the end of 2011 (Lomas, 2008). Juniper also predicted that by that time, more than 2 billion mobile subscribers will use their phone for mobile payments and mobile banking (Herman, 2008). Mobile commerce (m-commerce) is the fastest growing form of Internet access and platform for SST.

General Consumption Using Technology

Global SST usage has increased over the past several years. In 2003, consumers spent roughly \$100 billion on Internet shopping (Mullaney et al., 2003), while \$128 billion was spent through non-Internet self-service technology in the U.S. (Holman, Sheldon, & Buzek, 2004). Considering that total spending of consumer units for 2004 was over \$5.05 trillion in the U.S. (*Household Spending*, 2006), SSTs can play an important role in the retail environment. Indeed, \$438 billion was spent at self-checkout lanes, ticketing kiosks and other self-service machines by North American consumers in 2006, over \$525 billion in 2007, and over \$775 billion in 2009 (*IHL Consulting Group*,

2007; 2009). According to an IHL Consulting Group's report (2009), consumer spending using SSTs is estimated to reach \$1.6 trillion by 2013 (see Figures 1 and 2). Such figures indicate that SSTs have clearly become an important purchase transaction option for retailers.

Figure 1: Estimated Amount Spent Using SSTs in the U.S.



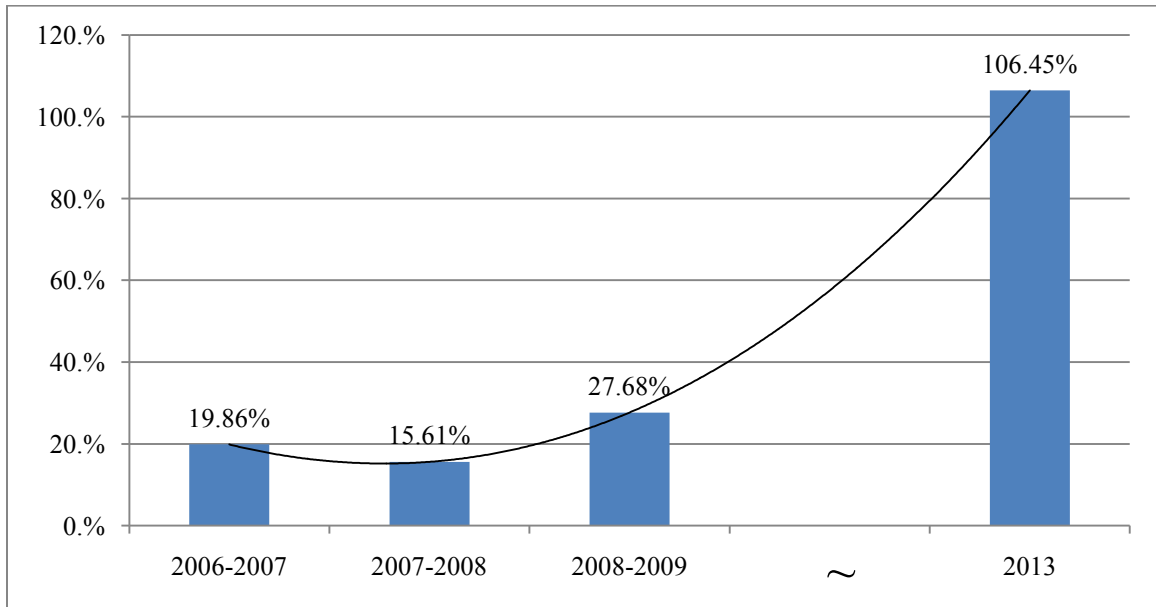
Sources: IHL Consulting Group (2007). Retrieved October 22, 2010, from IHL Consulting Group Website:

http://www.ihlservices.com/ihl/press_detail.cfm?PressReleaseID=55

IHL Consulting Group (2009). Retrieved October 22, 2010, from IHL Consulting Group Website:

http://www.ihlservices.com/ihl/product_detail.cfm?page=StoreAutomation&ProductID=4

Figure 2: Increased Percentage of Amount Spent Using SSTs in the U.S.



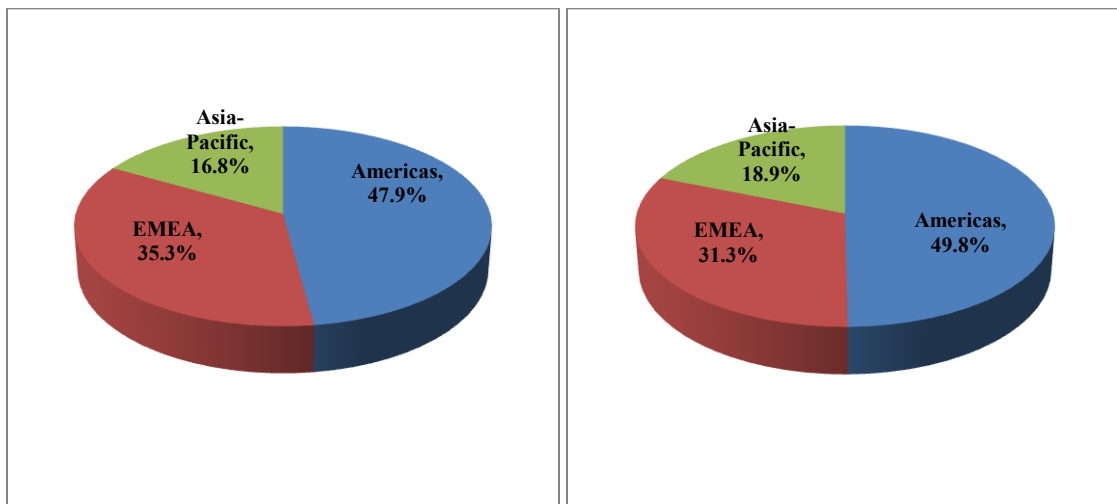
Source: Calculated based on Figure 1

The Americas—Argentina, Brazil, Canada, Chile, Mexico, United States, and Venezuela—represent the strongest regional market for both self-checkout solutions and retail-based kiosks. As shown in Figure 3, the Americas account for 47.9% of the total global market for self-checkout solutions and 49.8% of the total global market for retail-based kiosks (VDC Research Group, 2008).

The EMEA (Europe, Middle East and Africa)— Benelux, Eastern Europe, Egypt, France, Germany, Israel, Italy, Scandinavia, South Africa, Spain/Portugal, Switzerland/Austria, Turkey, and United Kingdom/Ireland—represent the second strongest regional market for both self-checkout solutions and retail-based kiosks. As shown in Figure 3, the EMEAs account for 35.3% of the total global market for self-

checkout solutions and 31.3% of the total global market for retail-based kiosks (VDC Research Group, 2008).

Figure 3: Global Usage of Self-Checkout Solutions (left) and Retail-Based Kiosks (right) in 2007



Sources: VDC Research Group (December, 2008). Retrieved October 22, 2010, from IHL Consulting Group Website:

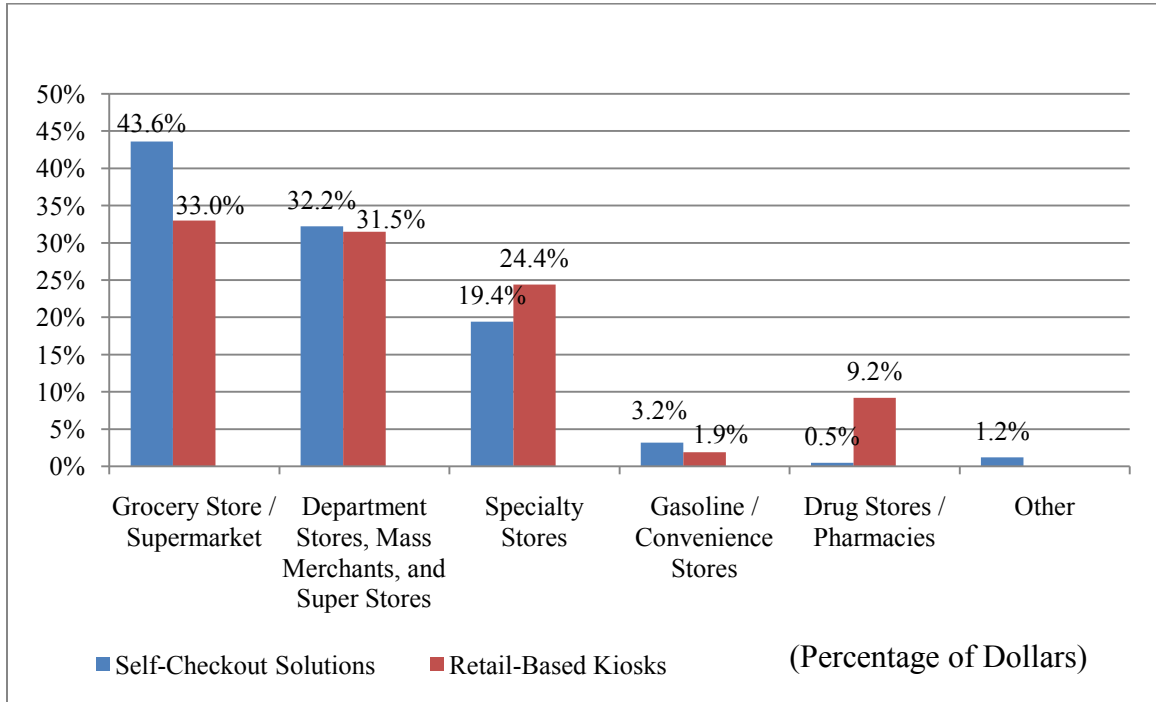
<http://www.vdcresearch.com/Documents/tracks/t1v9brief-2228.pdf>

VDC Research Group (July, 2008). Retrieved October 22, 2010, from IHL Consulting Group Website: <http://www.vdcresearch.com/Documents/tracks/t1v3brief-2228.pdf>

Within these different global markets, consumers use self-service checkouts and retail-based kiosks most often in grocery stores/supermarkets and department stores/mass merchants. Combined, grocery stores and department stores account for almost 80% of the total global market for self-checkouts and 64.5% of the total global market for retail-based kiosks (see Figure 4). Moreover, in a year, over 60 billion transactions occur in retail stores alone, and 68% of those are in grocery, gas, and convenience stores (Atkinson, 2005). In addition, according to ITIF (2010), 68% of U.S. adults who use the

Internet have experienced using self checkout at a retail store and 21% have used an in-store kiosk.

Figure 4: Usage of Self-Checkout Solutions vs. Retail-Based Kiosks in 2007



Sources: VDC Research Group (December, 2008). Retrieved October 22, 2010, from IHL Consulting Group Website:

<http://www.vdcresearch.com/Documents/tracks/t1v9brief-2228.pdf>

VDC Research Group (July, 2008). Retrieved October 22, 2010, from IHL Consulting Group Website: <http://www.vdcresearch.com/Documents/tracks/t1v3brief-2228.pdf>

The apparel market is significant in terms of volume and this includes textile goods (Thomassey, 2010). According to Thomassey (2010), in the U.S., textile trade is around \$530 billion annually, of which \$319 billion is estimated for the clothing industry alone. In addition, *Household Spending* (2008) estimated that in 2006, over \$5.75 trillion was spent on consumer goods in the U.S., with over \$252 billion of this total spent on apparel.

Obviously, the apparel retail industry provides enormous potential for SST use and adoption.

Gaps in the Research

Many industries have introduced and successfully implemented technology-based service using different types of delivery and in concert with traditional service (Fisher, 1998). As Meuter et al. (2000) note, the technologies that customers use independently and without any interaction with employees has been termed self-service technology (SST). The most popular examples of SSTs today are ATMs, online banking, airline check-in, automated hotel reservations, and pay at the pump gas stations. Although such services are now widely used, encouraging consumers to use new technologies can still be a challenge. The ability to replace employees with technology to deliver services, and the characteristics of SSTs, such as standardized service delivery, reduced labor costs, and expanded delivery options, have extensive appeal. However, new technologies are successful only when consumers adopt them. Therefore, it is very important to understand how to best design, manage and promote new technologies in order to ensure the best chance of consumer acceptance.

In addition to consumer acceptance and adoption of SSTs, Rust (2001) suggests that an important long-term trend is the use of SSTs for information and communication in daily business activities. This is one reason for the increased use of innovative technologies among retailers (Dabholkar, Bobbitt, & Lee, 2003). Meuter et al. (2000) point out that SSTs allow consumers to be self-sufficient throughout the decision-making

process. As such, the SSTs increasingly being used in retailing are self-scanning systems (Dabholkar et al., 2003) and online shopping (Childers, Carr, Peck, & Carson, 2001).

According to Dabholkar et al. (2003), usage of SSTs in retail settings has had some success, due to increased availability and use of online retailing in the marketplace. By adopting SSTs, a customer can manage the entire consumption process, including monitoring delivery. One advantage is reduced problems resulting from human interaction between employees and customers (Weijters, Rangarajan, Falk, & Schillewaert, 2007). As Curran, Meuter, and Surprenant (2003) point out, handling demand fluctuations (one of the major problems resulting from human interaction) can be solved by SSTs, which standardize the service environment by eliminating interaction with employees. Curran et al. (2003) point out, however, that while SSTs can improve productivity as well as service quality with reduced cost, they do not solve all problems. That is, expectations of positive outcomes from SSTs can be too high. Hence, some retailers hesitate to increase their SST use (Rust, Lemon, & Zeithaml, 2004).

In investigating the outcomes of SST adoption in retail settings, customer satisfaction is a common research topic (Tom & Lucey, 1995). For example, Weijters et al. (2007) explored how using SSTs impacts customer satisfaction. As an important outcome of SST usage, customer satisfaction is a strong determinant of customer retention (Anderson, Fornell, & Lehmann, 1994; Anderson & Mittal, 2000). Weijters et al. (2007) investigated perceived waiting time as a critical SST outcome variable, as previous studies (Czepiel, 1980; Davis & Vollmann, 1990; Taylor, 1994; Tom & Lucey, 1995) indicated the importance of time in customers' evaluation of service. Similarly,

Dabholkar (1996) and Dabholkar and Bagozzi (2002) explored the importance of waiting time for shopping attitudes toward using SSTs. Related to time, Weijters et al. (2007) also investigated how the total time that customers stayed in a store affected SST usage.

Since consumer demographics typically influence SST usage, Weijters et al. (2007) explored how specific demographic information such as education level, age, and gender impact intention to use SSTs. They also used the technology acceptance model (TAM) to examine key factors influencing attitude toward SST usage. Morris and Venkatesh (2000) and Venkatesh, Morris, and Ackerman (2000) also confirmed that demographic variables such as age and gender impact technology adoption in a retail setting.

Although Weijters et al. (2007) revealed the importance of waiting time for customers' overall satisfaction, little research has shown how customer satisfaction with SSTs is impacted by waiting time when they purchase multiple items at different stores. Hence, Curran and Meuter (2007) tested the use of SSTs in various settings (e.g., ATM use, banking by phone, and online banking). However, such studies focus mainly on the banking and grocery industries. Additional studies using multiple technologies across a variety of industries, including apparel retailing, are thus sorely needed.

Although SSTs are popular in some retail environments (e.g., grocery stores), it has been noted that there is lack of research on consumer attitudes toward and actual use of SSTs (Weijters et al., 2007). Since consumer use of SSTs is a relatively new area of research, much has yet to be discovered about the impact of SSTs usage on customer satisfaction, and the advantages as well as disadvantages of SST use not only for customers but also for retailers. Curran, Meuter, and Surprenant (2003) found that

attitude toward SSTs is positively related to intention to use SSTs. They examined ease of use, usefulness, need for interaction, and risk. However, as the recent developments in Internet business communities have demonstrated, care must be taken when adopting new technology in an industry, as technologies should be well-planned and effectively managed. Due to the relative newness of SSTs, it is not yet known how effective they will be in the long term. As Weijters et al. (2007) suggest, the effect of perceived waiting time and corresponding satisfaction of using SSTs might be interesting to investigate.

In summary, while previous studies have focused on consumers' attitudes and intentions with regard to SSTs, very little have examined the potential for adopting SST use in an apparel retail environment. Moreover, although previous research (e.g., Morris & Venkatesh, 2000; Venkatesh, Morris, & Ackerman, 2000) has included age, education, gender, income, and race as major variables influencing using SSTs in various retail environments, the relationship between these demographic variables and the adoption of SSTs within the apparel retail environment has yet to be examined.

Research Purpose and Objectives

In order to address the gaps in literature that exist regarding relationships between consumer attitude toward SSTs and intention to use SSTs, the overall purpose of the study is to investigate the importance of motivation factors (e.g., intrinsic vs. extrinsic) for consumers' adoption of SSTs and specifically within the apparel retail environment.

To investigate the relationship between attitude toward SSTs and intention to use SSTs, the objectives of this study are to:

1. Explore the motivation factors (e.g., intrinsic and extrinsic motivations) important to using SSTs;
2. Examine the effects of these motivation factors on consumers' attitudes toward using SSTs for purchasing apparel products;
3. Investigate the relationship between consumers' attitudes toward using SSTs and their intention to use SSTs in apparel retail settings; and
4. Assess the moderating effects of familiarity on the relationships between motivation factors and consumers' attitudes toward SSTs.

Given that self-service technology is now very advanced, this study contributes to the growing knowledge base about consumers' shopping behavior in relation to SSTs, and particularly in the apparel retail shopping environment. By addressing the research objectives, this study investigates factors that influence consumers' attitudes toward SST use, and therefore provides valuable insights into the potential for SSTs within the apparel retail environment.

Significance of the Study

Although some studies have focused on purchase behavior with or intention to use SSTs, very little research addresses the potential for adoption of SSTs in the apparel retail environment. In addition, though previous research has included key motivation factors (i.e., perceived enjoyment, technology anxiety, perceived usefulness, and perceived time saving) found to influence use of SSTs in various retail environments (e.g., banks, airports, grocery stores, etc.), none have explored the relationship between these key motivation factors and SST use in the apparel retail environment. Furthermore, little is

known about the extent to which familiarity with SSTs moderates the relationship between these key motivation factors (i.e., perceived enjoyment, technology anxiety, perceived usefulness, and perceived time saving) and attitude toward using SSTs in the apparel retail environment. In other words, it is not known whether the consumer who uses SSTs in the grocery store will use SSTs to purchase clothing in an apparel store. Whether consumers use SSTs just to check the price of an item, or to complete a purchase transaction, it is important to understand how they perceive and use such technologies when shopping. This research will help to determine what is important to consumers when using SSTs to shop for and purchase apparel. Therefore, this research fills several gaps in knowledge about the potential for adopting SSTs in the apparel retail environment.

By examining consumers' familiarity with SSTs as a moderating factor, this study makes several additional contributions to the literature. First, this study provides important insights into how intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety) influence consumers' attitudes toward SSTs in the apparel retail environment. Second, this study explores how extrinsic motivation factors (i.e., perceived usefulness and perceived time saving) influence consumers' attitudes toward SSTs in the apparel retail environment. Third, this study provides insight into how consumers' familiarity with SSTs moderates the relationship between intrinsic/extrinsic motivation factors (i.e., perceived enjoyment, technology anxiety, perceived usefulness, and perceived time saving) and attitude toward SSTs. Last, this research confirms the unique value of SSTs to retailing and emphasizes the importance of SSTs to purchase intention.

Definition of Key Terms

The following table provides definitions of key terms that are applied throughout the dissertation.

Table 2: Definition of Key Terms

Americas	Argentina, Brazil, Canada, Chile, Mexico, United States, and Venezuela (VDC Research Group, Inc, 2008).
Asia-Pacific	Australia/New Zealand, China, Hong Kong, India, Japan, Korea, Singapore, and Taiwan (VDC Research Group, Inc, 2008).
ATMs	Automated Teller Machines (ITIF, 2010).
Attitude toward Using SST	A consumer's positive or negative feelings about using SST (Dabholkar & Bagozzi, 2002).
Computer Anxiety	Computer anxiety is defined as “the fear, apprehension and hope people feel when considering use or actually using computer technology” (Scott & Rockwell, 1997, p. 45), and as a “fear of impending interaction with a computer that is disproportionate to the actual threat presented by the computer” (Howard, Murphy, & Thomas, 1986, p. 630).

Decision-making	The thought process of selecting a logical choice from among the available options. When trying to make a good decision, a person must weigh the positives and negatives of each option, and consider all of the alternatives. For effective decision-making, a person must be able to forecast the outcome of each option, and determine which option is the best for that particular situation (Kotler, 2000).
Diffusion	Communication of innovation through certain channels over a period of time among the members of a social system (Rogers, 2003).
Electronic Kiosks	Stand-alone solutions which provide information or services to customers (ITIF, 2010).
EMEA	Benelux (Belgium, the Netherlands, and Luxembourg), Eastern Europe, Egypt, France, Germany, Israel, Italy, Scandinavia, South Africa, Spain/Portugal, Switzerland/Austria, Turkey, and United Kingdom/Ireland (VDC Research Group, Inc, 2008).
Intention to Use SST	A person's intention to use an SST when he/she purchases a product (Chen & He, 2003).

Kiosks	An interactive multifunctional workstation, located either in-store or off-site, which is accessed by the customer in a do-it-yourself fashion (Roster et al., 2006; Rowley & Slack, 2003).
Perceived Ease of Use	The degree to which a person believes that using a particular system would be free of effort (Davis et al., 1989, p. 320).
Perceived Enjoyment	The extent to which the activity of using a system is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated (Davis et al., 1992, p. 1113)
Perceived Usefulness	The degree to which a person believes that using a particular system would enhance his or her performance (Davis et al., 1989, p. 320).
Self-Service Technology (SST)	Technological interfaces that enable customers to produce a service independent of direct service employee involvement (Meuter et al., 2000, p. 50).
Technology Anxiety	Technology Anxiety specifically focuses on the user's state of mind regarding their ability and willingness to use technology-related tools. It refers to the use of general technology tools, rather than being more narrowly focused

	on anxiety related to personal computer usage (Meuter, Ostrom, Bitner, & Roundtree, 2003, p. 90).
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Organization of the Dissertation

Chapter I outlined the research study. The research purpose and objectives were included, as well as a discussion of the significance of the study and definitions of key terms.

Chapter II provides a review of the literature related to the purpose of the study. Research on SSTs is explored, including studies that examine the relationship between attitude toward and intention to use SSTs in the general retailing setting, as well as the relationship between motivation factors and preference for SSTs over traditional types of service. Based on the literature and relative to the objectives of the study, several testable hypotheses are developed.

Chapter III presents the research design that is used to test the research hypotheses, and provides the details of the sample and data collection procedures. Last, procedures for data analysis are discussed.

Chapter IV discusses the data analysis and statistical tests used. An explanation of structural equation modeling is provided relative to the conceptual model. Finally, results are discussed relative to the hypotheses.

Chapter V presents the findings of the study in light of the research objectives. Recommendations are provided and limitations are discussed. Finally, suggestions for further research are provided.

CHAPTER II

LITERATURE REVIEW

This chapter provides a review of literature pertinent to the study, and includes six major sections: (1) Theoretical Foundations; (2) Self-Service Technology; (3) Conceptual Model; (4) Hypotheses Development; and (5) Summary.

The purpose of this research is to explore and explain the importance of intrinsic and extrinsic motivation factors relative to consumers' adoption of SSTs. Specifically, the primary goal is to examine how SST attributes (e.g., intrinsic and extrinsic motivation factors, familiarity with SSTs) relate to consumers' attitudes toward using SSTs and intention to use SSTs within the apparel retail environment.

Theoretical Foundations

This section introduces the theoretical foundation to be used in the study, including (a) Attitude-Behavior Relationships, (b) The Theory of Reasoned Action, (c) The Theory of Planned Behavior, and (d) The Technology Acceptance Model.

Attitude-Behavior Relationships

Allport (1935) described attitude as “the most distinctive and indispensable concept in contemporary American social psychology” (p. 798). Although many definitions of attitude have been proposed, Fishbein and Ajzen's (1975) definition, “a learned predisposition to respond to an object in a consistently favorable or unfavorable manner” (p. 336) has been the most widely accepted, as they posit that an attitude comprises a

person's beliefs, feelings, and actions toward an object.

According to Trafimow and Finlay (1996), attitude is considered one of the most important concepts that marketers use to understand consumers. They also noted that attitude is one of the best predictors of behavioral intention. Because, as Schiffman and Kanuk (2007) note, attitude is an “expression of inner feelings that reflect whether a person is favorably or unfavorably predisposed to some object” (p. 240), attitude has a significant impact on behavior. Attitude, thus, is defined as “a learned predisposition to behave in a consistently favorable or unfavorable way with respect to a given object” (Schiffman & Kanuk, 2004, p. 285).

Attitude can be described as consumers' negative or positive feelings toward an object that drives them against or toward a particular behavior. For this reason, Al-Rafee and Cronan (2006) noted that “If attitude can be changed, then intention may be influenced, and subsequently behavior may be influenced” (p. 239). This notion supports Trafimow and Finlay's (1996) idea that attitude is the best predictor of behavioral intention, thereby confirming that attitude significantly affects consumers' buying decisions. Studies related to attitude-behavior relationships have been applied in various consumption contexts, such as environmental protection (Cordano & Frieze, 2000), policy making (Venkatesh, Morris, & Ackerman, 2000), online shopping (Wang, Chen, Chang, & Yang, 2007), and the use of new technology (Morris & Venkatesh, 2000).

Attitude-behavior relationship studies can be explained by three major theories—the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (Ajzen, 1985), and the Theory of Self-Regulation (Bagozzi, 1992)—for

understanding and predicting consumer behavior. Fishbein and Ajzen's (1975; 1980) Theory of Reasoned Action (TRA) and Ajzen's (Ajzen, 1985; Ajzen & Madden, 1986) Theory of Planned Behavior are the most commonly and widely applied models for examining attitude-behavior relationships within the expectancy-value approach (Chaiken & Stangor, 1987; Eagly & Chaiken, 1993; Olson & Zanna, 1993; Tesser & Shaffer, 1990).

The Theory of Reasoned Action

The Theory of Reasoned Action (TRA) was first introduced by Fishbein and Ajzen in 1975. This is an extended and modified model of Fishbein's multiattribute model which relates consumers' beliefs and attitudes to their behavioral intentions (Peter & Olson, 2005). According to Davis, Bagozzi, and Warshaw (1989), the Theory of Reasoned Action is "an especially well-researched intention model that has proven successful in predicting and explaining behavior across a wide variety of domains" (p. 983). The main purpose of TRA is to understand causes of behavior (Ajzen & Fishbein, 1980), but this model has been widely employed in many fields to predict intentions and behavior, such as weight loss (Bagozzi & Warshaw, 1992) and moral behavior (Vallerand et al., 1992), to name a few. After an extensive meta-analysis of the TRA literature, Sheppare, Hartwick, and Warshaw (1988) found a strong relationship between attitude, subjective norms and behavioral intentions for behaviors under volitional control. Furthermore, their results provided strong support for the overall predictive utility of the TRA.

According to Ajzen and Fishbein (1980), the TRA model assumes that consumers intentionally consider the consequences of the alternative behaviors under consideration and choose the one that leads to the most desirable consequences. Therefore, people tend to perform behaviors that are evaluated as favorable or more popular with others rather than perform behaviors that are regarded as unfavorable/unpopular with others. The result of this reasoned choice process is an intention to engage in the selected behavior, and this behavioral intention is considered the single best predictor of actual behavior (Peter & Olson, 2005). In other words, a person's performance of a certain behavior is determined by the person's behavioral intention to perform that behavior.

According to TRA, the attitude equation ($A = \sum b_i e_i$) "represents an information-processing view of attitude formation and change which posits that external stimuli influence attitudes only indirectly through changes in the person's belief structure" (Davis et al., 1989, p. 984). The person's attitude (A) and subjective norm (SN) determine the behavior intention (BI), with relative weights typically estimated by regression, where BI is defined as "a measure of strength of one's intention to perform a specified behavior" (Davis et al., 1989, p. 984). Therefore, the Theory of Reasoned Action can be expressed as follows (see Figure 5):

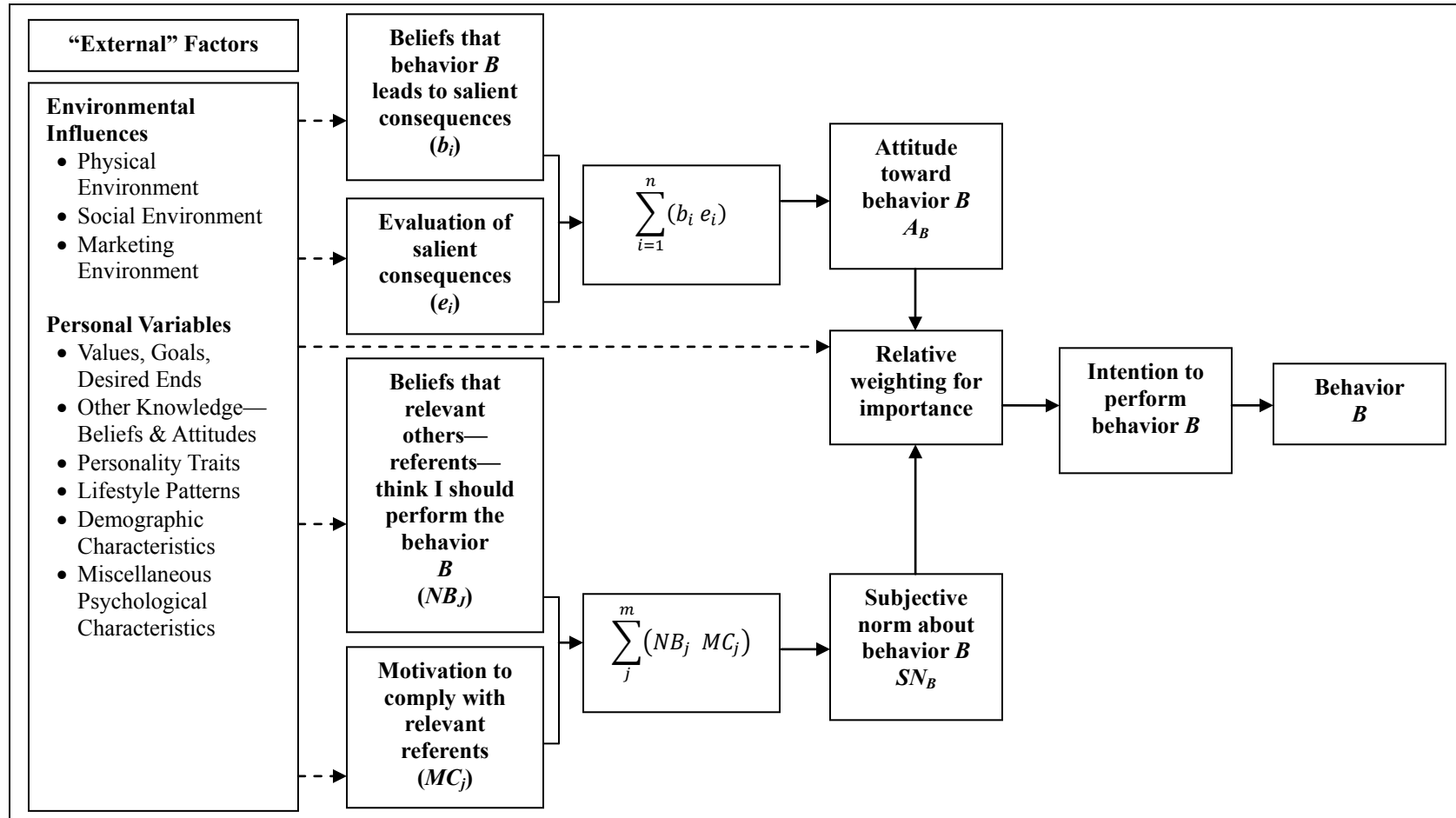
$$B \sim BI = A_B (w_1) + SN (w_2)$$

where:

B = a specific behavior;

BI = consumer's intention to engage in that behavior;

Figure 5: The Theory of Reasoned Action Model



Source: Fishbein, M. & Ajzen, I. (1980). Predicting and understanding consumer behavior: Attitude-behavior correspondence. In I. Ajzen & M. Fishbein (Eds.), *Understanding attitudes and predicting social behavior* (pp.148-172). Englewood Cliffs, NJ: Prentice Hall.

- B = a specific behavior;
- BI = consumer's intention to engage in that behavior;
- $B \sim BI$ = a decision to engage in a behavior is directly predicted by an individual's intention to perform the behavior;
- A_B = consumer's attitude toward engaging in that behavior;
- SN = subjective norm regarding whether other people want the consumer to engage in that behavior; and
- w_1 and w_2 = weights that reflect the relative influence of the A_B and SN components on BI

It should be noted that the TRA is a general model, as it does not specify the beliefs that are operative for a particular behavior. Therefore, Davis et al. (1989) argue that it is necessary to "identify the beliefs that are salient for subjects regarding the behavior under investigation" (p. 984).

Particular actions directed at some target object (e.g., shopping for or purchasing apparel products using SSTs) and behaviors occur in a situational context or environment at a specific time (Schiffman & Kanuk, 2004). Because the components of the TRA must be defined and measured in terms of these specific factors, Peter and Olson (2005) noted that such components of the behavior of interest must be clear. A behavior intention is a proposition connecting the self and a future (i.e., "I intend to make my apparel product purchases through SSTs in the near future"). It is basically a plan to do a specified behavior. According to Fishbein and Ajzen (1980), behavior intentions can be measured by examining the probability of performing the behavior of interest. Therefore, specific to

the context of the current study, consumers' beliefs about the behavior lead to salient consequences, and the evaluation of salient consequences creates a form of attitude toward the behavior (Fishbein & Ajzen, 1980). Ultimately, the behavior, such as using SSTs to purchase apparel, reflects consumers' overall evaluation of performing that behavior.

Fishbein and Ajzen (1980) noted that subjective norm (SN) is another critical predictor of behavioral intention. SN refers to the consumers' perception of what other people want them to do or not do. SN can be measured directly by assessing a consumer's feelings as to what relevant others, such as family members or friends, think of the behavior. For example, let's assume that an individual is planning to purchase a red leather jacket. Here, he may stop to ask himself what his spouse or friends would think if he performed that behavior. Reflection on whether relevant others will agree or disagree with the purchase constitutes the subjective norm. Schiffman and Kanuk (2004) noted that researchers can get beyond the subjective norm to the underlying factors that are likely to produce it, and they accomplish this by assessing the normative beliefs that the individual attributes to relevant others, as well as the individual's motivation to comply with each of the relevant others. In the example of purchasing a red leather jacket, to understand the individual's subjective norm about the desired purchase, we may need to identify his relevant others as well as his beliefs about how each would respond to the purchase of a red leather jacket. Finally, we also need to know his motivation to comply with his spouse or friends (Schiffman & Kanuk, 2004).

In addition to attitudes, intention is another important dependent variable. Applied to the question of SST use, Hebert and Benbasat (1994) found support for the relationship between attitude and behavioral intention in the adoption of information technology by combining two major theories: the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and the Diffusion of Innovations (Rogers, 1995). Previous literature in both attitudinal research and research on technology adoption proved the assumption that intention is a reliable predictor of behavior (Ajzen, 1991; Sheppard et al., 1988; Venkatesh & Speier, 1999). In addition, Bagozzi (1981) and other researchers suggest that the link between attitude and intention is fundamental in attitudinal research. For instance, Dabholkar and Bagozzi (2002) indicated that consumers attitudes toward using SSTs had a direct, positive effect on their intention to use SSTs. Intention to use is regarded as an important long-term outcome and indicator of an information system's success (Bhattacharjee & Premkumar, 2004), as well as a motivation of future behavior (Zeithaml et al., 1996)¹. Moreover, the intention-behavior relationship has been supported by various researchers in terms of the Technology Acceptance Model, which will be discussed shortly (Ajzen & Fishbein, 1977; Bagozzi, 1981; Dabholkar & Bagozzi, 2002; Davis, 1989; Sheppard et al., 1988).

¹ It should be noted that consumers can be influenced by others to use a system to purchase a product, and specifically an apparel product. However, because a consumer does not necessarily make the decision based on what relevant others think about it, subjective norm will not be considered in this study.

Table 3: Studies Reviewed Related to TRA

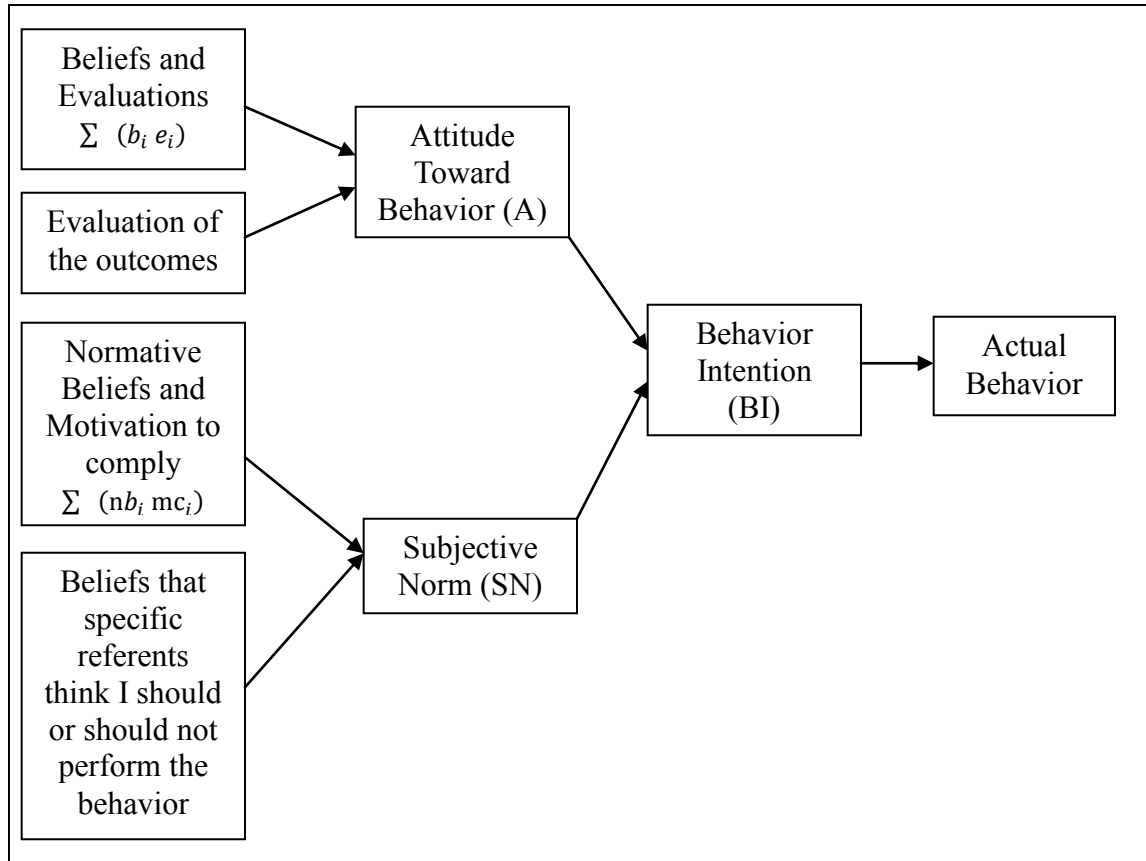
Study	Purpose
Fishbein & Ajzen (1975)	First introduced TRA. Extended and modified Fishbein's multiattribute model.
Fishbein & Ajzen (1980)	Explained TRA and applied the model to various cases.
Bagozzi (1981)	A longitudinal field study to test relationships among attitudes, intentions, and behavior, using measures of actual blood donation behavior.
Sheppard, Hartwick, & Warshaw (1988)	Meta-analysis to investigate the effectiveness of the TRA.
Davis, Bagozzi, & Warshaw (1989)	Compared two theoretical models (TRA vs. TAM).
Bagozzi & Warshaw (1992)	Provided behavioral and psychological reactions for event-planned goals (i.e., trying to lose weight) and event-triggered goals (i.e., initiating a conversation with an attractive stranger).
Vallerand et al. (1992)	A confirmatory test of Ajzen and Fishbein's (1980) TRA as applied to the realm of moral behavior.
Hebert & Benbasat (1994)	To measure the influence of factors on the adoption of information technology in a health care setting, particularly focusing on the relationship between attitudes and expectations concerning the technology and the intent to adopt it.
Rogers (1995)	Demonstrated how new ideas are spread in a variety of settings and cultures. Described factors influencing innovation including characteristics of the innovation itself, and a description of the receptivity of different segments of the population to embrace innovation.
Dabholkar & Bagozzi (2002)	Investigated the moderating effects of consumer traits and situational factors on the relationships within a core attitudinal model.

Peter & Olson (2005)	Provided the knowledge and skills necessary to perform consumer analyses that can be used for understanding markets and developing effective marketing strategies.
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Theory of Planned Behavior

By including perceived behavioral control as a determinant of both behavioral intention and behavior, the Theory of Planned Behavior (TPB) extended the Theory of Reasoned Action (Armitage & Christian, 2003). Ajzen (1985) hypothesized that perceived behavioral control influences both behavioral intention and behavior and proposed a conceptual framework to address the problem of incomplete volitional control (see Figure 6). Ajzen (1985) noted that perceived behavioral control is the perception of how difficult or easy an action is to perform a given subject and hypothesized that greater perceived behavior control has more positive behavioral intention as well as more likelihood to perform a behavior. However, researchers like Leone, Perugini, and Ercolani (1999) noted that it is not necessary to have a direct path from perceived control to behavior in all cases. Ajzen and Madden (1986) added this direct path (from perceived behavior) is assumed to exist only if the perceived behavior control is a good proxy of actual control. However, if the behavior is new to the individual, it will be excluded (Ajzen & Madden, 1986). The Theory of Planned Behavior has been widely applied in behavioral domains such as dishonest behavior (Beck & Ajzen, 1991), class attendance, and academic achievement (Ajzen & Madden, 1986) to name a few.

Figure 6: The Theory of Planned Behavior



Source: Ajzen, I. (1985) From intention to actions: A theory of planned behavior. In J. Juhl & J. Beckham (Eds.), *Action control: From cognition to behavior* (pp. 11-39). New York, NY: Springer-Verlag.

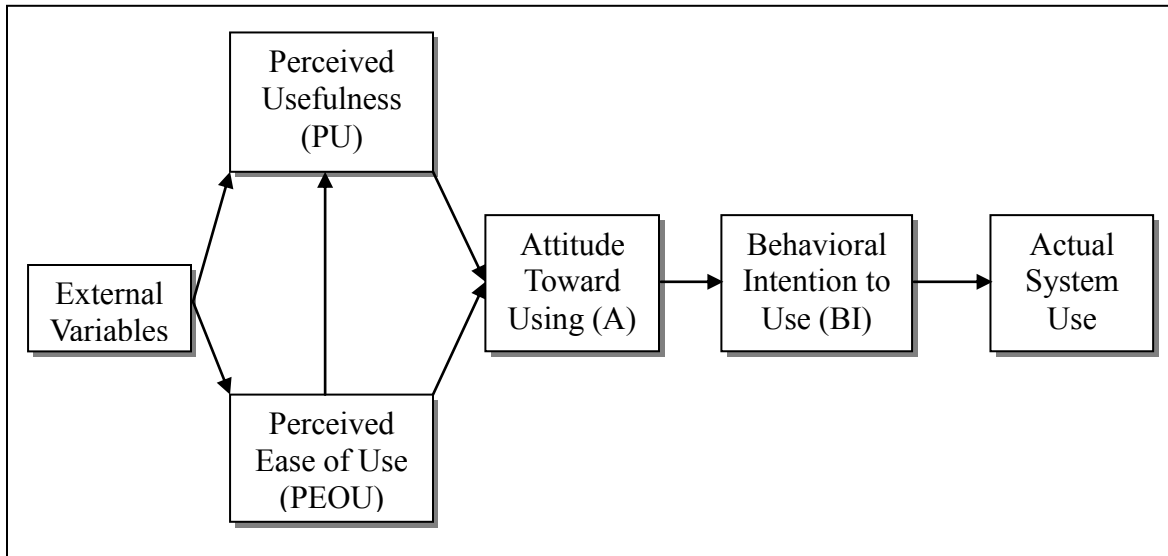
Technology Acceptance Model

Over two decades ago, several researchers, such as Curley (1984), Edelman (1981), and Sharda, Barr, and McDonnell (1988), suggested that the use of information technology may have substantial potential to improve white collar work performance. However, it was difficult to assess the extent of improved performance due to users' unwillingness to accept and use available systems (Bowen, 1986; Young, 1984). Although numerous others examined this issue, such as Benbasat and Dexter (1986) and

Franz and Robey (1986), there remained very few high-quality measures for investigating key determinants. Despite the widespread use of subjective measures in practice, little attention had been paid to the quality of the measures used and how well those measures correlate with actual usage behavior. Researchers such as DeSanctis (1983), Ginzberg (1981), Schewe (1976), and Srinivasan (1985) also noted that many existing measures do not correlate highly with system use, and other researchers such as Barki and Huff (1985) found that the size of the usage correlation varies depending on measurements. It was thus necessary to develop improved measures for the key theoretical constructs used in the information systems field. For those vendors who wanted to assess user demand, and information systems managers who may want to evaluate the vendors, better measures would provide more valid and reliable information for predicting or explaining system use. Consequently, Davis (1989) sought to introduce better measures, now known as the Technology Acceptance Model (TAM) (see Figure 7).

TAM is an information systems theory that models how users come to accept and use a specific technology. The main purpose of TAM is to better understand the impact of external factors on internal beliefs, attitudes, and intentions (Davis et al., 1989). TAM has been extensively employed to predict the degree of consumer technology acceptance and for diagnosing technical design problems. TAM is an adaptation of the TRA model, in that it adopts the causal chain of beliefs → attitude → intention → behavior that was previously put forward by social psychologists in the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975).

Figure 7: Technology Acceptance Model (TAM)



Source: Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.

Davis et al. (1989) suggested that numerous factors influence users' decisions as to how and when they will use a new technology. In a related study, Davis (1989) also focused on what causes people to accept or reject a technology based on two theoretical constructs: perceived usefulness (PU) and perceived ease of use (PEOU). These two theoretical constructs are considered fundamental determinants of system use, thus Davis (1989) developed new scales to measure them. Perceived usefulness (PU) is the extent to which consumers believe a technology will help them perform better, and is defined as the degree to which consumers feel that a system's function can assist their performance when operating the technical system (Davis, 1989). When a consumer accepts or rejects a technology, he or she may be influenced by perceptions of how easy it is to operate, also known as perceived ease of use (PEOU). Perceived ease of use is defined as "the degree

to which a person believes that using a particular system would be free of effort which follows from the definition of ease—freedom from difficulty or great effort” (Davis, 1989, p. 320). As Figure 7 shows, consumer perceptions of ease of use eventually lead to perceived usefulness. Therefore, perceived usefulness is critical to how consumers formulate attitudes toward technical system usage (Davis, 1989). Numerous researchers have since discovered that the TAM consistently explains many of the reasons why users accept or reject technical systems (Chen & Wells, 1999; Hausman & Siekpe, 2009; Song & Zinkhan, 2003).

Davis (1989) also provided other theoretical foundations for the perceived usefulness and perceived ease of use constructs. Decisions to use a system influence one’s self-efficacy and outcome beliefs. Davis noted that Bandura’s (1982) extensive research on self-efficacy supports his conception of perceived ease of use. According to Davis (1989), “Bandura’s (1982) theory distinguishes self-efficacy judgments from outcome judgments, the latter being concerned with the extent to which a behavior, once successfully executed, is believed to be linked to valued outcomes” (p. 321). Thus perceived usefulness is similar to Bandura’s outcome judgment variables.

Davis (1989) further noted that both perceived usefulness and perceived ease of use are relevant to the cost-benefit paradigm outlined in Behavioral Decision Theory (Beach & Mitchell, 1978; Johnson & Payne, 1985; Payne, 1982). The primary foci of the cost-benefit paradigm are: distinction between objective and subjective accuracy and effort (Beach & Mitchell, 1978), as well as objective measures of accuracy and effort (Abelson & Levi, 1985; Adelbratt & Montgomery, 1980; Wright, 1975). Davis (1989) stated that

the distinction between objective and subjective decision making performances is similar to the distinction between perceived usefulness and perceived ease of use.

Previous adoption of innovation studies by Tornatzky and Klein (1982) also influenced Davis' conception of perceived ease of use. According to Tornatzky and Klein (1982), complexity, relative advantage, and compatibility were most significant across a broad range of innovation types. In addition, the definition of complexity by Roger and Shoemaker (1971) as "the degree to which an innovation is perceived as relatively difficult to understand and use," (p. 154) parallels Davis' (1986) notion of perceived ease of use.

Davis' development of Swanson's (1982, 1987) research on channel disposition influenced both perceived usefulness and perceived ease of use. Swanson (1982, 1987) developed the concept of channel disposition, consisting of two components—attributed information quality and attributed access quality—to explain information choice and use. According to Davis (1986), the concept of channel disposition provides theoretical support for perceived usefulness and perceived ease of use as the two most important variables influencing system use.

According to Davis (1989), efficiency and time-savings increase a consumer's perception of a technology's ease-of-use. For self-service technologies, this could mean easy order placement, a convenient payment system and short processing times. Consumer perception of ease-of-use can be associated with enjoyment and playfulness, which means the easier the system is to use, the more enjoyable it is. Perceived ease of use becomes an intrinsically entertaining experience which encourages consumers to

continue using the system (Skadberg & Kimmel, 2004). By increasing consumers' perception of usefulness, a self-service technology's ease-of-use is important to motivate consumers who are unfamiliar with a technology or system.

As previously discussed, much research on service assumes that customer service consists of a face-to-face interpersonal interaction between a customer and employee. However, resulting from the rapid growth of highly developed technology, today's customers are often exposed to a variety of types of self-service technology. SST has changed the way customers interact with firms, and research on the adoption or diffusion (distribution) of new technology has been examined across a wide range of fields (Rogers, 1995). For example, demographic differences and adoption of technology-based service (Al Zubaidi & Al-Ainsari, 2010; Dickerson & Gentry, 1983; Eastlick, 1996; Greco & Fields, 1991, Van Schaik, Roadford, & Hogg, 2010), and characteristics of innovation as well as influencing factors of adopting SSTs (Autry, Grawe, Daugherty, & Richey, 2010; Carr, Zhang, Klopping, & Min, 2010; Eastlick, 1996; Labay & Kinnear, 1981; Hernandez, Jimenez, & Martin, 2009; Kim & Forsythe, 2010; Polancic, Hericko, & Rozman, 2010; Rogers, 1995; Tong, 2010; Turner, Kitchenham, Brereton, Charters, & Budgen, 2010; Venkatraman, 1991), are influencing factors of major constructs that have been extensively investigated. In the case of the former, literature indicates inconsistent findings about demographic differences and SST adoption. For example, Eastlick (1996) and Venkatraman (1991) found that younger shoppers used SSTs more often than older shoppers, but Rogers' (1995) meta-analysis revealed that only half of the 228 studies in his comprehensive review of the relationship between age and innovation adoption

indicated that a shopper's age and adoption behavior were significantly related. Rogers (1995) also noted that some research reported that younger customers are more likely to adopt SSTs than older customers, while other research found the opposite to be true.

Existing research reveals differing results related to characteristics of an innovation (e.g., relative advantage, complexity) that might influence consumers' adoption. For example, while Venkatraman (1991) found that only relative advantage had a significant relationship with innovation adoption, Labay and Kinnear (1981) suggested that perceived advantage, complexity, and compatibility of the innovation were significantly related to an adoption of innovation. Some of the research indicates contradictory findings. For example, according to Venkatraman (1991), relative advantage and adoption behavior were significantly related in adoption of two different technology types (VCR vs. PC), whereas Meuter, Bitner, Ostrom, and Brown (2005) found it to be positive in Interactive Voice Response telephone-based SST and negative in the Internet-based SST. The different results could be explained by differences in time, place, technology types, and participant sample, thus Cunningham, Young, and Gerlach (2008) suggest using mediating variables to specifically explain relationships.

Davis' (1989) TAM also relies in part on Fishbein and Ajzen's (1975) Theory of Reasoned Action, primarily as it specifies users' attitudes, and intentions, and the causal linkages between perceived usefulness and perceived ease of use. However, TRA was designed to explain human behavior broadly, while TAM explains only computer usage-related human behavior (Davis, Bagozzi, & Warshaw, 1989). As is discussed here, Davis (1989) relied on TRA along with self-efficacy theory, the cost-benefit paradigm, adoption

of innovations, evaluation of information reports, and the channel disposition model, for developing scales measuring perceived usefulness and perceived ease of use as determinants of user behavior.

Similar to TRA, TAM suggests that computer usage is determined by behavioral intention (BI), but a slightly different BI. BI in the TAM is determined by one's attitude toward using the system (A) and its perceived usefulness (PU), with relative weights estimated by regression. Therefore, $BI = A + PU$ (Davis et al., 1989). In addition, the TAM does not include the subjective norm (SN) as a determinant of BI because it is difficult to disentangle direct effects of SN on BI from indirect effects, via attitude (A) (Davis et al., 1989). Davis (1986, 1989) argues that PU and PEOU are the determining factors of attitude (A), with relative weights statistically estimated by linear regression, as $A = PU + PEOU$. Here, he hypothesized PU as having a positive influence on A. He also hypothesized that PEOU has a significant effect on A. As shown in Figure 7, Davis suggested that PEOU influences PU and A, thus PU can be determined by PEOU and other external variables, $PU = PEOU + \text{External Variables}$ (Davis et al., 1989). For example, two computer systems have the same level of easiness to use, but one leads to better performance. In this case, the system offering better performance would likely be seen as the more useful system, despite the PEOU parity. Moreover, if an individual learns to operate the system, other types of external variables are apt to influence beliefs of usefulness. That is, perceived ease of use can be determined by external variables such as the functional and interface characteristics of the system (Benbasat & Dexter, 1986; Bewley et al., 1983; Dickson et al., 1986), development methodologies (Alavi, 1984),

training and education (Nelson & Cheney, 1987), and user involvement in design (Baroudi et al., 1986; Franz & Robey, 1986), where PEOU = External Variables.

Bandura (1982) supports the importance of perceived ease of use by investigating the effect of self-efficacy, and proposed two determinants of behavior related to self-efficacy: self-efficacy beliefs and outcome beliefs, positing that behaviors are best predicted when we consider both self-efficacy beliefs and outcome beliefs. He defined self-efficacy as “judgments of how well one can execute courses of action required to deal with prospective situations” (p. 122). Based on this perspective, Davis (1989) argued that self-efficacy is similar to perceived ease of use, and that outcome judgment is similar to perceived usefulness. Davis (1989) also noted that “self-efficacy research provides one of several theoretical perspectives suggesting that perceived ease of use and perceived usefulness function as basic determinants of user behavior” (p. 321). Later, Hill, Smith, and Mann (1987) found that people were influenced by both self-efficacy and outcome beliefs when they decide to learn a computer system.

Numerous researchers have discovered that TAM consistently explains many of the reasons that users accept or reject technical systems (Chen & Wells, 1999; Hausman & Siekpe, 2009; Song & Zinkhan, 2003). According to Davis (1989), efficiency and time-savings increase a consumer’s perception of a technology’s ease of use. For the SST, this means an easy operating system, a convenient payment system and short check-out time. Consumer perception of ease-of-use can be associated with enjoyment and playfulness, which means the easier the system is to use, the more enjoyable it is. Perceived ease of use and perceived enjoyment becomes an intrinsically entertaining experience which

Table 4: TAM Studies Identified in a Review of Extant Literature

Study	Purpose
Beach & Mitchell (1978)	Investigated why decision makers choose different decision strategies in dealing with different decision problems with a contingent model of decision strategy selection.
Edelman (1981)	Longitudinal study that examined application of a radically new system architecture (i.e., data base management technology, human resources management) at RCA.
Bandura (1982)	Examined self-efficacy mechanism. Higher level of self-efficacy has higher performance accomplishments and lower emotional arousal.
Payne (1982)	Reviewed research with areas of contingency (i.e., cost/benefit principles, perceptual processes, and adaptive production systems).
Tornatzky & Klein (1982)	A meta-analysis of articles concerned with innovation characteristics and their relationship to innovation adoption and implementation.
Curley (1984)	Investigated benefits of installing different types of office automation technology (i.e., pilot projects using MS word).
Barki & Huff (1985)	Based on decision support systems (DSS), investigated the relationships between the extent of changes caused by the systems to users' work environments, the users' attitudes toward work related changes, and four measures of DSS success.
Johnson & Payne (1985)	Examined individuals' effort, accuracy, and role in strategy selection using a production system framework which allows the estimation of the effort required to use the strategy in a choice environment.
Srinivasan (1985)	Examined the relationship between user perceived effectiveness measures (user satisfaction) and behavioral measures of system effectiveness (system use) in management information systems.

Benbast & Dexter (1986)	Examined the influence of color and information presentation differences (i.e., tabular, graphical, and combined tabular-graphical) on user perceptions and decision making.
Franz & Robey (1986)	Investigated organizational factors (i.e., management information system (MIS) department's size, age, level of MIS manager, MIS department scope, decentralization of authority) related to user involvement in information system development and perceived system usefulness.
Swanson (1987)	An exploratory study that provided a basic channel-disposition model related to individuals' attitude or disposition toward a channel to their actual use of the channel.
Sharda, Barr & McDonnel (1988)	Reviewed previous studies and examined the effectiveness of decision support systems over an eight-week period.
Davis (1989)	Provided valid measurement scales for predicting user acceptance of computers. Developed and validated new scales for perceived usefulness and perceived ease of use.
Davis et al. (1989)	Examined influencing factors (i.e., perceived usefulness, perceived ease of use, attitude, and subjective norm) on accepting technology to predict peoples' acceptance based on their intention.
Venkatraman (1991)	Investigated the impact of innovativeness and innovation types (i.e., VCR, PC) on adoption.
Skadberg & Kimmel (2004)	Examined influencing factors (i.e., time distortion, enjoyment, and telepresence) of website flow experience and investigated the relationships between visitors' online experience, characteristics of the web site, visitors' individual differences, and the effectiveness of the web site.
Meuter, Bitner, Ostrom, & Brown (2005)	Investigated key factors (i.e., innovation characteristics including compatibility, relative advantage, complexity, observability, trialability, perceived risk, and individual differences including inertia, technology anxiety, need for interaction, previous experience, and demographics) that influence the initial SST trial decision. Used consumer readiness variables as predictors of trial.

Cunningham, Young & Gerlach (2008)	Examined how customers perceived and classified different types of self-service technologies (SSTs).
Hausman & Siekpe (2009)	Examined website design features (usefulness, informativeness, entertainment, irritation) which bring positive managerial outcomes and influence attitude toward site and purchase intention.

encourage consumers to continue use of a system (Skadberg & Kimmel, 2004). By increasing consumer's perception of usefulness, an SST's ease of use or perceived enjoyment are important factors if marketers want to motivate consumers who are not familiar with computers or might have higher avoidance behavior relative to the system. Therefore, TAM, as based in part on TRA, is used in this study to investigate the relationship between attitudes toward and intention to use SSTs.

Self-Service Technology

As it develops in sophistication, the use of technology is altering traditional business and marketing practices. Self-service technologies (SSTs) have a substantial impact on traditional methods of business and business strategies (Beatson, 2010). Self-service technologies are technological interfaces that allow consumers to serve themselves, independent of direct involvement with employees (Meuter, Ostrom, Roundtree, & Bitner, 2000). Currently, self-service technologies can be found in various retail environments, such as banks (ATMs), airlines (self-service boarding pass dispensers), gas stations (self-service gasoline pumps), grocery stores (self-scan and pay systems), and hotels (automated check-in and check-out facilities), among others. High SST performance and successful marketing strategies can enhance consumers' in-store

experiences, and, in turn, potentially increase store profits.

SST and Consumer Behavior

Previous studies highlight some of the key factors that influence adoption of an SST, including customer's perceived satisfaction (e.g., Shamdasani, Mukherjee, & Malhotra, 2008), usefulness (e.g., Kim & Forsythe, 2010), as well as self-efficacy (e.g., Dabholkar & Bagozzi, 2002; Oyedele & Simpson, 2007). According to Venkatraman and Price (1990), novelty-seeking behavior or so called consumer innovativeness is a predisposition to look for new products and services. This is related to the desire for new experiences (Venkatraman, 1991) and trying new products (Khare, Singh, & Khare, 2010). Factors such as social influence, self-consciousness, and interaction with a service representative may also impact SST adoption (Dabholkar et al., 2002; Davis et al., 1989, 1992; Ellen, Bearden, & Sharma, 1991; Venkatesh & Davis, 2000). In addition, Meuter et al. (2000) and Dabholkar (1996) suggest that because SSTs can reduce interactions between customers and employees, this by default leads to further use of SSTs.

User profiles have been employed to explain SST acceptance (Bateson, 1985; Darian, 1987; Eastlick, 1996; Greco & Fields, 1991; Langeard, Bateson, Lovelock, & Eiglier, 1981; Zeithaml & Gilly, 1987). For example, Zeithaml and Gilly (1987) examined age as a predictor of adoption rate for technology-based self-service. Barczak, Ellen and Pilling (1997) looked at consumer profiles relative to their use of Automated Teller Machines, telephone banking, as well as automatic deposits and withdrawals, to identify their degree of security consciousness. According to Marr and Pendergast (1991, 1993), previous research on technology adoption at banks mostly focuses on Automated

Teller Machine technology (ATMs).

Langeard, Bateson, Lovelock, and Eiglier's (1981) study was one of the most comprehensive early studies which identified customers' willingness to use an SST. The study suggested that younger, single, and more educated customers are more likely to use SSTs. Interestingly, however, they suggest income level is negatively correlated to willingness to use SSTs. More recently, Nilsson (2007) compared demographic variables such as age, gender, education, and family income between Swedish and Estonian consumers related to the potential adoption of SST. He explored Internet banking use in terms of how long and how often it has been used, and the purpose of using SST (e.g., paying bills). Not surprisingly, Estonian consumers who used Internet banking most often were predominantly younger, male, and better educated. Those who were non-Internet banking customers tended to have lower incomes. Those who used it also used it more frequently, and used it more often to pay their bills. In contrast, Swedish SSTs use did not reveal a relationship between education and Internet-banking usage. Similar to the Estonian sample, Internet-banking users in Sweden were predominantly young and male.

Dabholkar (1992) examined attitudes toward computerized products and how need for interaction with service employees affected attitude toward using SSTs. Dabholkar (1996) also examined various attributes such as delivery speed, controllability, ease of use, and enjoyment relative to SST use. Dabholkar's results from the two studies suggest that enjoyment and control were the two most influential factors in deciding to order fast-food via a computer versus traditional personal service.

Dabholkar's (1992, 1996) studies focused on a single technology, as do others that look at low-technology self-service, such as hotel vending machines versus room service and ATM usage (Bateson 1985; Langeard et al., 1981). In contrast, Meuter et al. (2000) explore a range of different SSTs based on a review of the academic literature, trade press, and observations. They provide a breakdown of technologies as well as purposes from the consumer perspective. According to Meuter et al. (2000), types of SSTs include telephone-based technologies, various interactive voice response systems, direct online connections and Internet-based interfaces, interactive free-standing kiosks, and video or compact disc (CD) technologies. They posit that consumers often use more than one technology at a time to make purchase decisions, and that companies offering several technologies simultaneously can therefore provide better service. Meuter et al. (2000) also noted that companies provide SSTs for various reasons, such as allowing consumers to manage accounts or pay bills, or so that the company can track frequently asked questions from customers.

Focusing more on consumer attitude, Elliott and Hall (2005) examined the influence of consumer characteristics on the likelihood of using SST. For instance, not all customers are interested in using Internet kiosks in retail stores, and thus different customers have different levels of response to SSTs. Bobbitt and Dabholkar (2001) noted that intentions to use SSTs are strongly, directly, and positively affected by consumer attitudes toward SSTs. Similarly, Venkatesh (2000) noted that customers' enjoyment makes it easier for them to use new technologies. However, it should be noted that customers can have both positive and negative feelings simultaneously about using new

technologies (Mick & Fournier, 1998).

There are negative consequences associated with SST, such as increased risk during a transaction. Meuter et al.'s (2000) study of 800 critical incidents involving SSTs found that the main sources of dissatisfaction for customers using SSTs is technology failure, technology design or service design problems, and customer driven failures. Likewise, Joseph, McClure, and Joseph (1999) suggested that problems related to accuracy of transactions, accessibility of service, and customer support and security can cause dissatisfaction with service quality.

SST and Business to Business

Much research explores the role of SSTs in the consumer/company relationship. However, SSTs are not only for consumers. Companies can also use SSTs to do business with other companies, known as Business to Business (B2B). Since SSTs provide many benefits, such as cost saving, improved efficiency, higher return on investment, improving customer reach and accessibility, and time savings and control, many companies are shifting to SSTs when doing business with others (Dabholkar, 1996; Gallagher, 2002; MacDonald & Smith, 2004; Pujari, 2004).

According to Pujari (2004), many new types of SSTs, such as electronic transactions and delivery technologies (e.g., EDI) are Internet-based. Like SSTs in the business-to-consumer context, using SSTs in B2B does not require face-to-face interaction. Pujari (2004) introduced a framework for analyzing the nature of B2B transactions affected by technology-based encounters. Pujari's (2004) framework includes interactions for service delivery, but also telephone and website technology.

Interpersonal encounters are not necessary and SST encounters take place directly between the supplier and the buyer (Pujari, 2004).

Pujari (2004) defined factors prompting satisfaction and dissatisfaction with SST use in Canadian B2B transactions. He noted that key sources of satisfaction in B2B are different than with end consumers. The key sources of satisfaction in B2B contexts are improved speed and improved efficiency, whereas solving intensified needs and being “better than the alternative” (easy to use, avoid personnel, anytime, anywhere accessibility) were the key sources of satisfaction in the B2C context. He also noted that time savings is a source of satisfaction for both B2C and B2B customers. Moreover, Pujari (2004) noted that satisfaction factors in the B2B context included improved speed, improved process efficiency, saved labor hours (time and cost), reliability, real time accessibility, convenience, and quick help. Dissatisfaction factors were technology failure, transaction process problems, post-transaction process problems, customer service problems, a long wait time due to slowed connections and user-unfriendly factors, such as difficult use, change of instructions without notice, and buyer error.

SSTs in B2B also have bearing on brand loyalty. According to Keller (2001), a supplier’s brand is determined by the buyers’ experience with using available SSTs. Related to issues of trust and perceived risk, customers choose to use SSTs with brands they trust rather than brands they don’t know (Pujari, 2004).

Other research has investigated relevant areas of the context of B2B exchange, including operational efficiencies in Internet transactions (e.g., Johns & Perrott, 2008; Pujari, 2004; Sharma, 2002), the impact of technology-mediated communication on

buyer behavior (MacDonald & Smith, 2004), adoption and impact of inter-organizational IT and the Internet on buyer-seller relationships (Leek, Turnbull, & Naude, 2003), and building relations over the Internet (Bauer, Grether, & Leach, 2002).

With highly developed B2B self-service software and tools, the nature of service has been significantly changed from labor intensive operations to low cost automated self-service (Leek, Turnbull, & Naude, 2003; MacDonald & Smith, 2004). Its application can be seen in many different areas, such as academia (e.g., Archer & Yuan, 2000; Bauer, Grether, & Leach, 2002; Dabholkar, 1996; Dabholkar & Bagozzi, 2002; Meuter, Ostrom, Roundtree, & Bitner, 2000; Osmonbekov, Bello, & Gilliland, 2002; Rao, Perry, & Frazer, 2002; Selnes & Hansen, 2001), media (e.g., Bitner, 2001; Johnson, 2001), and government (e.g., web-based filing of tax returns and e-health provisions). With technology, companies can save costs, but this is not the only reason that they are shifting to self-service technology. By using technology-based self service, companies can reap several benefits, such as improved efficiencies and higher return on investment (Dabholkar, 1996; Gallagher, 2002).

As seen in previous studies with both consumers and companies, SSTs have significantly changed the nature of service. Consumers become involved in unique shopping experiences by adopting SSTs (Fleming & Artis, 2010). Consumers can also save time, money, and enjoy the benefits that SSTs provide, including a more satisfactory shopping experience by adopting SSTs (Bitner, 2001; Meuter et al., 2000). By implementing various self-service technologies, such as scanning, companies can improve their service quality, productivity, and reduce the overall costs of service as well

Table 5: Self-Service Technology (SST) Studies Identified in a Review of Extant Literature

Study	Purpose
Bateson (1985)	Investigated consumers' choice process between traditional service and technology-based self-service.
Zeithaml & Gilly (1987)	Explored characteristics affecting the acceptance of retailing technologies with grocery scanners, electronic funds transfer, and ATMs.
Davis et al. (1989)	Examined influencing factors (i.e., perceived usefulness, perceived ease of use, attitude, and subjective norm) on accepting technology to predict peoples' acceptance based on their intention.
Venkatraman & Price (1990)	A comparison of how non-SST users and SST (i.e., PC, food processor, and VCR) users differ in their responses to innovations.
Venkatraman (1991)	Examined the effect on adoption of the characteristics of SSTs (PC vs. VCR) and provided a framework for identifying innovator segments.
Ellen, Bearden & Sharma (1991)	Examined factors that cause individual resistance to technological innovations, specifically effects of self-efficacy and performance satisfaction on consumers' responses to technology changes.
Davis et al. (1992)	Examined effects of usefulness and enjoyment on intentions to use computers in the workplace regarding word processing software and business graphics programs.
Marr & Prendergast (1993)	Investigated consumers' adoption behaviors toward SSTs in retail banking.
Dabholkar (1996)	Examined consumers' feelings toward the use of technology based on different waiting times.
Meuter, Ostrom, Roundtree & Bitner (2000)	Examined customers' satisfaction elements of using SSTs, and relationships between satisfaction/dissatisfaction with SST customers and non-

	SST customers.
Dabholkar & Bagozzi (2002)	Investigated the moderating effects of consumer traits and situational factors (i.e., perceived waiting time and social anxiety) that influence attitudes toward technology-based self-service.
Venkatesh & Davis (2000)	Examined extrinsic motivation factor (perceived usefulness) and usage intentions in social influence and cognitive instrumental processes.
MacDonald & Smith (2004)	Examined relationships between usage of technology-mediated communication and the key relationship variables of trust, commitment, and future intentions for industrial buyers.
Pujari (2004)	Explored key determinants of satisfaction (i.e., improved speed, improved process efficiency, time and cost saving) and dissatisfaction (i.e., technology failure, transaction process problems) for SST encounters among Canadian B2B customers and effects of favorable/unfavorable SST encounters on business relationships.
Elliott & Hall (2005)	Explored gender differences in using technology-based self-services.
Nilsson (2007)	A cross-cultural comparison between Swedish and Estonian SST users in Internet banking usage.
Oyedele & Simpson (2007)	Investigated consumer control factors (i.e., internal control, sensitivity to others' control, time pressure, technology anxiety, and self-efficacy) on consumers' decisions to use SSTs in a shopping, a library, and a hotel situation.
Johns & Perrott (2008)	Explored the impact of Internet banking on B2B relationships.
Shamdasani, Mukherjee & Malhotra (2008)	Explored the role of service quality in consumer evaluation of technology-based self-service (e.g., online banking) by extending the self-service quality framework and service evaluation model.

Khare, Singh & Khare (2010)	Examined the relationship between innovativeness/novelty-seeking behavior of Indian youth and their online shopping behavior.
Kim & Forsythe (2010)	Investigated functional and hedonic roles of dynamic product imagery (DPI) with a modified TAM to DPI adoption process among shoppers in three different age groups (age 18-30, age 31-50, and age over 50) when using DPI for different shopping product categories (i.e., apparel, jewelry, shoes, small electronics, home appliances, furniture, and car). Also, investigated DPI usage for reducing risk associated with online product purchasing and/or increasing enjoyment of the online shopping process.

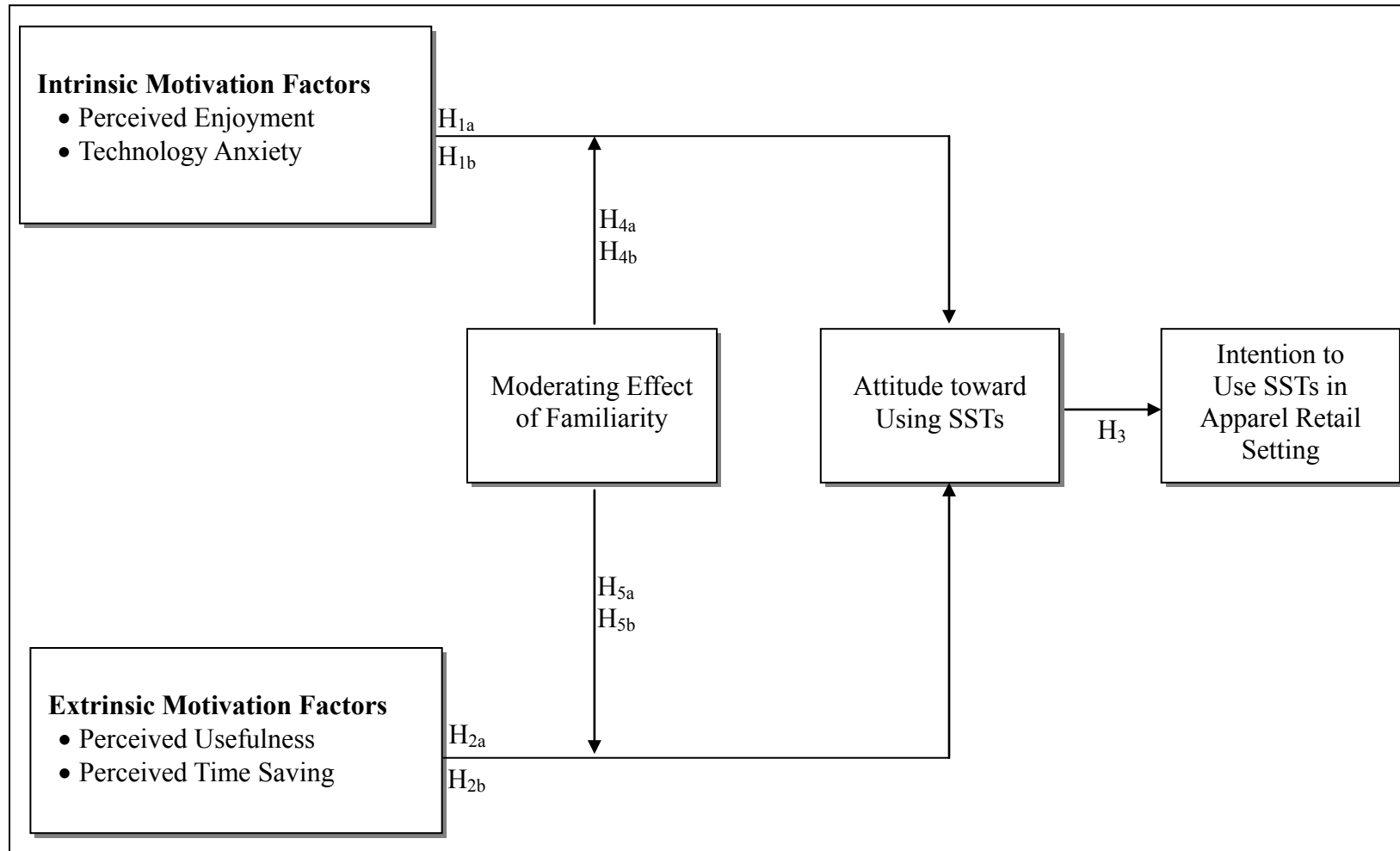
(Curran & Meuter, 2007; Doyle, 2007; Zeithaml & Gilly, 1987). However, SSTs are not yet widely used in the apparel retail environment, either by consumers or companies. To address the gap in knowledge that exists, this study provides a better understanding of consumers' attitudes and behavioral intentions toward using self-service technology in the in-store apparel retail environment. More importantly, this study sheds light on how apparel retailers can develop effective strategies for encouraging the use of SSTs by consumers.

Conceptual Model

The purpose of this study is to examine how consumers' attitudes toward SSTs are influenced by different motivation factors (e.g., intrinsic and extrinsic motivation factors), and how familiarity with SSTs influences the relationship between these motivation factors and attitudes toward using SSTs. This research extends the TAM model, whereby familiarity is a moderating effect, to further strengthen the theoretical connection between motivation factors and consumers' attitudes toward using SSTs. Drawing on the extant

literature, the model proposes that intrinsic (perceived enjoyment and technology anxiety) and extrinsic (perceived usefulness and perceived time saving) motivation factors influence consumers' attitudes toward using SSTs, which, in turn, influence their intention to use SSTs, and specifically within the apparel retail setting. Lastly, familiarity with SSTs is proposed to moderate the relationship between motivation factors and consumers' attitudes toward using SSTs (see Figure 8).

Figure 8: Conceptual Model



57

Hypothesis Development

Hypothesis 1: Relationship between intrinsic motivation factors and consumers' attitudes toward using SSTs

Motivation to perform an activity is often divided into two different classes by motivation theorists: intrinsic motivation and extrinsic motivation (e.g., Calder & Staw, 1975; Deci, 1971; Pinder, 1976; Porac & Meindl, 1982; Pritchard, Campbell, & Campbell, 1977; Scott, Farh, & Podsakoff, 1988). According to Davis, Bagozzi, and Warshaw (1992), intrinsic motivation refers to “the performance of an activity for no apparent reinforcement other than the process of performing the activity per se” (p. 1112). This means people do something because it is inherently interesting or enjoyable. They also noted that enjoyment, which refers to a situation (e.g., using the computer is perceived to be enjoyable in its own right), apart from any performance consequences that may be anticipated, is an example of intrinsic motivation based on the above definition. Thus, perceived enjoyment is defined as “the extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated” (Davis et al., 1992, p. 1113).

van der Heijden (2004) suggested that perceived enjoyment, as an intrinsic motivation factor, is a significant determinant of an individual's intention to use a computer system. Based on the distinction between utilitarian and hedonic products (Hirschman & Holbrook, 1982; Holbrook & Hirschman, 1982), perceived enjoyment and playfulness can be classified as hedonic, thus, as van der Heijden (2004) suggests, when program developers employ hedonic content in a computer system, such as a focus on

colors, sounds, and appealing visual layouts, it allows users to have fun when using the system (i.e., this may be why some think MACs are easier to use than PCs). van der Heijden (2004) noted that consumers use technological innovations (i.e., computer games, instant messaging) to satisfy their need for entertainment. He also noted that individuals who have high perceived enjoyment were more likely to use a technology. Therefore, it is hypothesized that (see Figure 9):

H_{1a}: There will be a relationship between perceived enjoyment and consumers' attitudes toward using SSTs.

Scott and Rockwell (1997) defined computer anxiety as “the fear, apprehension and hope people feel when considering use or actually using computer technology” (p. 45). Adding to this, Doronina (1995) noted that this anxiety can lead to “excessive timidity in using computers, negative comments against computers and information science, attempts to reduce the amount of time spent using computers, and even the avoidance of computers in the place where they are located” (Meutera, Ostromb, Bitnerb, & Roundtreec, 2003, p. 900).

Technology anxiety can be explained by computer anxiety, which is related to the technology readiness (TR) concept (Igbaria & Parasuraman, 1989; Kay, 1993), introduced by Parasuraman (2000). TR aims to understand consumers' use of new technologies to accomplish goals. TR is conceptualized as “a propensity to embrace technology and would be expected to influence the predisposition to use new technologies” (Meutera, Ostromb, Bitnerb, & Roundtreec, 2003, p. 900). Conceptually, technology anxiety is quite similar to computer anxiety. However, technology anxiety is

anxiety related to general technological tools while computer anxiety is more narrowly focused on anxiety related to personal computer usage (Meuter, Ostrom, Bitner, & Roundtree, 2003). Additionally, technology anxiety specifically focuses on the user's feelings about their ability or willingness to use any technology-based system. Technology anxiety is different than technology readiness which focuses on broader constructs (Meutera, Ostromb, Bitnerb, & Roundtreec, 2003).

According to Oyedele and Simpson (2007), when consumers lack self-confidence or the ability to effectively manage or control technology, technology anxiety is more likely to develop. Therefore, consumers' anxiety toward technology-based systems affects their decision to use that technology. Meuter et al. (2003) noted that individuals who have high technology anxiety were less disposed to utilizing SSTs. Therefore, it is hypothesized that (see Figure 9):

H_{1b}: There will be a relationship between technology anxiety and consumers' attitudes toward using SSTs.

Hypothesis 2: Relationship between extrinsic motivation factors and consumers' attitudes toward using SSTs

Many previous researchers have examined a number of extrinsic motivation factors (e.g., perceived usefulness) that might influence acceptance of SSTs by consumers (Childers et al., 2001; Curran, Meuter, & Surprenant, 2003; Dabholkar, 1994, 1996; Dabholkar & Bagozzi, 2002; Featherman & Pavlou, 2003; Plouffe, Hulland, & Vandebosch, 2001). These studies are largely inspired by the TAM framework (Davis, 1989). As discussed previously, TAM is based on the theory of reasoned action (TRA),

which asserts that an individual's behavioral intention is impacted by attitudes toward a specific behavior and subjective norm, which leads to actual behavior (Fishbein & Ajzen, 1980; Fishbein & Ajzen, 1975). Davis et al. (1989) noted that technology acceptance was based on the strength of the attitude or intention toward using the technology (Davis, Bagozzi, & Warsaw, 1989). As explained previously, according to Schiffman and Kanuk (2004), attitude is defined as "a learned predisposition to behave in a consistently favorable or unfavorable way with respect to a given object." This definition is based on Fishbein and Ajzen's (1975) definition of attitude as "an individual's positive or negative feelings about performing the target behavior" (p. 6) and that intentions are assumed to capture the motivation factors that influence the behavior. Thus, intentions indicate how hard people are willing to try or to what extent they are planning to make an effort in order to perform the behavior (Ajzen & Fishbein, 1980).

According to Davis et al. (1992), extrinsic motivation refers to "the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions" (p. 1112). In other words, extrinsic motivation influences behavior due to the reinforcement value of outcomes. As discussed, intrinsic motivation factors (e.g., perceived enjoyment, playfulness) are similar to the hedonic perspective, while extrinsic motivation factors (e.g., perceived usefulness) are closer to a utilitarian perspective. The main purpose of the utilitarian perspective is to increase task performance, rather than to seek a pleasurable experience (van der Heijden, 2004). Childers et al. (2001) note that perceived usefulness reflects the utilitarian view of shopping behavior since consumers

motivated by utilitarian reasons seek to buy products in a timely and efficient manner. Thus, perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance, which follows from the definition of the word useful—capable of being used advantageously” (Davis, 1989, p. 320).

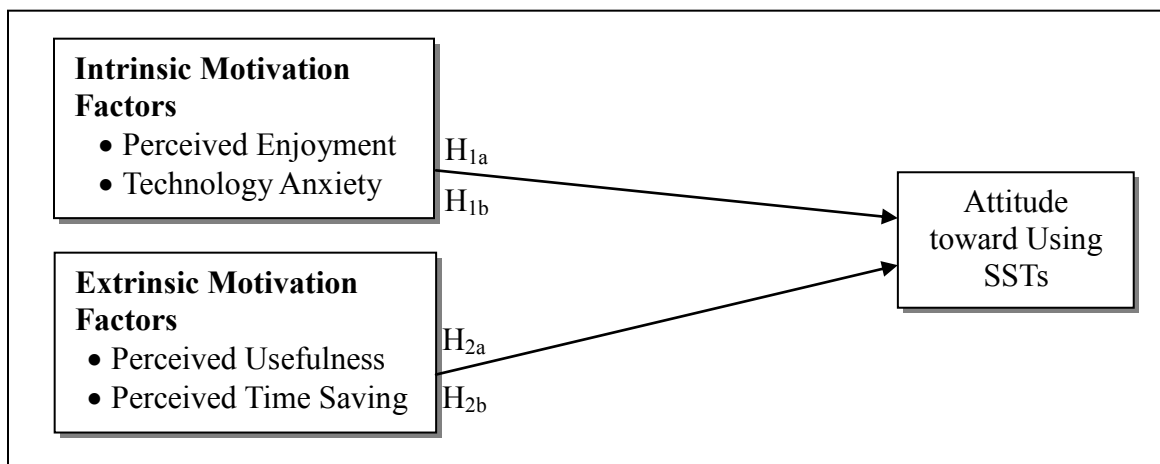
Dabholkar and Bagozzi (2002) have suggested that perceived usefulness is not relevant to technology-based self-services since customers do not own the technology, even though they participate in using it. Therefore it is difficult to see the usefulness. Instead, they suggest that the construct refers to consistently and accurately performing a task. In this study, perceived usefulness is considered to play an important role in shaping customer’s attitudes toward using SSTs because it performs consistently and accurately the expected task (Weijters, Rangarajan, Falk, & Schillewaert, 2007). As previous researchers (i.e., Bateson, 1985; Meuter et al., 2000; Parasuraman, Zeithaml, & Malhotra 2005) suggest, consumers tend to focus on the potential benefits that the technology has to offer when faced with the choice of using SST. This is also supported by Childers et al.’s (2001) study, which identified perceived usefulness as a major driver of the attitude toward an SST in a retail-shopping context, reflecting the more instrumental aspects of shopping. Moreover, previous research has shown that perceived usefulness is a significant determinant of behavioral intentions to use technologies (Davis, 1989; Davis, Bagozzi, & Warshaw, 1992; Shang, Cheny, & Shen, 2005). Therefore, it is hypothesized that (see Figure 9):

H_{2a}: There will be a relationship between perceived usefulness and attitude toward using SSTs.

Since SSTs are often designed to save consumers time, the impact of time or time-use has been discussed by many previous marketing and organizational behavior researchers, such as Bluedorn and Denhardt (1988), Feldman and Jacob (1981), Kaufman et al. (1991), and Oyedele and Simpson (2007), to name a few. According to Rojas-Mendez et al. (2002), consumers who consider time a valued resource will use SSTs to optimize their time. In addition, many studies have found that time significantly affects service quality, satisfaction and repurchase intention (e.g., Durrande-Morreau, 1999; Houston et al., 1998; Jones et al., 2003; Parasuraman et al., 1988, 1991). Thus, it is hypothesized that (see Figure 9):

H_{2b}: There will be a relationship between perceived time saving and attitude toward using SSTs.

Figure 9: Intrinsic Motivation Factors, Extrinsic Motivation Factors, and Attitude toward Using SSTs

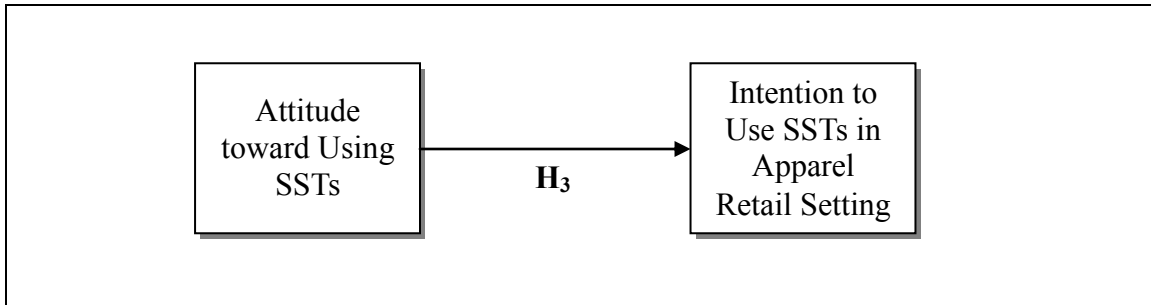


Hypothesis 3: Relationship between consumers' attitudes toward using SSTs and their intentions to use SSTs

In addition to attitudes, intention is an important dependent variable in the TAM (Davis, 1989). According to Mathieson (1991), intention is typically used because it is easy to measure and because of the practical difficulties associated with measuring actual behavior. Previous literature in both attitudinal research and research on technology adoption has proved the assumption that intention is a reliable predictor of behavior (Ajzen, 1991; Sheppard et al., 1988; Venkatesh & Speier, 1999). In addition, Bagozzi (1981) and other researchers (e.g., Ajzen & Fishbein, 1977; Bagozzi, 1981; Bhattacharjee & Premkumar, 2004; Dabholkar & Bagozzi, 2002; Davis, 1989; Sheppard et al., 1988) suggest that the link between attitude and intention is fundamental in attitudinal research. Several researchers (e.g., Dabholkar & Bagozzi, 2002) indicated that consumers' attitudes toward using SSTs had a direct, positive effect on their intention to use SSTs. Intention to use is regarded as an important long-term outcome and indicator of an information system's success (Bhattacharjee & Premkumar, 2004), as well as a motivation of future behavior (Zeithaml et al., 1996). Moreover, this relationship has been supported by various researchers in various settings, including research on TAM (Ajzen & Fishbein, 1977; Bagozzi, 1981; Dabholkar & Bagozzi, 2002; Davis, 1989; Sheppard et al., 1988). Therefore, it is hypothesized that (see Figure 10):

H₃: There will be a relationship between attitude toward using SSTs and intention to use SSTs.

Figure 10: Attitude toward Using SSTs and Behavioral Intention



Hypothesis 4: Moderating effect of familiarity on relationships between intrinsic motivation factors and consumers' attitudes toward using SSTs

Alba and Hutchinson (1987) and Bozinoff (1981) noted that familiarity with a specific purchase or task situation may simplify the decision making process. In addition, Dahl, Manchanda, and Argo (2001) noted that consumers are less likely to be affected by extraneous factors as they become more familiar with a specific purchase or task situation. Consumers may purchase a product they are not familiar with by asking or seeing other consumers in the same aisle purchasing that product, and by doing so, they mitigate the potential fault brought on by product selection (Kinard, Capella, & Kinard, 2009). Baumeister and Leary (1995) and Festinger, Schachter, and Back (1950) found that people are more positive in their decisions to purchase a product within a bar, athletic event, or concert because of the fundamental human motivation to belong. That is, in such purchase situations, consumers are part of the event in which they are familiar with the processes, thereby increasing positive emotional responses and behavioral intentions. Likewise, Argo et al. (2005) examined the effects of noninteractive social presence in traditional retail contexts and found positive emotional responses when there are one or

more other customers present in the same shopping environment. These findings suggest that if consumers are familiar with a product or a technology, they are more likely to purchase that product or use a technology. When they are not familiar with the product or technology, they look to the presence of others in the setting.

Dahl et al. (2001) noted that a customer can experience uncertainty about how to use a technology-based self-service if they are not familiar with the system. Similarly, Edlmann (1981) noted that embarrassment can occur if undesirable information is shared with others through a purchasing event, such as the purchase of medical products or condoms. Thus, negative emotional responses and behavioral intentions can increase if an individual is unfamiliar with steps required of the purchase situation. For example, Dahl et al. (2001) found that consumers feel more embarrassment during embarrassing product purchases (e.g., condoms) and other less routine purchase processes, because external factors (i.e., presence of others when purchasing an embarrassing product) adversely affects consumers' attitudes toward the purchase. Kinard, Capella, and Kinard (2009) expanded Dahl et al. (2001) and Edlmann's (1981) familiarity with purchase process/situation to technology-based self-services, which are less routine and necessitate a more complex purchase situation. However, Kinard et al.'s (2009) results indicate that familiarity with the purchase situation actually has a positive effect on using technology-based self-service.

According to van der Heijden (2004), consumers use technological products to satisfy their entertainment goals. As he suggests, consumers who have a high level of perceived enjoyment have a high level of intention to use a technology. Therefore, the

degree of familiarity toward technology usage is expected to generate a different impact on the relationship between perceived enjoyment and consumers' attitudes toward using SSTs. That is, when consumers are more familiar with technology usage, they tend to perceive the use of SSTs as more enjoyable and display positive attitudes toward using SSTs than those who are less familiar with technology usage.

In contrast, individuals with high levels of technology anxiety were less disposed to utilizing SSTs (Meuter et al., 2003). Technology anxiety is more likely to develop when consumers lack self-confidence or the ability to effectively manage or control technology (Oyedele & Simpson, 2007). If a consumer is not familiar with an SST, they will hesitate to use it when faced with the purchase process. This consumer will instead be more likely to choose the traditional mode of service. In other words, when consumers are less familiar with technology usage, their fear of using technology is likely to be enhanced, which may negatively affect their attitudes toward using SSTs as compared to those who are more familiar with technology usage.

Therefore, the following hypotheses are offered (see Figure 11):

H_{4a}: The influence of perceived enjoyment on consumers' attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.

H_{4b}: The influence of technology anxiety on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage

conditions.

Hypothesis 5: Moderating effect of familiarity on relationships between extrinsic motivation factors and consumers' attitudes toward using SSTs

Jackson, Chow, and Leitch (1997) found that prior use, or familiarity toward a system, was an important factor in predicting intention to use. But, as Kober, Lee, and Ng (2010) note, it takes time for users to become familiar with a new method of technology, it takes time for the usefulness of a new technology to become evident, and familiarity and experience over time ultimately contribute to perceptions of usefulness. They suggest that the effectiveness of implementation of a technology would depend on users' level of familiarity and experience with using a system. Thus, it is expected that when consumers are more familiar with technology usage, they tend to view the use of SSTs as less useful which is likely to negatively affect their attitudes toward using SSTs as compared to those who are less familiar with technology usage.

Because consumers tend to focus on the potential benefits that a technology has to offer when considering whether to adopt it (Bateson, 1985; Meuter et al., 2000; Parasuraman, Zeithaml, & Malhotra 2005), if they can be familiarized with the benefits that SSTs offer, then they will be more likely to use SSTs when faced with the choice. For instance, time saving is one of the most significant benefits of using SSTs (Oyedele & Simpson, 2007). Rojas-Mendez et al. (2002) found that consumers who consider time a valued resource will use SSTs to optimize their time. Therefore, if a consumer is familiar with the benefits of SSTs for time saving, they will be more likely to use SSTs when they are given a choice. In other words, when consumers are more familiar with technology

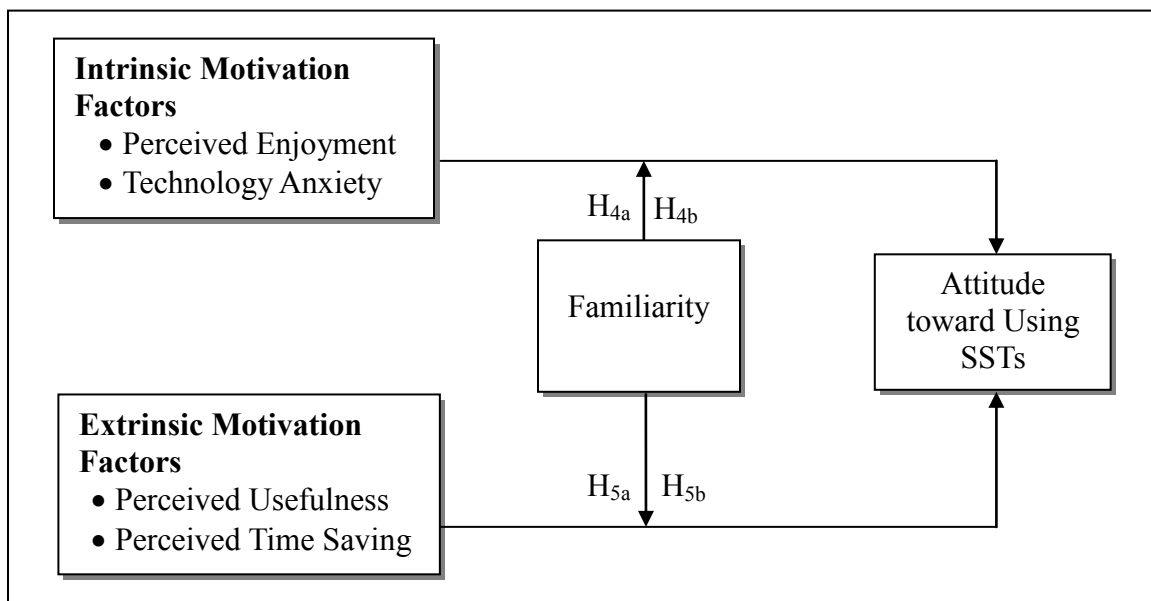
usage, they tend to believe that the use of SSTs will save time and exhibit positive attitudes toward using SSTs as compared to those who are less familiar with technology usage.

Given these findings, the following hypotheses are developed (see Figure 11).

H_{5a}: The influence of perceived usefulness on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.

H_{5b}: The influence of perceived time saving on attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.

Figure 11: Moderating Effect of Familiarity



Summary

This chapter described the theoretical foundation that underlies the study, as well as the development of the constructs tested. Based on a review of pertinent literature, the conceptual model was introduced and hypotheses were presented. The next chapter outlines the research design and methodology used in the study.

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the research methodology, and includes five major sections: (1) Research Purpose and Objectives; (2) Instrument Development; (3) Sample and Procedure; (4) Statistical Analysis; and (5) Summary.

Research Purpose and Objectives

As discussed in Chapter 1, the overall purpose of the study is to explore and explain the importance of motivation factors (e.g., intrinsic vs. extrinsic) and their relationships to consumers' adoption of SSTs in the apparel retail environment.

To investigate the relationship between customers' attitude toward and intention to use SSTs in the apparel retail environment, the objectives of this study are to:

1. Explore the motivation factors (e.g., intrinsic and extrinsic motivations) important to using SSTs;
2. Examine the effects of these motivation factors on consumers' attitudes toward using SSTs for purchasing apparel products;
3. Investigate the relationship between consumers' attitudes toward using SSTs and their intentions to use SSTs in apparel retail settings; and
4. Assess the moderating effects of familiarity on the relationships between motivation factors and consumers' attitudes toward SSTs.

Given that self-service technology is now very advanced, this study contributes to the growing knowledge base about consumers' shopping behaviors in relation to SSTs, and particularly in the apparel retail shopping environment. By addressing the research objectives, this study investigates the factors that influence attitudes toward SSTs and thus provides valuable insight into the potential use of SSTs within the apparel retail environment.

Instrument Development

A structured questionnaire was developed based on the review of extant literature. The literature was used as an aid to obtain conceptual and measurement information related to the variables being investigated. As a result, the written questionnaire used in this study is comprised of the following variables: intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety), extrinsic motivation factors (i.e., perceived usefulness and perceived time saving), consumers' attitudes toward SSTs in apparel retail settings, consumers' intentions to use SSTs for purchasing an apparel product, general questions assessing shopping experiences using SSTs, and demographic information. A total of 44 items are included in the instrument.

Because many apparel retail settings do not currently offer self-service technology, participants were provided a definition of self-service technology as "technology that can be used by consumers for self service, such as self check-outs in grocery stores." In addition, a scenario was included in the survey that participants read prior to completing the survey. The scenario reads as follows:

Imagine you are shopping for apparel products at a major department store. While shopping, you discover that you have two options for checking out:

- 1. You can pay as usual at the register, or*
- 2. You can use a newly installed self check-out system. The self check-out system is located on the counter and has directions for use and description of the complete payment process on the screen itself.*

You are thinking about using the second option (i.e., the newly installed self check-out system) at the check-out counter. You have been told that security tags may be easily removed at the self-service check-out system. In addition, if you have problems using the self check-out system, store employees are always available to assist you.

Measures

Table 6 summarizes the major constructs that were employed in the study. Where possible, measurement scales were selected for each construct for validation purposes. Most of the major constructs being investigated in the study (i.e., technology anxiety, perceived usefulness, perceived time saving, familiarity, and consumers' intentions to use an SST) were measured using a seven-point, Likert-type scale related to participants' level of agreement with each statement. The scales range from "strongly disagree" (1) to "strongly agree" (7) with a "not applicable" option (N/A) provided for all major constructs. Perceived enjoyment and consumers' attitudes toward SSTs were measured using seven-point semantic differential scales (Chang & Cheung, 2001; Igbaria et al., 1995; van der Heijden et al., 2004).

Intrinsic Motivation Factors

Two dimensions (i.e., perceived enjoyment and technology anxiety) of intrinsic motivation were measured with 15 items adopted from three major studies: Igbaria et al. (1995), Meuter et al. (2003), and Venkatesh et al. (2003). Of those 15 items, five items assess perceived enjoyment (e.g., “Using SSTs are fun”) and were adopted from Igbaria et al. (1995), and 10 items assess technology anxiety (e.g., “I feel apprehensive about using technology”) and were adopted from Meuter et al. (2003). Meuter et al.’s (2003) technology anxiety was originally from Raub (1981), developed as a computer anxiety scale focusing on personal computers. Meuter et al. (2003) modified Raub’s (1981) scale to reflect more general technology anxiety. This scale has established an acceptable level of reliability and validity as reported in the literature (Meuter et al., 2003; van der Heijden et al., 2004; Venkatesh et al., 2003). The items referring to perceived enjoyment and technology anxiety are measured on a seven-point Likert-type scale and relate to participants’ level of agreement with each statement. Scales range from “strongly disagree” (1) to “strongly agree” (7) with a “not applicable” option (N/A), where higher scores indicate a lower level of anxiety.

Extrinsic Motivation Factors

Perceived Usefulness

Perceived usefulness was measured via a five-item scale adapted from Venkatesh et al. (2003). Example statements are “The system improves my shopping performance,” and “I find SSTs useful in purchasing apparel products.” Previous research has revealed a satisfactory level of reliability and validity (Igbaria et al., 1995; van der Heijden, 2004).

Items for perceived usefulness were measured on a seven-point Likert-type scale and relate to participants' level of agreement with each statement. Scales range from "strongly disagree" (1) to "strongly agree" (7) with a "not applicable" option (N/A), where higher scores indicate a higher level of perceived usefulness.

Perceived Time Saving

Perceived time saving was measured with three items adopted from Weijters et al. (2007). Example statements include "Using SSTs will reduce my waiting time at the cash register," "Using SSTs will allow me to shop faster," and "Using SSTs will make me more efficient while shopping." Items were measured on a seven-point, Likert-type scale related to participants' level of agreement with each statement, ranging from "strongly disagree" (1) to "strongly agree" (7) with a "not applicable" option (N/A), where higher scores indicate a higher level of perceived time saving. The scale was found to have an acceptable level of reliability and validity in previous research (Venkatesh et al., 2003; Weijters et al., 2007).

Attitude Toward Using SSTs

Consumers' attitudes toward using SSTs were measured through four items (i.e., "Using SSTs are a bad/good idea," "Using SSTs are unpleasant/pleasant," "Using SSTs are harmful/beneficial," and "Using SSTs are unfavorable/favorable") drawn from Reinders et al. (2008). Items were measured using seven-point semantic differential scales with the endpoints "bad-good", "unpleasant-pleasant", "harmful-beneficial", and "unfavorable-favorable". The scale has revealed an acceptable level of reliability and validity in previous research (Dabholkar & Bagozzi, 2002; Venkatesh et al., 2003).

Intention to Use SSTs

A three-item scale assessing consumers' intentions to use self-service technology was adapted from Chen and He (2003). Example questions include "I intend to make my apparel product purchase through SSTs in the near future," "It is likely that I will make a purchase using SSTs," and "I expect to purchase through SSTs in the near future." Items were measured on a seven-point Likert-type scale related to participants' level of agreement with each statement, ranging from "strongly disagree" (1) to "strongly agree" (7) with a "not applicable" option (N/A). Scales assessing consumers' intentions to purchase using SSTs have shown a satisfactory level of reliability and validity in previous studies (Chen & He, 2003; Chiu, Fang, & Tseng, 2010; Dabholkar, Bobbitt, & Lee, 2003; Meuter et al., 2005; Venkatesh et al., 2003).

Familiarity with SSTs

Familiarity, defined as "experience with the what, who, how, and when of what is happening," (Gefen, Karahanna, & Straub, 2003, p. 63) was measured via five items adapted from two major studies: Gefen, Karahanna, and Straub (2003) and Reinders, Dabholkar, and Frambach (2008). Example statements are, "I am familiar with self-service check-outs (e.g., through grocery shopping)," "I am familiar with self-service technology through purchasing products at retail stores," "I commonly use many computers," "I do not have much experience using technology-based self-services," and "I use a lot of technological based products and services." Items are measured on a seven-point Likert-type scale related to participants' level of agreement with each statement, and range from "strongly disagree" (1) to "strongly agree" (7) with a "not applicable"

option (N/A). Previous research using these items has revealed a satisfactory level of reliability and validity (Gefen et al., 2003; Reinders et al., 2008).

General Questions Related to Participants' Shopping Experiences

There are three items included in this section. All items have been developed specifically for the current study by the researcher. For example, one question asks “How familiar are you with self-service technology?” and was measured using a seven–point semantic differential scale with the endpoints “not familiar at all–extremely familiar.” The second item assesses whether the participant had experience with purchasing a product or checking the price of merchandise by using self-service technology. This item was measured using a categorical scale. The third item assesses how often the participant uses self-service technology in general per week and was measured using a ratio scale (i.e., “When you purchase items, how many times do you use SSTs per week excluding ATMs?”).

Demographic Information

Demographic information was measured in terms of (1) gender, (2) age, (3) major, (4) ethnicity, (5) year in school, and (6) personal monthly income. All items were assessed through categorical scales, except age, which was assessed through a ratio scale.

Table 6: Sources of Scales

Constructs	Definition (Conceptualization)	Number of Items	Examples of items	Literature Source(s)
Perceived Enjoyment	The extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated.	5	<ul style="list-style-type: none"> • Using SSTs are Fun • Using SSTs are Pleasant • Using SSTs are Pleasurable • Using SSTs are Exciting • Using SSTs are Enjoyable 	Igbaria, Iivari, & Maragahh (1995)
Technology Anxiety	The fear, apprehension and hope people feel when considering use or actually using computer technology	10	<ul style="list-style-type: none"> • I am confident I can learn technology-related skills. • I have difficulty understanding most technological matters. • I feel apprehensive about using technology. • When given the opportunity to use technology, I fear I might damage it in some way. • I am sure of my ability to interpret technological output. • Technological terminology sounds like confusing jargon to me. • I have avoided technology because it is unfamiliar to me. 	Meuter et al. (2003), and Venkatesh et al. (2003)

			<ul style="list-style-type: none"> • I am able to keep up with important technological advances. • I hesitate to use technology for fear of making mistakes I cannot correct. • Technology-based systems are somewhat intimidating to me. 	
Perceived Usefulness	The belief that using an SST will enhance a person's performance	5	<ul style="list-style-type: none"> • The system improves my shopping performance. • I find SSTs useful in purchasing apparel products. • SSTs enhance my shopping effectiveness. • Using SSTs for my shopping trip would enable me to accomplish tasks more quickly. • Using SSTs would make my shopping task easier. 	Venkatesh et al. (2003)
Perceived Time Saving	The belief that using an SST will enhance a person's efficiency by saving shopping time	3	<ul style="list-style-type: none"> • Using SSTs will allow me to shop faster. • Using SSTs will make me more efficient while shopping. • Using SSTs reduce the waiting time at the cash register. 	Weijters et al. (2007)
Familiarity	Experience with the what, who, how,	5	<ul style="list-style-type: none"> • I commonly use many computers. 	Gefen, Karahanna, &

	and when of what is happening		<ul style="list-style-type: none"> • I do not have much experience using technology-based self-services. • I use a lot of technological based products and services. • I am familiar with self-service check-outs (e.g., through grocery shopping). • I am familiar with self-service technology through purchasing products at retail stores. 	Straub (2003), and Reinders, Dabholkar, & Frambach (2008)
Attitude toward Using SSTs	A consumer's positive or negative feelings about using SSTs. Consumer's perception that purchasing an apparel product using an SST is interesting and they feel comfortable utilizing the SST.	4	<ul style="list-style-type: none"> • Bad / Good. • Unpleasant / Pleasant. • Harmful / Beneficial. • Unfavorable / Favorable. 	Reinders, Dabholkar, & Frambach (2008)
Intention to Use SSTs	A person's intention to use SST when he/she purchases a product.	3	<ul style="list-style-type: none"> • I intend to make my apparel product purchase through SSTs in the near future. • It is likely that I will make a purchase using SSTs. • I expect to purchase through SSTs in the near future. 	Chen & He (2003)

Stimuli and Pretesting the Instrument

To test the instrument and select the appropriate stimuli (i.e., a self-service technology), 58 participants were recruited from the RCS 464: Multicultural and Multichannel Retailing, and RCS 362: Integrated Marketing Communications for Apparel and Consumer Retailing, courses offered in fall 2010. Participants were college students majoring in Consumer, Apparel, and Retail Studies (CARS) and were selected based on shared background characteristics (e.g., area of study, age) that are similar to those who were asked to respond to the final survey. The participants were presented with the survey draft and asked to evaluate the clarity of items in the questionnaire. All aspects of the questionnaire were presented, including wording, question content, sequence, form and layout, question difficulty, and instructions.

Table 7 shows descriptive statistics and the correlation matrix for the seven constructs. Results from the preliminary study indicate that reliability for most constructs was very high ($\alpha > 0.80$) except for the reliability of Familiarity with SST items ($\alpha = 0.714$). The means of all constructs were above 5.1, except the Technology Anxiety ($M_{\text{technology anxiety}} = 2.62$), Perceived Enjoyment ($M_{\text{perceived enjoyment}} = 4.86$), and Perceived Usefulness ($M_{\text{perceived usefulness}} = 4.76$) constructs, whose means were lower than 5.1. The standard deviation ranged from 0.91 ($M_{\text{familiarity}} = 5.95$) to 1.33 ($M_{\text{perceived usefulness}} = 4.76$), indicating substantial variances in the responses. The values of the correlations ranged from -0.625 to 0.805. Relevant editorial changes were addressed based on the feedback of participants. The final questionnaire contains seven major sections concerning perceived enjoyment, technology anxiety, perceived usefulness, perceived time saving, consumers'

Table 7: Descriptive Statistics, Reliability, and Correlation Summary for Constructs (Pretesting, N=58)

Model Variables	Mean	SD	Reliability (α)	Correlations							
				F	TA	PE	PU	PTS	A	BI	
F	5.953	.910	.714	1.000							
TA	2.616	1.042	.892	-.625 ^{*c}	1.000						
PE	4.862	1.253	.956	.220	-.424 ^{*c}	1.000					
PU	4.761	1.333	.939	.217	-.345 ^{*b}	.675 ^{*c}	1.000				
PTS	5.132	1.322	.869	.200	-.387 ^{*b}	.564 ^{*c}	.805 ^{*c}	1.000			
A	5.496	1.199	.894	.175	-.379 ^{*b}	.757 ^{*c}	.720 ^{*c}	.718 ^{*c}	1.000		
BI	5.443	1.084	.890	.258 ^a	-.335 ^{**b}	.672 ^{*c}	.670 ^{*c}	.582 ^{*c}	.752 ^{*c}	1.000	

Note. ^{*} $p < 0.05$; ^{**} $p < 0.01$ (2 tailed).

^aCorrelation is significant at the 0.05 level.

^bCorrelation is significant at the 0.01 level.

^cCorrelation is significant at the 0.001 level.

F = familiarity (N=58); TA = technology anxiety (N=58); PE = perceived enjoyment (N=58); PU = perceived usefulness (N=58); PTS = perceived time saving (N=58); A = attitude toward using SSTs (N=55); BI = intention to use SSTs (N=58)

attitudes toward using SST, consumers' intentions to search for information and purchase an apparel product using SST, general questions about SSTs, and demographic information, respectively (see Appendix A).

Sample and Procedure

Data were collected from a convenience sample of undergraduate students attending the University of North Carolina at Greensboro in the spring of 2011. Due to the exploratory nature of the study, students were deemed appropriate for the sample because they provide a homogeneous population (i.e., less noise or extraneous variations), which is desirable for theory testing (Calder, Phillips, & Tybout, 1981). In addition, college students were selected for the study because this population is known for its technological expertise (Seock & Chen, 2007) and a prime market for apparel products (Wolburg & Pokrywczynski, 2001). Moreover, students are representatives of the consuming population, so are a judgment sample of highly educated individuals. Therefore, the participants can read, understand, and evaluate a sophisticated questionnaire on consumer issues. Many previous studies regarding consumer behavior, branding, and SSTs have successfully used a student-based sample (Biswas, Pullic, & Krishnan, 1999; Oyedele & Simpson, 2007; Stafford, 1998; Van Riel, Lemmink, & Ouwersloot, 2001).

Students were recruited through various classes with the permission of instructors (i.e., CRS 221: Culture, Human Behavior, and Clothing; CRS 231: Introduction to Apparel and Consumer Retailing; CRS 312: Quality Analysis of Consumer Goods; CRS 321: Social Psychology of Dress; CRS 463: Global Sourcing of Apparel and Related

Consumer Products; CRS 481: Contemporary Professional Issues in Consumer, Apparel, and Retail Studies; RCS 261: Introduction to Consumer Retailing; RCS 361: Fundamentals of Retail Buying and Merchandising; and NTR 213: Introductory Nutrition). Five hundred eighty-four participants completed surveys from these nine classes. To avoid overlapping participation, students taking more than one of the above courses were asked to complete the survey only once.

Approval to use human participants was received by IRB prior to data collection. Students who agreed to participate and were at least 18 years old were invited to voluntarily participate in the study. They were provided two identical consent forms (see Appendix B) to read about the study and sign to agree to participate. Once they read and signed the consent forms, they returned a signed copy to the researcher and kept the other for their personal records. After receiving the signed consent form, the researcher distributed the survey. The participants then completed the survey.

Statistical Analysis

Once the data was collected, it was then entered into SPSS 18 for statistical analysis. Descriptive analyses, including frequency, means, etc. were run first on data related to general questions pertaining to attitude toward SSTs and demographic information. Reliability, such as Cronbach's α , and CFA were assessed prior to subsequent analyses.

Structural equation analysis via LISREL 8.8 (Jöreskog & Sörbom, 1996) was employed to test all hypotheses. The LISREL model consists of a full structural equation model and uses a full information maximum likelihood estimation technique to derive path coefficients (Bearden, Sharma, & Tell, 1982). The structural model specifies how

latent variables are measured in terms of the observed variables, and specifies the relationships among the unobserved constructs (Kline, 2004). Therefore, this technique allows for an examination of the hypothesized relationships among constructs simultaneously.

Summary

This chapter described the research methodology designed to address the research objectives and test the hypotheses. Instrument development, sample and procedure, and statistical analysis approaches were discussed. In the next chapter, data analysis will be presented and the model is discussed.

CHAPTER IV

DATA ANALYSIS

This chapter includes the following sections: (1) Description of Sample and Responses; (2) Measurement Model Analysis; and (3) Structural Model Analysis and Hypotheses Testing.

Description of Sample and Responses

Data were collected from students at the University of North Carolina at Greensboro during March and April 2011. Five hundred eighty-four participants completed the survey. Of those, 90 responses were incomplete, resulting in 494 usable responses, yielding a response rate of 85%.

Demographic characteristics of the respondents are summarized in Table 8. The final sample ($N = 494$) was composed of 408 females (82.6%), 84 males (17.0%) and 2 missing values. The mean age of respondents was 22 years, with ages ranging from 18 to 57 and seven missing. The majority of participants were Caucasian/White ($n = 299$, 60.5%), followed by African-Americans ($n = 128$, 25.9%), Asian or Pacific Islanders ($n = 39$, 7.9%) and Hispanic/Latinos ($n = 15$, 3.0%), respectively. Related to year at school, almost 55 percent were lower level class, such as freshmen and sophomores ($n = 271$, 54.9%). The majority of participants were sophomores ($n = 154$, 31.2%), with the second largest group being juniors ($n = 122$, 24.7%), and the third freshmen ($n = 117$, 23.7%). In addition, academic majors of the participants were varied, with almost 40 percent of

respondents majoring in a business-related field. The majority of respondents indicated that they were Consumer, Apparel and Retail Studies majors (n = 132, 26.72%), followed by respondents enrolled in Business Administration (n = 63, 12.15%). Monthly income indicated by most respondents was under \$300 (n = 167, 33.8%), followed by \$300 - \$499 (n = 98, 19.8%) and \$500 - \$749 (n = 73, 14.8%).

Table 8: Demographic Information

Characteristics		Frequency/Percentage	
Number of Respondents		584	
Valid (usable) Sample Size		494	
Gender		Total	Percentage
	Male	84	17.0%
	Female	408	82.6%
	Missing	2	0.4%
Age (Mean)		21.75	
Ethnicity			
	Caucasian/White	299	60.5%
	African-American	128	25.9%
	Asian or Pacific Islander	39	7.9%
	Hispanic/Latino	15	3.0%
	Native American	3	0.6%
	Other Ethnic Backgrounds	7	1.4%
	Missing	3	0.6%
Year at School			
	Freshmen	117	23.7%
	Sophomore	154	31.2%
	Junior	122	24.7%
	Senior	89	18%
	Graduate	12	2.4%

Major		
Consumer, Apparel and Retail Studies	132	26.72%
Business Administration and related majors	63	12.75%
Nursing and Health related majors	63	12.75%
Education and related majors	48	9.72%
Kinesiology	30	6.07%
Nutrition	21	4.25%
English / Speech Pathology	20	4.05%
Art and Design related majors	15	3.04%
Human Development and Family Studies	14	2.83%
Communication Studies	13	2.63%
Biology	12	2.42%
All Other majors	48	9.72%
Undecided	15	3.0%
Monthly Income		
Under \$300	167	33.8%
\$300-\$499	98	19.8%
\$500-\$749	73	14.8%
\$750-\$999	49	9.9%
\$1,000-\$1,299	39	7.9%
\$1,300 or more	51	10.3%
Missing	17	3.4%

Measurement Model Analysis

Measurement model analysis was based on the seven latent constructs discussed earlier: (1) Perceived Enjoyment; (2) Technology Anxiety; (3) Perceived Usefulness; (4) Perceived Time Saving; (5) Familiarity with using SSTs; (6) Attitude toward using SSTs; and (7) Intention to use SSTs in the Apparel Retail Environment. For the purpose of measurement purification and item refinement, item inter-correlations were examined for values indicating very high or very low associations. For this study, two separate analyses were conducted to test the main effect as well as the moderating effect of familiarity with using SSTs based on Structural Equation Modeling (SEM) via LISREL 8.8. To explore

the pattern of relationships among a number of variables, factor analysis is concerned.

According to Hair et al.'s (1998) suggestions for factor analysis, Bartlett's test of Sphericity (p -value < 0.0001) was employed to test the significance of each item and the measure of sampling adequacy (MSA). Before conducting a factor analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of Sphericity were used to examine the appropriateness of the data for factor analysis.

KMO Test and Bartlett's Test of Sphericity

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy tests whether the partial correlations among variables are small. Bartlett's test of Sphericity measures whether the correlation matrix is an identity matrix (it is not appropriate to conduct a factor analysis when the correlation matrix of variables is an identity matrix), which would indicate that the factor model is inappropriate.

Table 9: KMO Test and Bartlett's Test of Sphericity

Construct	Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)	Bartlett's Test of Sphericity Approx. Chi-Square (df)	Sig
Familiarity	.677	288.791 (6)	.000
Perceived Enjoyment	.895	2731.362 (10)	.000
Technology Anxiety	.907	1838.399 (28)	.000
Perceived Usefulness	.854	1976.575 (10)	.000
Perceived Time Saving	.683	747.088 (3)	.000
Attitude toward using SSTs	.788	1594.380 (6)	.000
Intention to use SSTs in Apparel Retail Environment	.726	1303.300 (3)	.000

* z-value=1.96 ($p \leq 0.05$), ** z-value=2.58 ($p \leq 0.01$), *** z-value=3.45 ($p \leq 0.001$).

According to Hair et al. (1998), KMO measure of sampling adequacy is used as an index when comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients. In other words, the KMO measure of sampling adequacy tests whether the partial correlations among variables are small. For a satisfactory factor analysis, the value of the KMO should be greater than 0.5 to show sampling adequacy. Bartlett's test of Sphericity is another indicator to test the strength of the relationship among variables. Bartlett's test of Sphericity is used to test the null hypothesis, which means the correlation matrix is an identity matrix. In other words, if the correlation matrix is an identity matrix, it means the variables in the population correlation matrix are absolutely uncorrelated. The observed significance level is less than .0001, which means it is enough to reject the null hypothesis. If the significance level is greater than .0001, it is not enough to reject (fail to reject) the null hypothesis, which means it is not appropriate to conduct a factor analysis and the factor model is inappropriate. Therefore, the significance level should be less than .0001. As shown in Table 9, the KMO measure for each construct is from .677 to .907, and the Bartlett's test of Sphericity for each construct is significant at less than .0001. Therefore, it was concluded that the relationships among variables were strong, providing justification of an identity matrix and good indices for factor analysis, so factor analysis can proceed.

As a part of the Structural Equation Modeling analysis, the factor structure of survey measurements was tested via LISREL 8.8. Based on Structural Equation Modeling (SEM) via LISREL 8.8 in this study, factor analysis is concerned with exploring the pattern of relationships among a number of variables, and these patterns are

represented by principal components or factors. Examination of the loadings of variables on each factor helps to identify the character of underlying dimensions. In SEM, each factor is a latent variable in the measurement model, and SEM analyses can provide statistical tests of the goodness-of-fit for a proposed confirmatory factor solution, which traditional factor analysis offered by statistical software such as SPSS cannot provide.

Confirmatory factor analysis (CFA) provides validation of scales for the measurement of specific constructs. In the CFA measurement model for this study, the indicators are depicted with Xs and latent variables labeled as constructs. This model represents the hypothesis that X_i variables assess the construct of the main effects. The single-arrows that point from the factor to the indicator represent the presumed direct causal effect of the latent variable on the observed measure (Kline, 2004, p. 199). The statistical estimates of these direct effects are factor loadings. Factor loadings in CFA are generally interpreted as regression coefficients that may be in unstandardized or standardized form. Indicators assumed to be caused by latent variables are called effect indicators.

In CFA, overall model fit indicates the degree to which specified indicators represent the hypothesized constructs for both main effects and moderating effects of familiarity with using SSTs. For this study, two separate analyses were conducted to test main effects of relationships between intrinsic and extrinsic motivation factors as well as moderating effects of familiarity with using SSTs based on SEM. As shown in Table 10, there are three types of overall model fit measures (i.e., absolute fit, incremental fit, and parsimonious fit) useful in SEM.

Table 10: Structural Equation Modeling Goodness of Fit Summary (N=494)

Construct	Fit Measure	Fit Guideline Criteria	Proposed Model (Main Effect)	Proposed Model (Main Effect changed by modification indices)	Proposed Model (Moderating Effect)	Proposed Model (Moderating Effect changed by modification indices)	Accepted	
92	Absolute Fit	Chi-square (χ^2)	p > .05	1283.14 (d.f.=339, p < .000)	1247.01 (d.f.=339, p < .000)	115.97 (d.f.=9, p < .000)	35.40 (d.f.=9, p < .000)	
		Normed chi-square (χ^2 / Degree of freedom)	p < 3.0	3.79	3.69	12.89	3.93	
		Goodness-of-fit index (GFI)	p > .90	0.84	0.85	0.96	0.99	√
Incremental Fit	Normed Fit Index (NFI)	p > .90	0.97	0.97	0.99	1.0	√	
	Comparative Fit Index (CFI)	p > .90	0.98	0.98	0.99	1.0	√	
Parsimonious Fit	Root Mean Square Error of Approximation	p < .08	0.075	0.074	0.157	0.078	√	

Source: Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.

Absolute fit measures assess the overall model fit for both structural and measurement models collectively with no adjustment for the degree of *overfitting* that might occur. Incremental fit measures compare the proposed model to another known model. Lastly, parsimonious fit measures take the complexity of the model into account. According to Hu and Bentler (1999), researchers are encouraged to employ at least one or more measures from each type (absolute fit, incremental fit, and parsimonious fit). However, an acceptable level of overall goodness-of-fit does not mean that it will meet the fit requirements for the measurement model and that the structural model is fully supported. Hu and Bentler (1999) also suggested that research must assess each of these areas separately to confirm whether they meet the requirement or to use these fit indices to identify potential problems that affected overall goodness-of-fit.

As shown in Table 10, the SEM model for the main effects had a significant χ^2 index ($\chi^2 = 1283.14$; d.f. = 339; $p < 0.001$; $\chi^2 / \text{d.f.} > 3.0$), which indicates that the model does not fit the data (Bagozzi & Yi, 1988; Hu & Bentler, 1999). However, other fit indices that are used do indicate fit, including a GFI of .84 (close to cut-off value). The NFI is .97, and CFI is .98, both of which are greater than 0.95, as recommended. Also, the normed chi-square ($\chi^2 / \text{d.f.}$) is close to the cut-off value of 3.0 as recommended by the literature (Segars & Grover, 1993). The RMSEA, which is based on the concept of non-centrality, is reported at .075 (Browne & Cudeck, 1993). Moreover, the error terms of observed variables (within-construct) were allowed to correlate as suggested by modification indices. As a result, the overall fit of the measurement model had improved. Once the model was changed based on suggestions from the modification indices, the χ^2

index ($\chi^2 = 1247.01$; d.f. = 339; $p < 0.001$; $\chi^2 / \text{d.f.} > 3.0$) was significant, which indicates that the model does not fit the data (Bagozzi & Yi, 1988; Hu & Bentler, 1999). However, other fit indices are very similar to those of the original model, as the GFI = .85 (close to cut-off value), the NFI = .97, and CFI is .98 which are again greater than .9. Also, the normed chi-square ($\chi^2 / \text{d.f.}$) slightly decreased from 3.79 to 3.69. Moreover, the adjusted model's RMSEA is slightly better, from 0.075 to 0.074, which is acceptable (Browne & Cudeck, 1993). Therefore, it can be concluded that the measurement model yields acceptable fit.

For the SEM model, the moderating effects of familiarity with using SSTs also had a significant χ^2 index ($\chi^2 = 115.97$; d.f. = 9; $p < 0.001$; $\chi^2 / \text{d.f.} > 3.0$) which indicates that the model does not fit the data (Bagozzi & Yi, 1988; Hu & Bentler, 1999). The RMSEA is reported at .157, which also indicates the model does not fit well (Browne & Cudeck, 1993). Moreover, the model's χ^2 index ($\chi^2 = 35.40$; d.f. = 9; $p < 0.001$; $\chi^2 / \text{d.f.} > 3.0$) is significant after modification which also indicates that the model does not fit the data (Bagozzi & Yi, 1988; Hu & Bentler, 1999). However, other fit indices for the proposed model (main effect) indicate fit, including the GFI = .96, the NFI = .99, and CFI = .99, which are greater than 0.9, as recommended. Moreover, fit indices improved after the model was changed according to modification indices' suggestion. For example, the GFI improved from .84 to .99, the NFI improved from .99 to 1.0, the CFI improved from .99 to 1.0, and the normed chi-square ($\chi^2 / \text{d.f.}$) decreased from 12.89 to 3.93. Moreover, the RMSEA improved from 0.157 to 0.078 (Browne & Cudeck, 1993). Therefore, it can be concluded that the measurement model yields acceptable fit.

Five constructs—familiarity with using SSTs, intrinsic & extrinsic motivation factors, attitude toward using SSTs, and intention to use SSTs in the apparel retail environment—were used to measure the potential for adopting SSTs in the apparel retail environment. As seen in Table 11, five items were used to measure familiarity with using SSTs (see Lambda-X in Table 11). Items with loadings for familiarity (e.g., F1 = 0.61, F2 = 0.43) were observed. Fifteen items were used to measure intrinsic motivation factors, including five items of perceived enjoyment (factor loadings ranked from 0.89 to 0.93) and 10 items of technology anxiety (factor loadings ranked from 0.36 to 0.82). Eight items were used to measure extrinsic motivation factors, including five items of perceived usefulness (factor loadings ranked from 0.80 to 0.90) and three items of perceived time saving (factor loadings ranked from 0.67 to 0.90). Attitude toward using SSTs includes four items with loadings that range from 0.76 to 0.93 (see Lambda-Y in Table 11). Regarding behavioral intention to use SSTs in the apparel retail environment, three items were measured with factor loadings from 0.83 to 0.95.

Table 11: Completely Standardized Factor Loading

Construct	Factor Measure	Lambda X	z-statistic	P-Value	Completely Standardized Factor Loading
Familiarity		F1 1.00			0.61
		F2 0.87	7.65	***	0.43
		F3 1.28	10.95	***	0.75
		F4 .073	8.83	***	0.52
		F5 0.92	6.34	***	0.35
Intrinsic Motivation	Perceived Enjoyment	PE1 1.00			0.89
		PE2 0.98	31.32	***	0.91
		PE3 1.08	31.91	***	0.91
		PE4 1.06	29.52	***	0.89
		PE5 1.06	33.01	***	0.93

	Technology Anxiety	TA1	1.00			0.57
		TA2	1.66	11.58	***	0.68
		TA3	1.18	7.06	***	0.36
		TA4	1.81	11.89	***	0.71
		TA5	1.44	9.92	***	0.54
		TA6	1.99	11.44	***	0.66
		TA7	1.76	12.83	***	0.80
		TA8	1.13	7.72	***	0.40
		TA9	2.13	12.98	***	0.82
		TA10	2.26	12.98	***	0.82
Extrinsic Motivation	Perceived Usefulness	PU1	1.00			0.82
		PU2	0.98	21.17	***	0.80
		PU3	1.08	23.92	***	0.87
		PU4	1.02	22.01	***	0.82
		PU5	1.11	25.52	***	0.90
	Perceived Time Saving	PTS1	1.00			0.89
		PTS2	1.00	28.70	***	0.90
		PTS3	0.74	17.50	***	0.67
		Lambda Y				
Attitude toward using SSTs		A1	1.00			0.85
		A2	1.21	28.53	***	0.93
		A3	0.94	20.15	***	0.76
		A4	1.22	26.87	***	0.90
Intention to use SSTs in Apparel Retail Environment		BI1	1.00			0.83
		BI2	1.09	27.49	***	0.94
		BI3	1.14	28.21	***	0.95

Note: First λ path was set to 1, therefore, no z-values are given

* z-value (two-tailed) = 1.96 (p < .05), ** z-value = 2.58 (p < .01), *** z-value = 3.45 (p < .001).

On the other hand, a confirmatory factor analysis of the multi-item scales in the measurement model (see Table 12) shows that each factor loading of the indicators for each construct were statistically significant and sufficiently high for structural model testing. Based on the CFA, factor loadings (Lambda X and Lambda Y) lower than .50 (i.e., F5, TA3, TA8; except F2 of familiarity of using SSTs) were deleted.

Table 12: Measurement Validity and Reliability

Construct		Standardized Factor Loading (λ) (t-value)	Composite Factor Reliability (CR)	Construct Reliability (Cronbach's α)	Average Variance Extracted Values (AVE)				
Intrinsic Motivation									
Perceived Enjoyment (ξ_1)	PE1	0.89	0.96	0.957	0.82				
	PE2	0.91							
	PE3	0.91							
	PE4	0.89							
	PE5	0.93							
Technology Anxiety (ξ_2)	TA1	0.57	0.89	0.882	0.50				
	TA2	0.68							
	TA4	0.71							
	TA5	0.54							
	TA6	0.66							
	TA7	0.80							
	TA9	0.82							
	TA10	0.82							
	Extrinsic Motivation								
	Perceived Usefulness (ξ_3)	PU1				0.82	0.92	0.925	0.71
PU2		0.80							
PU3		0.87							
PU4		0.82							
PU5		0.90							
Perceived Time Saving (ξ_4)	PTS1	0.89	0.71	0.852	0.46				
	PTS2	0.90							
	PTS3	0.67							

Familiarity (ξ_5)	F1	0.61	0.73	0.635	0.35
	F2	0.43			
	F3	0.75			
	F4	0.52			
	F5	0.35			
Attitude toward using SSTs (η_1)	A1	0.85	0.77	0.918	0.46
	A2	0.93			
	A3	0.76			
	A4	0.90			
Intention to use SSTs in Apparel Retail Environment (η_2)	BI1	0.83	0.73	0.928	0.48
	BI2	0.94			
	BI3	0.95			

Note:

Composite Factor Reliability (CR) = $(\sum \lambda)^2 / [(\sum \lambda)^2 + (\sum \theta)]$

Average Variance Extracted Values (AVE) = $(\sum \lambda^2) / [(\sum \lambda^2) + (\sum \theta)]$

λ (Lambda): Completely Standardized Factor Loading Value

θ (Theta-Delta): Indicator error variances

Cronbach's alpha (α) = $N * C\text{-bar} / [V\text{-bar} + (N-1) * C\text{-bar}]$

N: Number of Items

C-bar: Average inter-item covariance among the items.

V-bar: Average variance

Psychometric Properties

Measurement model analysis (e.g., Cronbach's α , composite factor reliability (CR), and average variance extracted values (AVE)) were used to assess the psychometric properties to measure reliability and validity of measurement items. For measuring reliability, Cronbach's α and composite factor reliability (CR) were applied and average variance extracted (AVE) based on the information from the measurement model were used to measure convergent validity. Discriminant validity was measured by comparison of the construct's correlation to other constructs and the square root of AVE.

For the reliability related to internal consistency between constructs, Cronbach's α was used. The acceptable level is greater than .7 (Hair et al., 1998). As shown in Table 12, all Cronbach's α values are greater than .7 (ranged from .635 to .957) except familiarity with using SSTs (0.635), and thus indicate high internal consistency among items.

Convergent validity and discriminant validity were also examined to assess construct validity. According to Hair et al. (1998), convergent validity refers to the degree to which two measures of the same concepts are correlated. When different instruments are strongly correlated, convergent validity is demonstrated. Moreover, convergent validity indicates that measurement scales meet the intended concept and the instruments are measuring what they were intended to measure.

A factor loading value greater than 0.5, CR greater than 0.7, and AVE larger than 0.5 were used as the standards to measure convergent validity (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Hair et al., 1998). To assess the internal consistency between latent variables, CR was calculated. After deleting factor loadings (Lambda X and Lambda Y) lower than .50 (i.e., F5, TA3, TA8; except F2 of familiarity with using SSTs), factor loading values ranged from 0.43 to 0.95, with most factor loading results above 0.7. Therefore, factor loadings meet acceptable levels. Moreover, the CR for each construct ranged from 0.73 to 0.95, indicating high internal consistency for most constructs. As Fornell and Larcker (1981) suggest, the average variance extracted (AVE) value of constructs exceed 0.5 for a relatively high level of variance. As shown in Table 12, AVE values of intrinsic and extrinsic motivation factors are greater than 0.5, but familiarity with using SSTs, attitude toward using SSTs, and intention to use SSTs in the apparel

retail environment had lower than 0.5 AVE values. However, AVE values of attitude toward using SSTs and intention to use SSTs in the apparel retail environment were very close to 0.5, thus most AVE values are in the 0.5 or greater range. Therefore convergent validity is acceptable among measurement constructs by meeting acceptable levels.

As Fornell and Larcker (1981) suggest, in order for a construct to be distinctive from other constructs it must have the square root of the average variance extracted from it greater than its correlations with other constructs for the discriminant validity between constructs. As shown in Table 13, the bold diagonal values represent that the square root of the average variance extracted ranged from 0.59 to 0.91, which is greater than its correlations with other constructs. Therefore, discriminant validity was found to exist between constructs, except for between perceived usefulness and perceived time saving.

Table 13: Descriptive Statistics, Reliability, and Correlation Summary for Constructs (N=494)

Model Variables	Mean	SD	Reliability (α)	Correlations							
				F	TA	PE	PU	PTS	A	BI	
F	6.039	0.942	.637	(0.59)							
TA	2.361	1.078	.882	.528**	(0.71)						
PE	5.067	1.366	.957	.261**	-.287**	(0.91)					
PU	4.709	1.440	.925	.246**	-.275**	.643**	(0.84)				
PTS	4.976	1.450	.852	.226**	.265**	.561**	.852**	(0.67)			
A	5.595	1.350	.918	.289**	-.326**	.645**	.662**	.640**	(0.68)		
BI	5.217	1.465	.928	.333**	-.318**	.619**	.691**	.621**	.696**	(0.69)	

Note. ** $p < 0.01$ (2 tailed). The bold diagonal values are the square root of the average variance extracted for each construct. F = familiarity with using SSTs; TA = technology anxiety; PE = perceived enjoyment; PU = perceived usefulness; PTS = perceived time saving; A = attitude toward using SSTs; BI = intention to use SSTs in the apparel retail environment

Structural Model Analysis and Hypotheses Testing

Structural equation modeling was used to test the proposed research framework and hypotheses. For this study, two separate analyses were conducted to test the main effect as well as the moderating effect of familiarity with using SSTs based on Structural Equation Modeling (SEM) via LISREL 8.8. The first analysis model tests the main effects and the second analysis model tests the moderating effect of familiarity as well as how this moderating effect changes the main effects.

Test of Main Effects (Core Model)

Model Testing

To analyze structural models of main effects, structural equation modeling (SEM) was conducted using the maximum-likelihood estimation procedure through LISREL 8.8. The relationships in the model were based on the theoretical associations as discussed in Chapter II. Most of the hypothesized paths were significant at the $p < .01$ level based on the results of SEM. Squared multiple correlations (R^2) are reported for endogenous constructs as well as path coefficients and t-values for each statistically significant path. Chi-square statistics (χ^2), goodness-of-fit index (GFI), normed fit index (NFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were used to assess model fit.

The path model had a χ^2 test-statistic of 1283.14 (d.f. = 339; $p < .000$) which is significant, and indicates that the model does not fit the data. However, other fit indices, including GFI = .84, NFI = .97, and CFI = .98, were close enough to or greater than the cut-off value of 0.9 (see Table 10). Moreover, the model's RMSEA index is 0.075, with a

90 percent confidence interval between 0.071 and 0.080, indicating that model fit is acceptable. Most indices show that the proposed model fits the data well. The model's structural equations for the main effects are displayed below in Figure 12.

Hypothesis Testing

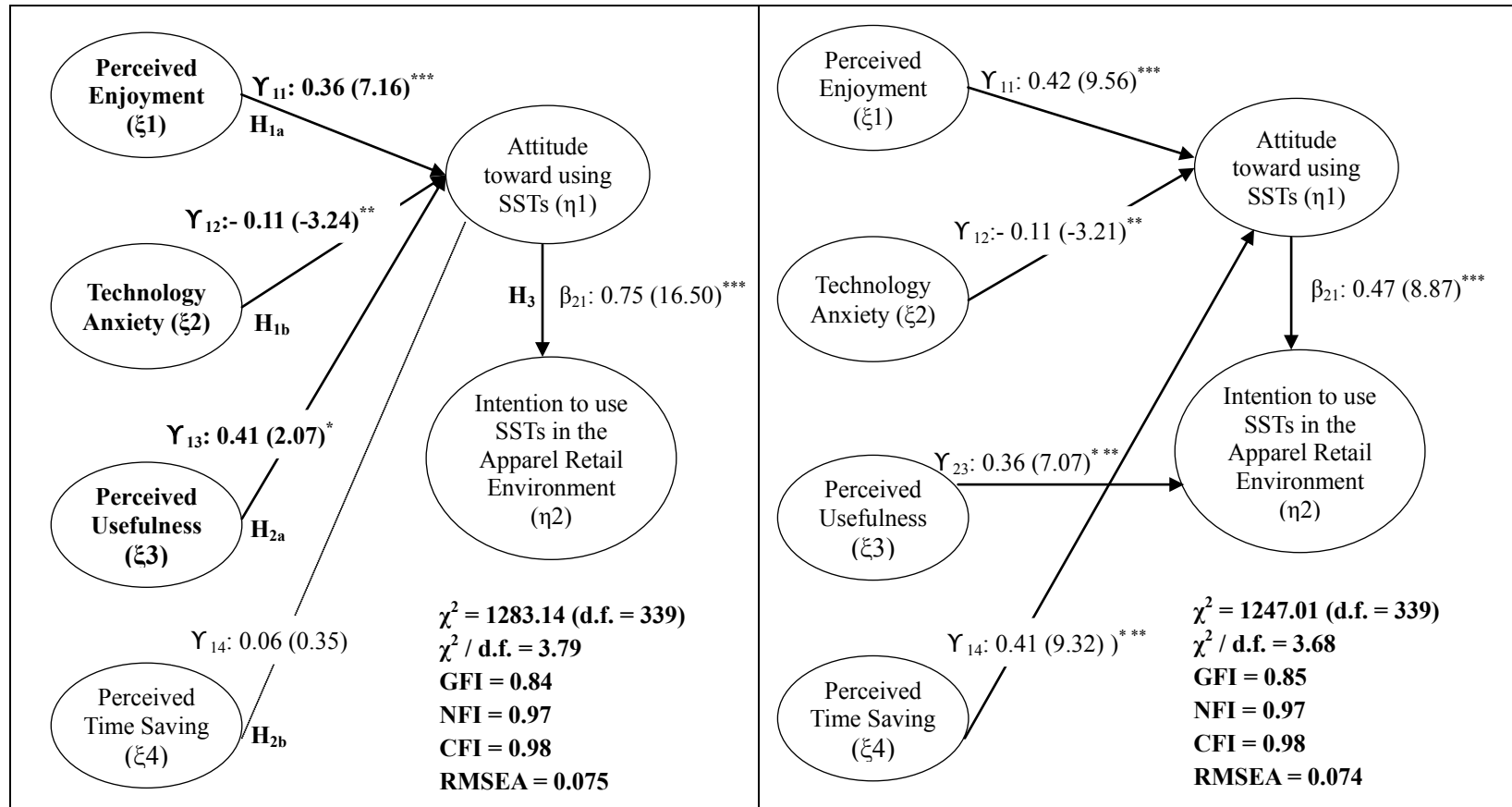
Based on Figure 12, the patterns of direct effects revealed by the path models suggest that the study's hypotheses are mostly supported. This model specifically describes each path relationship and the path results of SEM for the main effects, which are indicated in Table 14.

Table 14: Results of Structural Equation Modeling (SEM), Main Effects

Hypothesis	Standardized regression weight	z-value (significance)
H _{1a} : There is a relationship between perceived enjoyment and attitude toward using SSTs.	0.36	7.16 ***
H _{1b} : There is a relationship between technology anxiety and attitude toward using SSTs.	-0.11	-3.24 **
H _{2a} : There is a relationship between perceived usefulness and attitude toward using SSTs.	0.41	2.07 *
H _{2b} : There is a relationship between perceived time saving and attitude toward using SSTs.	0.06	0.35
H ₃ : There is a relationship between attitude toward using SSTs and intention to use SSTs in the Apparel Retail Environment.	0.75	16.50 ***

Note: N=494, * z-value (two-tailed) = 1.96 (p < .05), ** z-value = 2.58 (p < .01), *** z-value = 3.45 (p < .001).

Figure 12: Original (left) and Adjusted (right) Path Models for the Main Effect



Note: (z-value; two-tailed) * z-value = 1.96 ($p < .05$), ** z-value = 2.58 ($p < .01$), *** z-value = 3.45 ($p < .001$).

1. Indicator variables, correlations among exogenous variables, and disturbances have been omitted for notational simplicity.
2. ^aCoefficient: Completely standardized solution

Hypothesis 1 proposed the relationship between intrinsic motivation factors and consumers' attitudes toward using SSTs. A positive relationship was found between perceived enjoyment and attitude toward using SSTs, and a negative relationship was found between technology anxiety and attitude toward using SSTs. Specifically, the relationship predicted in H_{1a} (relationship between perceived enjoyment and attitude toward using SSTs) was supported by the data ($\gamma_{11} = 0.36$, $z\text{-value} = 7.16$, $p < .001$), and the relationship predicted in H_{1b} (relationship between technology anxiety and attitude toward using SSTs) was also supported by the data ($\gamma_{12} = -0.11$, $z\text{-value} = -3.24$, $p < .01$). Thus, H₁ was fully supported indicating the relationship between intrinsic motivation factors and attitude toward using SSTs.

For Hypothesis 2, which proposed the relationship between extrinsic motivation factors and consumers' attitudes toward using SSTs, a positive relationship was found between perceived usefulness and attitude toward using SSTs, which indicates that H_{2a} was supported by the data ($\gamma_{13} = 0.41$, $z\text{-value} = 2.07$, $p < .05$). A positive direct relationship was also found between perceived time saving and attitude toward SSTs, but the relationships were not significant, which indicates H_{2b} was not supported by the data ($\gamma_{14} = 0.06$, $z\text{-value} = 0.35$, $p > .05$). Thus, H₂, the relationship predicted between extrinsic motivation factors and attitude toward using SSTs, was partially supported. However, based on the results of the CFA, perceived usefulness and perceived time saving constructs were highly correlated, and thus can be considered as one variable. Therefore, the correlation may have had an impact on the relationship between extrinsic motivation factors and attitude toward using SSTs.

Related to consumers' behavioral intentions to use SSTs in the apparel retail environment, (H₃ proposed the relationship between attitude toward using SSTs and intention to use SSTs in the apparel retail environment), a positive relationship was found between attitude toward SSTs and intentions to use SSTs in the apparel retail environment. A strong effect ($> .5$) was also found between these two variables and the relationship was significant at the .001 level ($\beta_{21} = 0.75$, $z\text{-value} = 16.50$, $p < .001$), indicating that H₃ was fully and strongly supported.

In summary, H₁ and H₃ were fully supported and H₂ was partially supported as the main effect of the relationships among intrinsic, extrinsic motivation factors and attitude toward using SSTs (see Table 15).

Table 15: Results of Structural Equation Modeling (SEM), Main Effects

Hypothesis	Supported?
H ₁ : There will be a relationship between intrinsic motivation factors and consumers' attitudes toward using SSTs.	Y
H _{1a} : There will be a relationship between perceived enjoyment and consumers' attitudes toward using SSTs.	Y
H _{1b} : There will be a relationship between technology anxiety and consumers' attitudes toward using SSTs.	Y
H ₂ : There will be a relationship between extrinsic motivation factors and consumers' attitudes toward using SSTs.	Partial
H _{2a} : There will be a relationship between perceived usefulness and consumers' attitudes toward using SSTs.	Y
H _{2b} : There will be a relationship between perceived time saving and consumers' attitudes toward using SSTs.	N
H ₃ : There will be a relationship between attitude toward using SSTs and intention to use SSTs in the Apparel Retail Environment.	Y

Note: Y denotes Yes, N denotes No.

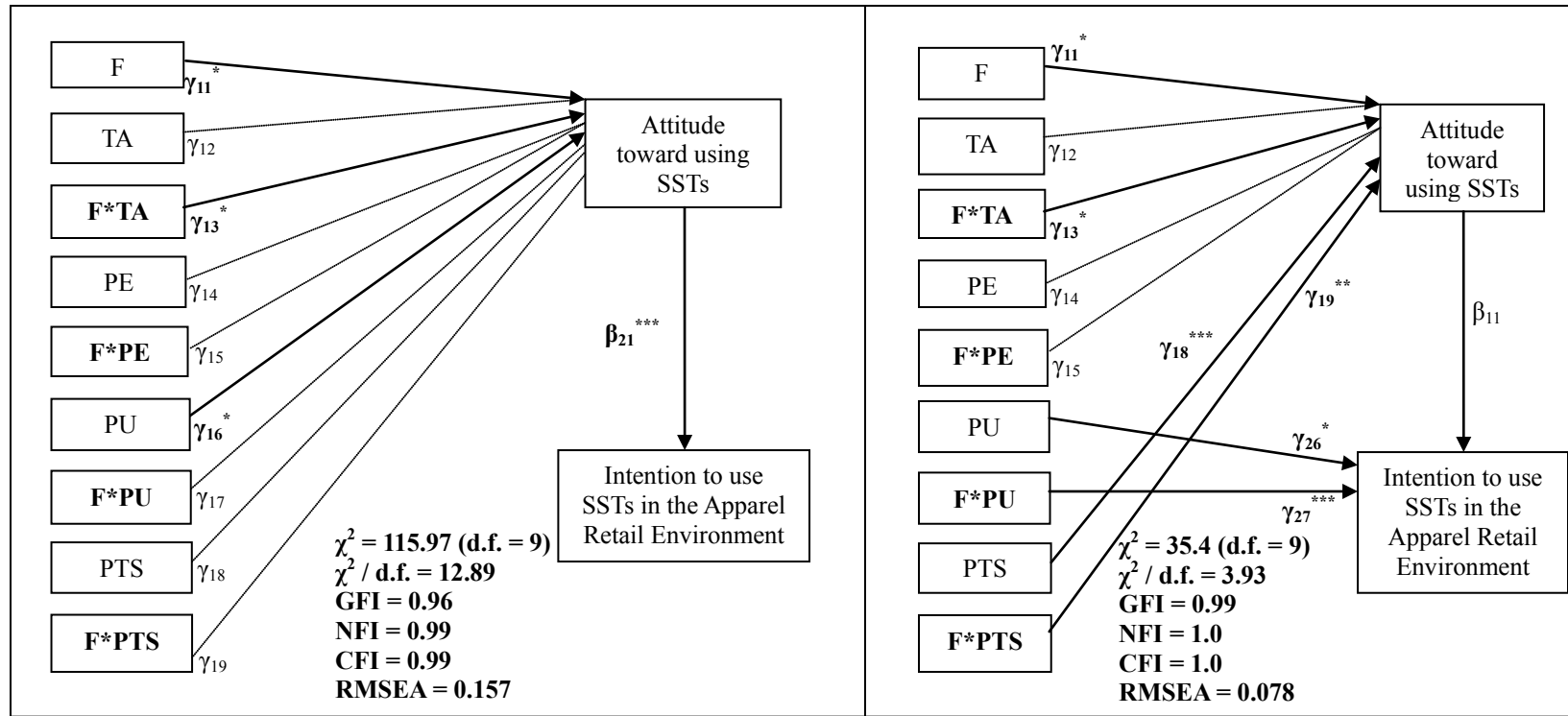
Test of Moderating Effects of Familiarity with using SSTs

Model Testing

In order to test the moderating effect of familiarity on the relationship between motivation factors (i.e., intrinsic and extrinsic) and attitude toward using SSTs, separate structural equation modeling (SEM) was conducted using the maximum-likelihood estimation procedure through LISREL 8.8. In preparation for the analysis, each variable was treated as an observed variable to test the moderating effect by adding interaction terms instead of using unobserved variables or so-called latent variables. To treat variables as observed variables, the mean value of each construct was used for the analysis.

The path model had a χ^2 test-statistic of 115.97 (d.f. = 9; $p < .000$) which is significant, and indicated that the model does not fit the data. The model's RMSEA index was 0.157, also indicating the model fit was not acceptable. However, other fit indices, including GFI = .96, NFI = .99, and CFI = .99, are much greater than the cut-off value of .9 (see Table 10) (Browne & Cudeck, 1992). The model's structural equations for the moderating effects are displayed below in Figure 13 and Table 16.

Figure 13: Original (left) and Adjusted (right) Path Models for the Moderating Effect



Note:

Proposed Model for the Moderating Effect (Left)

Moderating effects: γ_{13} : -0.28 (-2.15)^{*}, γ_{15} : 0.47 (1.41), γ_{17} : -0.81 (-1.57), γ_{19} : -0.46 (-1.06)

1. ^{*} z-value (two-tailed) = 1.96 (p < .05), ^{**} z-value = 2.58 (p < .01), ^{***} z-value = 3.45 (p < .001).
2. Correlations among exogenous variables and disturbances have been omitted for notational simplicity.
3. ^aCoefficient: Completely standardized solution.

Proposed Model for the Moderating Effect

after alteration based on modification indices (Right)
Moderating effects: γ_{13} : 0.54 (2.29)^{*}, γ_{15} : 0.18 (0.60), γ_{27} : 0.26 (3.45)^{***}, γ_{19} : -0.85 (-2.97)^{**}

Hypothesis Testing for Moderating Effects

Based on Figure 13, the patterns of moderating effects revealed by the path models suggest that the study's hypotheses are mostly not supported. This model specifically describes changes after consideration of the moderating effects of familiarity with using SSTs, and the path results of SEM for the moderating effects as indicated in Table 16.

Table 16: Results of Structural Equation Modeling (SEM), Moderating Effects

Hypothesis	Standardized regression weight	z-value (significance)
H _{4a} : Moderating Effect on Perceived Enjoyment → Attitude toward using SSTs	0.47	1.41
H _{4b} : Moderating Effect on Technology Anxiety → Attitude toward using SSTs	-0.28	-2.15 *
H _{5a} : Moderating Effect on Perceived Usefulness → Attitude toward using SSTs	-0.81	-1.57
H _{5b} : Moderating Effect on Perceived Time Saving → Attitude toward using SSTs	-0.46	-1.06

Note: N=494, *z-value (two-tailed) = 1.96 (p < .05), **z-value = 2.58 (p < .01), ***z-value = 3.45 (p < .001).

Hypothesis 4 proposed that there will be moderating effects of familiarity on relationships between intrinsic motivation factors and consumers' attitudes toward using SSTs. A positive relationship was found for the moderating effect of familiarity with using SSTs on the relationship between perceived enjoyment and attitude toward using SSTs, and a negative relationship was found for the moderating effect of familiarity with using SSTs on the relationship between technology anxiety and attitude toward using SSTs. More specifically, the standardized path coefficient for the moderating effect on the

relationships between perceived enjoyment and attitude toward using SSTs was 0.47 and the test statistic value was 1.41 ($p > .05$), which indicates that H_{4a} (the influence of perceived enjoyment on consumers' attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions) was not supported. However, the standardized path coefficient for the moderating effect on the relationships between technology anxiety and attitude toward using SSTs was -0.28, and the test statistic value was -2.15 ($p < .05$), which indicates that H_{4b} (the influence of technology anxiety on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions) was supported. Thus, H_4 was partially supported.

For H_5 (there will be moderating effects of familiarity on relationships between extrinsic motivation factors and consumers' attitudes toward using SSTs), a negative relationship was found for the moderating effect of familiarity with using SSTs on the relationship between extrinsic motivation factors and attitude toward using SSTs. However, the test statistic values were not significant, which indicates that H_5 was not supported. More specifically, the standardized path coefficient value for the moderating effect on the relationship between perceived usefulness and attitude toward using SSTs was -0.81, and -0.46 for the moderating effect on the relationship between perceived time saving. Neither were significant at -1.57 ($p > .05$) and -1.06 ($p > .05$) respectively. Thus, H_5 was not supported. In summary, H_4 was partially supported and H_5 was not supported testing the moderating effect of familiarity on the relationships among intrinsic and

extrinsic motivation factors and attitude toward using SSTs (see Table 17).

Table 17: Results of Structural Equation Modeling (SEM), Moderating Effects

Hypothesis	Supported?
H ₄ : There will be moderating effects of familiarity on relationships between intrinsic motivation factors and consumers' attitudes toward using SSTs.	Partial
H _{4a} : The influence of perceived enjoyment on consumers' attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.	N
H _{4b} : The influence of technology anxiety on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.	Y
H ₅ : There will be moderating effects of familiarity on relationships between extrinsic motivation factors and consumers' attitudes toward using SSTs.	N
H _{5a} : The influence of perceived usefulness on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.	N
H _{5b} : The influence of perceived time saving on attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions.	N

Note: Y denotes Yes, N denotes No.

Suggestions from Modification Indices

The modification indices for the main effect suggested the direct relationship between perceived usefulness and intention to use SSTs in the apparel retail environment. That is, consumers who have high perceived usefulness tend to have more positive intentions to purchase apparel products through SSTs. Based on this suggestion, the path

model has a χ^2 test-statistic of 1247.01 (d.f. = 339; $p < .000$) which is significant, and indicates that the model does not fit the data. However, other fit indices, including GFI = .85, NFI = .97, and CFI = .98, were close enough to or greater than the cut-off value of 0.9 (see Table 10). Moreover, the model's RMSEA index is 0.074, with a 90 percent confidence interval between 0.069 and 0.078, indicating model fit is acceptable as well. After alteration based on modification indices, model fit was slightly improved (see Figure 12 for the original (left) and adjusted (right) path model for the main effect).

Moreover, for the moderating effect, modification indices suggested the direct relationship between perceived usefulness and intention to use SSTs in the apparel retail environment, and the direct relationship for the moderating effect of familiarity with using SSTs on the relationship between perceived usefulness and attitude toward using SSTs. After the model was changed based on modification indices, the model's fit indices were improved, the GFI from .96 to .99, NFI from .99 to 1.0 (which indicates perfect fit), and CFI from .99 to 1.0 (which indicates perfect fit). Moreover, the model's RMSEA index tremendously improved from 0.157 to 0.078, thereby indicating acceptable model fit (see Figure 13 for the original (left) and adjusted (right) path model for the moderating effect).

Summary

This chapter provided an analysis of the survey responses, including description of the sample and measurement model analysis for both main effects and moderating effects. Hypotheses were tested based on the separate structural models for the main effects and moderating effects. The next chapter will discuss conclusions based on the findings and implications for future research.

CHAPTER V

CONCLUSIONS

This chapter presents the following sections: (1) Discussion, (2) Conclusions and Recommendations, (3) Implications, and (4) Limitations and Suggestions for Further Research.

Discussion

The overall purpose of this study was to explore and explain the importance of motivation factors (e.g., intrinsic vs. extrinsic) and their relationships to consumers' potential adoption of SSTs in the apparel retail environment. More specifically, this research examined the moderating effect of familiarity with using SSTs on relationships between motivation factors (i.e., intrinsic and extrinsic) and consumers' attitudes toward using SSTs. All proposed hypotheses were examined using a scenario, since apparel retail environments currently do not offer SSTs, and a conceptual model was developed to test these proposed hypotheses based on the Technology Acceptance Model.

To investigate the relationships between consumers' attitudes toward and intention to use SSTs in the apparel retail environment, four primary objectives guided the study: 1) to explore the motivation factors (e.g., intrinsic and extrinsic motivations) important to using SSTs; 2) to examine the effects of these motivation factors on consumers' attitudes toward using SSTs for purchasing apparel products; 3) to investigate the relationship between consumers' attitudes toward using SSTs and their intentions to use SSTs in

apparel retail settings; and 4) to assess the moderating effects of familiarity on the relationships between motivation factors and consumers' attitudes toward SSTs. The results of each of the four objectives are discussed below.

Objectives 1 and 2. Exploring the motivation factors (e.g., intrinsic and extrinsic motivations) that are important to using SSTs and examining the effects of these motivation factors (i.e., intrinsic and extrinsic) on consumers' attitudes toward using SSTs for purchasing apparel products.

Hypothesis 1: Relationship between intrinsic motivation factors and consumers' attitudes toward using SSTs

Hypothesis 1 proposed the relationship between intrinsic motivation factors (i.e., perceived enjoyment (H_{1a}) and technology anxiety (H_{1b})) and consumers' attitudes toward using SSTs (see Figure 14). H_{1a} predicted a relationship between perceived enjoyment and attitude toward using SSTs. The coefficient was 0.36 and significant at $p < .001$ ($r_{11} = 0.36$, z -value = 7.16, $p < .001$). This finding indicates that there is a direct positive relationship between perceived enjoyment and attitude toward using SSTs. That is, respondents indicated that they tend to have more positive attitudes toward using SSTs in the apparel retail environment when they have high perceived enjoyment, as in the other retail environments (e.g., grocery stores). Based on the general questions about respondents' past experience with SSTs, respondents also indicated that they use the system because it is fun. This finding is consistent with a study by ven der Heijden (2004), which indicated that consumers use technological innovations to satisfy the need for entertainment.

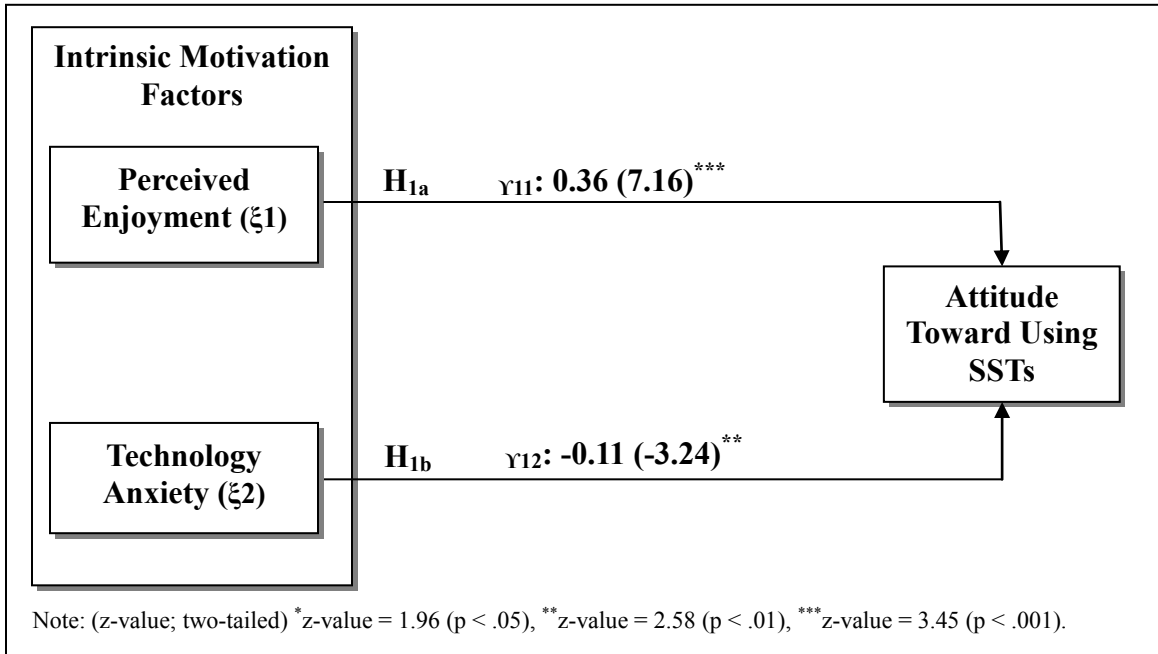
H_{1b} predicted a relationship between technology anxiety and consumers' attitudes toward using SSTs. The coefficient was -0.11 and significant at $p < 0.01$ ($r_{12} = -0.11$, z -value = -3.24, $p < .01$). Oyedele and Simpson (2007) and Meuter et al. (2003) indicated that technology anxiety negatively affects consumers' decisions to use a technology, and that individuals with high technology anxiety are less disposed to utilizing SSTs. The study's results also showed that technology anxiety negatively influenced consumers' attitudes toward using SSTs. That is, respondents who have low levels of technology anxiety have more positive attitudes toward using SSTs than those who have high levels of technology anxiety.

These findings suggest that in order to increase consumers' positive attitudes toward SSTs in the apparel retail environment, satisfying the need for enjoyment through an attractive layout, emphasis on visual design, or playful sound is relatively important. Therefore, when apparel retailers adopt SSTs, they have to consider that the system should provide consumers with some perception of enjoyment, and that this can increase consumers' satisfaction and intention to purchase apparel products through SSTs.

However, high levels of technology anxiety will negatively affect a consumer's decision to utilize SSTs. Therefore, designing the SST so that its easy to use features are emphasized would be important to ensure that consumers are comfortable with an SST. Apparel retailers must consider that the system has easy to use features to increase consumers' level of comfort with the system. Findings also indicate that technology use is becoming increasingly prevalent among the younger generation; however, this may be a result of the sample, since respondents were university students, many of whom are

already comfortable with computer operation and technology.

Figure 14: Intrinsic Motivation Factors and Attitude toward Using SSTs



Hypothesis 2: Relationship between extrinsic motivation factors and consumers’ attitudes toward using SSTs

According to Davis et al. (1989), the Technology Acceptance Model (TAM) presents two key beliefs as predictors of intention to use a system: perceived usefulness and perceived ease of use. In this study, perceived usefulness was predicted to impact attitude toward using SSTs. As another motivation factor, Hypothesis 2 proposed relationships between extrinsic motivation factors (i.e., perceived usefulness (H_{2a}) and perceived time saving (H_{2b})) and consumers’ attitudes toward using SSTs (see Figure 15). Whereas both intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety) were found to have a significant, direct relationship with consumers’ attitudes

toward using SSTs, H_{2a} was the only significant coefficient ($\gamma_{13} = 0.41$, z-value = 2.07, $p < .05$). That is, respondents indicated that they decide whether to use SSTs based on perceptions of its usefulness. This finding is not consistent with a study by Dabholkar and Bagozzi (2002), which suggested that perceived usefulness is not relevant to technology-based self-service since customers do not own the technology and therefore it is difficult for them to see the usefulness. The findings however, may be the result of the sample, as most respondents already have at least one experience with using SSTs, such as purchasing products at grocery stores, so they know SSTs are useful even though they do not own the technology. However, this finding is consistent with studies by Childers et al. (2001), Curran et al. (2003), Featherman and Pavlou (2003), Parasuraman et al. (2005), just to name a few, which suggest that perceived usefulness is an important element in predicting attitudes toward using SSTs. This finding also supports similar findings by Hausman and Siekpe (2009), Hu et al. (2009), Parasuraman et al., (2005), and Weijters et al. (2007), which indicate consumers use technology because it is useful.

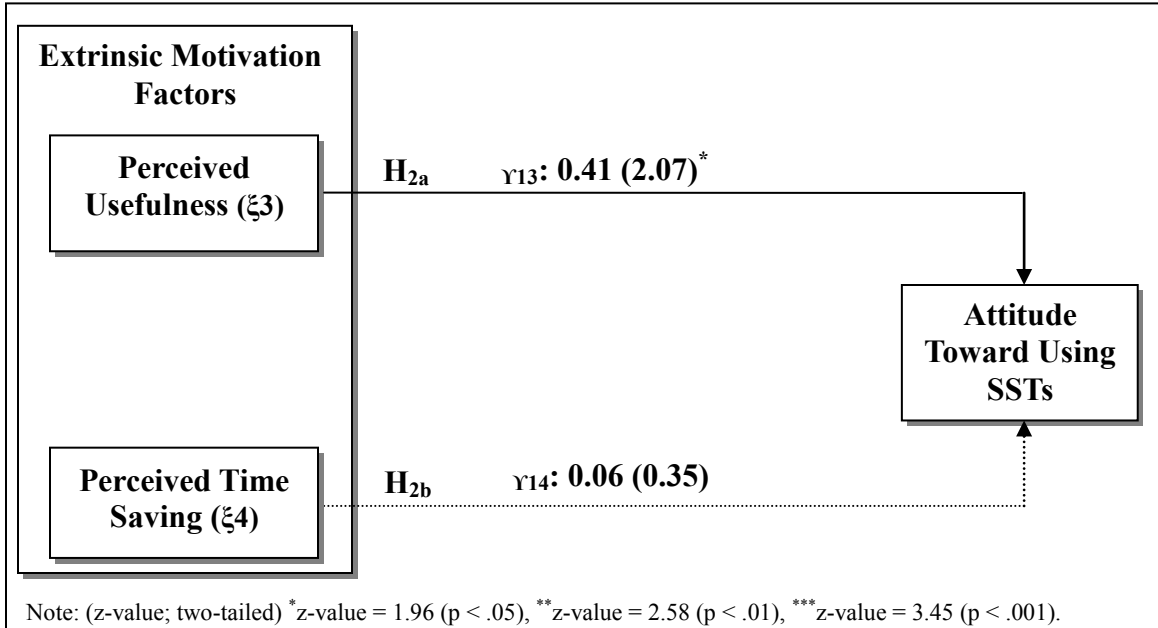
H_{2b} proposed a relationship between perceived time saving and attitude toward using SSTs. However, perceived time saving was found to be less critical to respondents' attitudes toward using SSTs. That is, H_{2b} was not supported by the data ($\gamma_{14} = 0.06$, z-value = 0.35, $p > .05$). In response to the general question asking about respondents' past experience with SSTs, some mentioned that they recognize that using SSTs takes more time when there is a problem, such as when a person does not know how to use the system or when there is a system error. This suggests that in order to increase consumers' positive attitudes toward SSTs in the apparel retail environment, the usefulness of the

technology is more important than time saving, even though most respondents mentioned that they used SSTs to save time.

This study found that an SST perceived to be useful attracts, and in turn facilitates, more positive attitudes toward using SSTs. These findings suggest that in order to increase consumers' positive attitudes toward SSTs in the apparel retail environment, retailers should emphasize the system's usefulness. Moreover, respondents mentioned that they use SSTs because it can save time when there are less people standing at the system. Therefore, even though the relationship between perceived time saving and consumers' attitudes toward using SSTs was not significant, time saving was important to respondents' attitudes toward using SSTs, based on responses to the general questions about how and why they use SSTs. When apparel retailers adopt SSTs, they should emphasize how the system can save time when the store is crowded. By adopting SSTs, apparel retailers can keep instead of lose customers, thereby leading to greater profit.

Moreover, based on the results of the CFA, perceived usefulness and perceived time saving were highly correlated, as γ is 0.95, indicating that the two variables can be seen as one variable. As time saving construct could be a part of usefulness, respondents may consider perceived time saving to be the same as perceived usefulness. Therefore, if these two variables (perceived usefulness and perceived time saving) were treated as one variable, the relationship between extrinsic motivation factors and attitude toward using SSTs may change.

Figure 15: Extrinsic Motivation Factors and Attitude toward Using SSTs



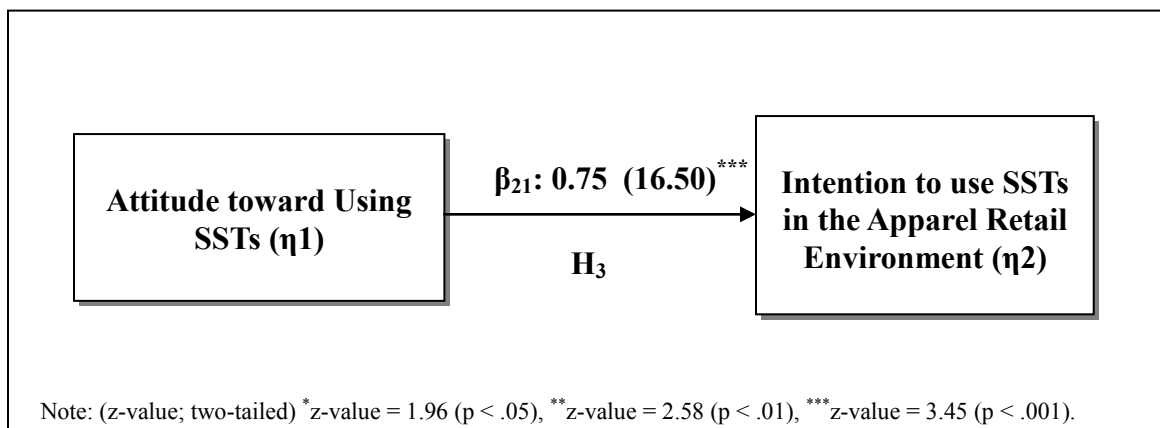
Objective 3. Investigate the relationship between consumers' attitudes toward using SSTs and their intention to use SSTs in apparel retail settings.

Hypothesis 3: Relationship between consumers' attitudes toward using SSTs and their intentions to use SSTs in the apparel retail environment

Hypothesis 3 predicted a relationship between consumers' attitudes toward using SSTs and their intention to use SSTs in the apparel retail environment, and was strongly supported by data ($\beta_{21} = 0.75$, z-value = 16.50, $p < .001$). This result is similar to previous research (e.g., Bhattacharjee & Premkumar, 2004; Dabholkar & Bagozzi, 2002; Seock & Norton, 2007), which indicated that a positive attitude toward using SSTs leads to higher intentions to use the system. As respondents' attitudes toward using SSTs had a direct, positive effect on their intention to use SSTs in other retail settings, such as grocery stores,

this finding indicates that consumers who have positive attitudes toward using SSTs are more likely to use SSTs in the apparel retail environment. Therefore, when apparel retailers adopt SSTs, they should try to increase consumers' satisfaction when they use SSTs by emphasizing SSTs' benefits, such as usefulness, and time saving. This will enhance consumers' positive attitudes toward using SSTs, which will lead to more intention to use SSTs when given the opportunity.

Figure 16: Attitude toward Using SSTs and Intention to use SSTs in the Apparel Retail Environment



Objective 4. Assess the moderating effects of familiarity on the relationships between motivation factors and consumers' attitudes toward SSTs.

Hypothesis 4: Moderating effect of familiarity on relationships between intrinsic motivation factors and consumers' attitudes toward using SSTs

Hypothesis 4 proposed a moderating effect of familiarity on relationships between intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety) and consumers' attitudes toward using SSTs (see Figure 17). Within H_4 , H_{4a} proposed that the

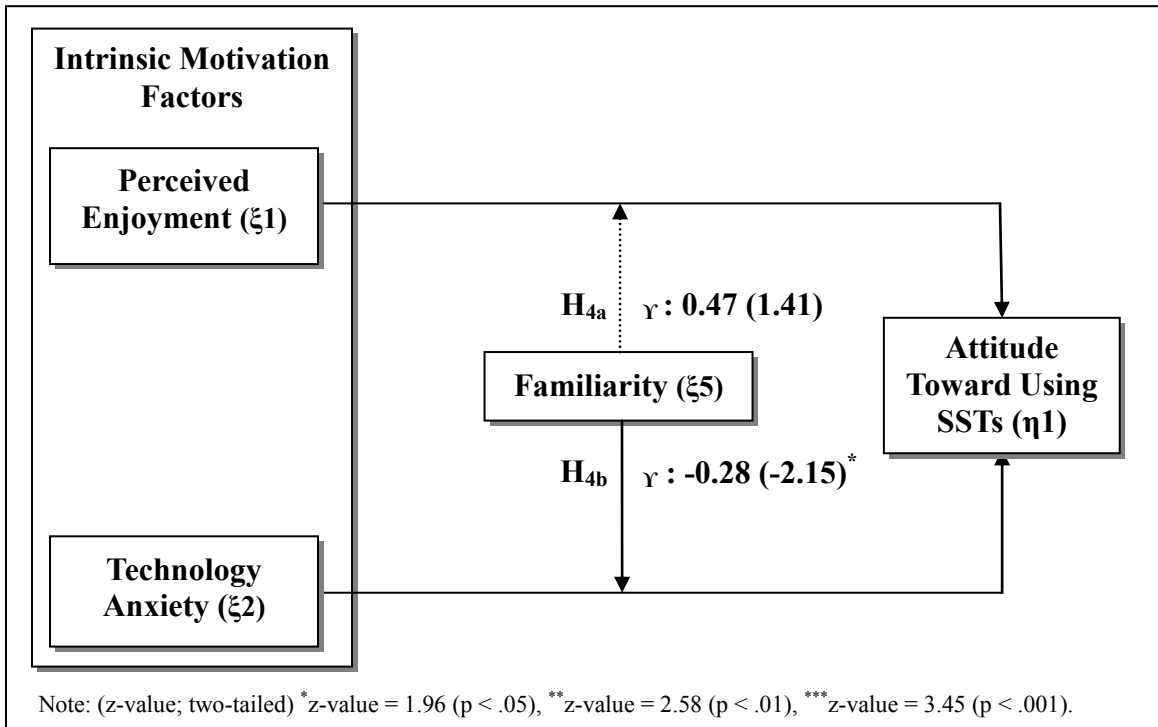
influence of perceived enjoyment on consumers' attitudes toward using SSTs will be stronger in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions, while H_{4b} proposed that the influence of technology anxiety on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions. Of the two, H_{4b} was the only significant coefficient ($r = -0.28$, $z\text{-value} = -2.15$, $p < .05$). That is, respondents indicated that they have less technology anxiety when they are more familiar with using SSTs, which leads to a more positive attitude toward using SSTs. This finding is consistent with a study by Kinard et al. (2003), which indicated consumers use more technology as they are familiar with using the system because they know the features of the system, which reduces their technology anxiety. This finding also supports findings by Dahl et al. (2001), Meuter et al. (2003), and Oyedele and Simpson (2007). Similar to their findings, this study's results also indicated that if a consumer is not familiar with an SST, they will hesitate to use it when faced with the purchase process. This consumer is instead more likely to choose the traditional mode of service. In other words, when consumers are less familiar with technology usage, their fear of using technology is likely to be enhanced, which negatively affects their attitudes toward using SSTs as compared to those who are more familiar with technology usage. Therefore, apparel retailers should encourage customers to become familiar with SSTs to increase their level of comfort with the system.

The moderating effect of familiarity with using SSTs was found to be less critical to perceptions of the influence of perceived enjoyment on consumers' attitude toward using

SSTs. That is, H_{4a} was not supported by the data. This finding indicates that familiarity with using SSTs does not affect the influence of perceived enjoyment on consumers' attitudes toward using SSTs.

These findings suggest that consumers who are more familiar with using SSTs, which leads to decreased technology anxiety, are more likely to have positive attitudes toward using SSTs than consumers who are less familiar with using SSTs. However, as shown in Figure 13, the main effects are also changed by adding interaction terms. With the main effect test (see Figure 12), both intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety) have significant effects on consumers' attitudes toward using SSTs. However, after adding the moderating effect of familiarity with using SSTs, none of these factors had a significant coefficient (see Figure 13). It also changed the correlation coefficient between technology anxiety and attitude toward using SSTs. This change may be a result of the data since the analysis for the moderating effect of familiarity used variable means rather than data from each latent variable, as treated in the main effect test. For retailers, consumers who have technology anxiety should be given easy access to employees as this would decrease their technology anxiety, leading to more positive attitude toward using SSTs.

Figure 17: Moderating Effects of Familiarity on Relationships between Intrinsic Motivation Factors and Consumers' Attitudes toward Using SSTs



Hypothesis 5: Moderating effect of familiarity on relationships between extrinsic motivation factors and consumers' attitudes toward using SSTs

Similar to Hypothesis 4, Hypothesis 5 proposed a moderating effect of familiarity on relationships between extrinsic motivation factors (i.e., perceived usefulness and perceived time saving) and consumers' attitudes toward using SSTs (see Figure 18). Within H5, H_{5a} proposed that the influence of perceived usefulness on consumers' attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions, while H_{5b} proposed that the influence of perceived time saving on attitudes toward using SSTs will be stronger in high levels of familiarity toward

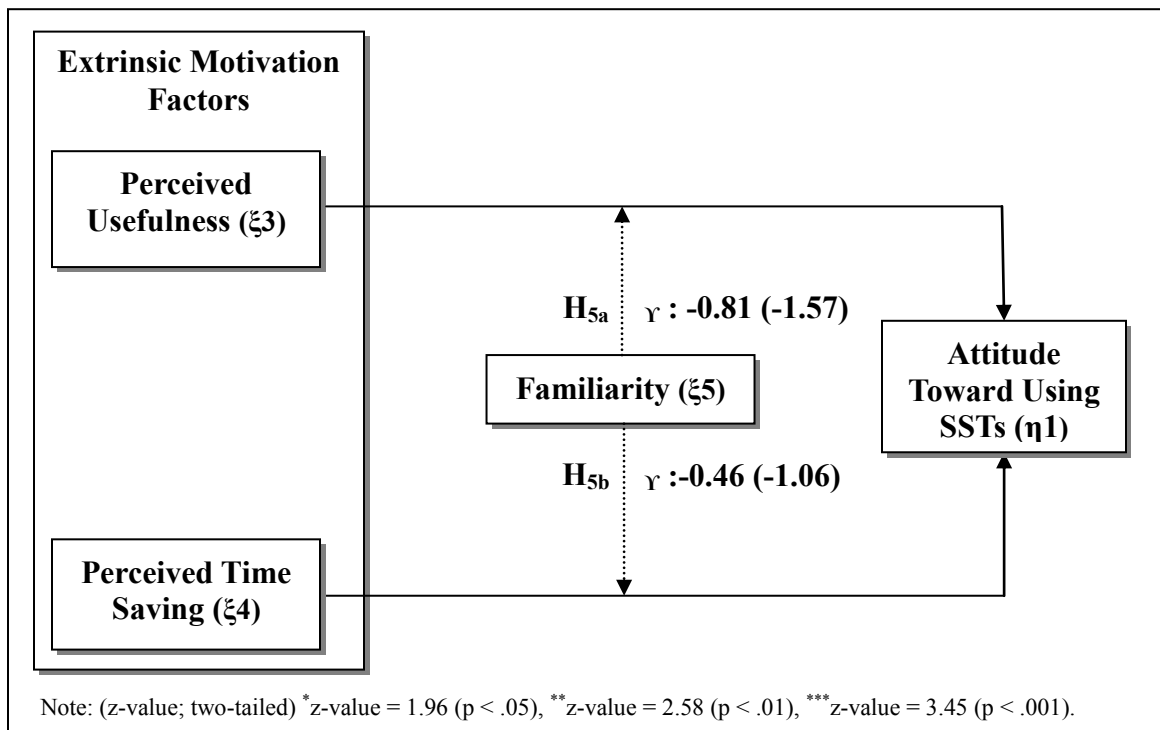
technology usage than in low levels of familiarity of technology usage conditions.

There was a negative moderating effect of familiarity with using SSTs on the relationships between perceived usefulness and consumers' attitudes toward using SSTs. That is, as consumers become familiar with using SSTs, they think SSTs would be less useful and particularly in the apparel vs. other retail environments. As mentioned in responses to the general question asking about respondents' past experience with SSTs, the respondents believe it takes more time when an SST has a problem, such as a system error, or when the person in front of him/her does not know how to operate the system. Therefore, when apparel retailers adopt SSTs, they should try to inform consumers about how useful SSTs are, and especially when the store is crowded or during busy seasons such as Christmas or Black Friday. This finding is similar to a study by Kober et al. (2010), which indicates that when consumers are more familiar with technology usage, they tend to view the use of SSTs as less useful, which is likely to negatively affect their attitudes toward using SSTs as compared to those who are less familiar with technology usage. Although, this result was not significant in this study, likely because the data for this study is mainly from consumers who have a high level of familiarity with using SSTs, it is recommended that apparel retailers should emphasize the importance of the usefulness of SSTs to consumers who have low levels of familiarity with using SSTs.

There was also found to be a negative moderating effect of familiarity with using SSTs on the relationships between perceived time saving and consumers' attitudes toward using SSTs. This finding is not supported by studies by Oyedele and

Simpson (2007), Parasuraman et al. (2005), or Rojas-Mendez et al. (2002), which proposed that if a consumer is familiar with the time saving benefits of SSTs, they tend to be more likely to use SSTs when given a choice. As mentioned earlier, as consumers become familiar with using SSTs, they think it takes more time and particularly when an SST has a problem. However, neither of the two (H_{5a} and H_{5b}) had a significant coefficient. That is, neither H_{5a} nor H_{5b} were supported by the data ($r = -0.81$, $z\text{-value} = -1.57$, $p > .5$; $r = -0.46$, $z\text{-value} = -1.06$, $p > .5$). In considering the main effect and after considering the moderating effect of familiarity with using SSTs (see Figures 12 and 13), the influence of perceived usefulness on consumers' attitudes toward using SSTs had a significant positive effect, but perceived time saving was not significant. If a consumer does not know how to process the transaction with an SST or if there is a system error, it can take much more time to use SSTs for check-out. That is, consumers probably realize that becoming familiar with SSTs can take additional time, and thus it may not always save them time. However, apparel retailers could make more employees available as compared to other retail environments so as to ensure time is not wasted with SST use.

Figure 18: Moderating Effects of Familiarity on Relationships between Extrinsic Motivation Factors and Consumers' Attitudes toward Using SSTs



Conclusions and Recommendations

This study was designed to investigate the potential for adoption of self-service technologies (SSTs) in the apparel retail environment by exploring and explaining the importance of motivation factors (intrinsic vs. extrinsic) for adopting SSTs in the apparel retail environment, and assessing the moderating effects of familiarity with using them. SST in the form of a self check-out system was the focus because it is one of the most typical SSTs currently found in other retail environments. It was hoped that findings might offer suggestions for apparel retailers to better target consumers in SST use.

According to the results, perceived enjoyment is recognized as an important element affecting consumers' attitudes toward using SSTs, as most of the respondents answered that they use SSTs because they are fun. Therefore, if apparel retailers adopt SSTs, they should focus on providing consumers with an SST that can satisfy their need for entertainment by adding fun features, such as an attractive display or enjoyable sounds. Technology anxiety was also an important element affecting respondents' attitude toward using SSTs. As they become familiar with using SSTs, respondents will have less technology anxiety, which leads to a more positive attitude toward using SSTs. Therefore, to reduce consumers' technology anxiety, when apparel retailers adopt SSTs, they should provide clear and thorough information to consumers who do not know how to use them. By doing this, apparel retailers can increase consumers' level of comfort with the system, which will lead to more use of SSTs during particularly busy times.

Regarding the extrinsic motivation factors, perceived usefulness was an important element affecting consumers' attitudes toward using SSTs. Therefore, retailers should promote an SST's usefulness for completing a transaction in order to attract the customer's attention. Among the intrinsic and extrinsic motivation factors (i.e., perceived enjoyment and technology anxiety, perceived usefulness, and perceived time saving), perceived enjoyment and perceived usefulness were the most important variables related to consumers' attitudes toward using SSTs, followed by technology anxiety.

Findings provide a clearer understanding of consumers' attitudes and behavioral intentions toward using SSTs specifically within the apparel retail environment. Results indicate that individuals who perceive SSTs to be personally enjoyable are likely to

display a favorable attitude toward using SSTs in the apparel retail environment. In contrast, individuals with a general fear of using technology are less likely to exhibit a favorable attitude toward using SSTs in the apparel retail environment. Results further suggest that individuals who believe that using SSTs would be personally enjoyable and would make the shopping task more efficient are likely to use SSTs when shopping for apparel products. Therefore, apparel retailers should emphasize how SSTs are useful and especially how SSTs save time when the store is crowded, such as adding ‘fast-lane’ or ‘easy-check-out’ signs.

Findings indicate a significant moderating effect of familiarity with using SSTs on the relationship between technology anxiety and consumers’ attitudes toward using SSTs. In other words, the influence of technology anxiety on consumers’ attitudes toward using SSTs will be weaker in high levels of familiarity toward technology usage than in low levels of familiarity toward technology usage conditions. Findings also indicate a significant relationship between consumers’ attitudes toward using SSTs and their intentions to use SSTs to make purchases in an apparel retail store. If retailers can provide and highlight easy to use features of SSTs, then consumers may recognize that their technology anxiety about using SSTs was unnecessarily high.

Based on the study’s results, apparel retailers can develop new marketing strategies to increase customers’ satisfaction with using SSTs. Moreover, apparel retailers can enhance their service offerings by providing an additional means for customers to purchase merchandise in the store, particularly important during busy shopping periods, such as Christmas and Black Friday. Instead of losing customers due to long lines,

apparel retailers can retain customers by providing faster and more efficient service by adopting SSTs, which will, in turn, lead to increased satisfaction. Therefore, apparel retailers can increase profit as well as customers' loyalty to the brand. The results of this study suggest a high level of potential for the possibility of adopting SSTs in the apparel retail environment.

Since two extrinsic motivation factors (perceived usefulness and perceived time saving) were highly correlated ($\gamma = 0.95$), these two variables could be treated as one variable, and thus, may impact the relationship between extrinsic motivation factors and attitude toward using SSTs. Therefore, if we treat perceived usefulness and perceived time saving as one variable, it may change the relationship between extrinsic motivation factors and attitude toward using SSTs. Future studies may consider treating these two variables as one variable. Moreover, this study's data was collected mainly from females. Therefore, if we include more male respondents, who usually use more technology than females, then the relationships between motivation factors (e.g., intrinsic vs. extrinsic) and attitude toward using SSTs may be different.

Moreover, different types of apparel retail environments attract different types of consumers, for example different age groups, gender, income levels, and technology anxiety levels. Therefore, variables important to a retailer's customers must be considered. For example, if an apparel retail store attracts mostly younger customers, then they may focus mainly on the perceived enjoyment of SST use, since the younger generation is more likely to use technology if they find it enjoyable. However, if an apparel retail store's customers are older, then these consumers may have higher degree of technology

anxiety. Therefore, the apparel retailer should focus on minimizing customers' technology anxiety about using SSTs by providing clear and thorough information on using SSTs and showing how SSTs are easy to use and beneficial, and especially during busy shopping seasons.

Employee presence in the store is another important element in consumers' attitude toward using SSTs. For example, due to few employees available to assist customers, many department stores already offer price-checking systems for customer use. They can further increase customer satisfaction by providing fast service, which could lead higher profit.

Therefore, the results of this study can be used to develop new marketing strategies when considering adopting SSTs for different types of apparel retail environments. This study provides key factors that apparel retailers should consider when adopting SSTs. This study also can be used to guide future study regarding SSTs as well as consumer behavior related to SSTs.

Implications

This study provides insight into four issues of theoretical relevance to the Technology Acceptance Model for the potential adoption of SSTs in the apparel retail environment. First, it explores the antecedents that drive consumers' intentions to use SSTs in the apparel retail environment. Perceived enjoyment and technology anxiety were used as intrinsic motivation factors, while perceived usefulness and perceived time saving were used as extrinsic motivation factors to test for relationships of attitude toward using SSTs.

Second, the research examined the effects of these motivation factors on consumers' attitudes toward using SSTs for purchasing apparel products. According to the findings, perceived enjoyment and technology anxiety were significant attributes influencing attitude toward using SSTs. Most respondents indicated that they used SSTs in other retail environments (e.g., grocery stores) because they are fun to use. This study relied on a scenario to test how these intrinsic motivation factors might affect consumers' attitudes toward using SSTs since they are not currently used in apparel retail environments. Nonetheless, the relationships between intrinsic motivation factors (i.e., perceived enjoyment and technology anxiety) and attitude toward using SSTs were found to be significant. This result suggests that apparel retailers need to consider these elements when and if they decide to adopt SSTs. Perceived usefulness was the most significant extrinsic motivation influencing attitude toward using SSTs, which indicates respondents use an SST because of its usefulness. Therefore, if apparel retailers adopt SSTs in their stores, they need to train employees to accept SSTs to acquire appropriate levels of knowledge of these technologies, and to encourage customers to use them. To provide maximum customer service and customer satisfaction, retail managers also need to be trained to design and integrate the right mix of these technologies to make them as useful as possible.

Third, this study examined the links between consumers' attitudes toward using SSTs and their intention to use SSTs in apparel retail settings. Based on the findings, most of the hypothesized relationships within the main effect tests were supported. Findings enhance the TRA and TAM, as a theoretical implication of this research is the addition of

the moderating effect of familiarity with using SSTs on relationships between motivation factors (i.e., intrinsic and extrinsic) and attitude toward using SSTs. The model developed by this study established relationships between motivation factors (i.e., intrinsic and extrinsic) and consumers' attitudes toward SSTs, and thus contributes to the original TAM model. It incorporates the conceptual findings of previous TAM research with the addition of familiarity as a moderating effect.

Fourth, given that self-service technology is now very advanced, this study contributes to the growing knowledge base about consumers' shopping behaviors in relation to SSTs, and specifically fills a gap that exists regarding SST use in the apparel retail shopping environment. Findings can aid apparel retailers looking to enhance their service offerings by providing an additional means for customers to purchase merchandise in the store, particularly important during busy shopping periods. Rather than losing customers to long lines, by adopting SSTs, apparel retailers can retain customers by providing faster and more efficient service, which could lead to increased profit as well as greater store loyalty.

Limitations and Suggestions for Further Research

This study has some limitations that point to interesting opportunities for further research. First, this study relied on a scenario because many apparel retail settings do not currently offer self-service technology. Future research could test SST perceptions use in the actual retail environment once apparel retailers offer SSTs more broadly. On the other hand, the study was able to examine the potential probability of adopting SSTs since most of the respondents had at least one experience with using SSTs in different retail

settings, such as the self check-out lanes available at grocery stores. Second, the research was limited by the fact that it was focused on a single type of SST, such as a self check-out system. Even though a description and general definition of self-service technology and types of SSTs were provided in the survey, the self check-out system typical of grocery stores was the system that respondents were asked to think of when considering an SST.

Finally, the data were collected from students at one university and most respondents were females and Caucasian/White. Even though students provide a homogeneous population useful for theory development, a knowledge of technological expertise, a prime market for apparel products, a representation of the consuming population, and a judgment sample of highly educated individuals, they do not represent all populations. Multiple group analysis could be used to compare consumers' perceptual or behavioral outcomes based on different demographics like gender, age, education, and income. Likewise, because this research used university students in similar kinds of classes as its sample, respondents' demographics were relatively homogenous. Therefore, future research is needed that applies the model to different populations. Additionally, as technology develops at a tremendously fast pace, consumers are using more and more types of SSTs, such as mobile shopping applications through Smartphones. Therefore, future research should address various types of SSTs or other technology-based systems to further examine whether attitudes toward using SSTs are moderated by familiarity and how this impacts behavioral intentions. Moreover, future research is needed that applies the model relative to different types of apparel retailers.

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APPENDIX A
SURVEY QUESTIONNAIRE

A self-service technology (SST) is defined as technology that can be used by consumers for self-service, such as self check-outs at the grocery store.

In this survey, there are 8 major sections. Section I presents questions about familiarity with self-service technologies (SSTs). Section II consists of questions related to your attitudes toward technology in general. Section III presents questions about Perceived Enjoyment. Section IV consists of questions related to extrinsic motivational factors. Section V consists of questions related to attitude toward the self-service technologies (SSTs). Section VI consists of questions related to behavioral intention. Section VII involves general questions concerning your shopping experience using self-service technologies (SSTs). Lastly, section VIII consists of questions related to demographic information.

Section 1: Familiarity with Self-Service Technologies

Please indicate your agreement or disagreement with the following statements about using self-service technologies (SSTs) in general.

		Strongly disagree					Strongly agree		
1.	I commonly use many computers.	1	2	3	4	5	6	7	N/A
2.	I do not have much experience using technology-based self-services.	1	2	3	4	5	6	7	N/A
3.	I use a lot of technology-based products and services.	1	2	3	4	5	6	7	N/A
4.	I am familiar with self-service check-outs (e.g., through grocery shopping).	1	2	3	4	5	6	7	N/A
5.	I am familiar with self-service technology through purchasing products at retail stores.	1	2	3	4	5	6	7	N/A

Section 2: Attitudes toward Technology

Please indicate your agreement or disagreement with the following statements about using technological products in general.

		Strongly disagree					Strongly agree		
1.	I am confident I can learn technology-related skills.	1	2	3	4	5	6	7	N/A

		Strongly disagree					Strongly agree		
		1	2	3	4	5	6	7	
2.	I have difficulty understanding most technological matters.	1	2	3	4	5	6	7	N/A
3.	I feel apprehensive about using technology.	1	2	3	4	5	6	7	N/A
4.	When given the opportunity to use technology, I fear I might damage it in some way.	1	2	3	4	5	6	7	N/A
5.	I am sure of my ability to interpret technological output.	1	2	3	4	5	6	7	N/A
6.	Technological terminology sounds like confusing jargon to me.	1	2	3	4	5	6	7	N/A
7.	I have avoided technology because it is unfamiliar to me.	1	2	3	4	5	6	7	N/A
8.	I am able to keep up with important technological advances.	1	2	3	4	5	6	7	N/A
9.	I hesitate to use technology for fear of making mistakes I cannot correct.	1	2	3	4	5	6	7	N/A
10.	Technology-based systems are somewhat intimidating to me.	1	2	3	4	5	6	7	N/A

Please read the following scenario and respond questions in section # 3 - 6

Imagine you are shopping for apparel products at a major department store. While shopping, you discover that you have two options for checking out:

- 1. You can pay as usual at the register, or*
- 2. You can use a newly installed self check-out system. The self check-out system is located on the counter and has directions for use and description of the complete payment process on the screen itself.*

You are thinking about using the second option (i.e., the newly installed self check-out system) at the check-out counter. You have been told that security tags may be easily removed at the self-service check-out system. In addition, if you have problems using the self check-out system, store employees are always available to assist you.

Section 3: Perceived Enjoyment

Please indicate your feelings about using self-service technologies (SSTs) based on the above scenario.

	Strongly disagree					Strongly agree			
1. Using SSTs is fun.	1	2	3	4	5	6	7	N/A	
2. Using SSTs is pleasant.	1	2	3	4	5	6	7	N/A	
3. Using SSTs is pleasurable.	1	2	3	4	5	6	7	N/A	
4. It is exciting to use SSTs.	1	2	3	4	5	6	7	N/A	
5. Using SSTs is enjoyable.	1	2	3	4	5	6	7	N/A	

Section 4: Extrinsic Factors (Perceived Usefulness & Perceived Time Saving)

Please indicate your feelings about using self-service technologies (SSTs) based on the above scenario.

	Strongly disagree					Strongly agree			
1. The system improves my shopping performance.	1	2	3	4	5	6	7	N/A	
2. I find SSTs useful in purchasing apparel products.	1	2	3	4	5	6	7	N/A	

	Strongly disagree					Strongly agree			
3. SSTs enhance my shopping effectiveness.	1	2	3	4	5	6	7	N/A	
4. Using SSTs for my shopping trip would enable me to accomplish tasks more quickly.	1	2	3	4	5	6	7	N/A	
5. Using SSTs would make my shopping task easier.	1	2	3	4	5	6	7	N/A	
6. Using SSTs will allow me to shop faster.	1	2	3	4	5	6	7	N/A	
7. Using SSTs will make me more efficient while shopping.	1	2	3	4	5	6	7	N/A	
8. Using SSTs will reduce my waiting time at the cash register.	1	2	3	4	5	6	7	N/A	

Section 5: Attitudes toward the SSTs

Given the above scenario, how would you describe your feelings with regard to self-service technology?

Bad	___ : ___ : ___ : ___ : ___ : ___ : ___	Good
Dislike	___ : ___ : ___ : ___ : ___ : ___ : ___	Like
Harmful	___ : ___ : ___ : ___ : ___ : ___ : ___	Beneficial
Unfavorable	___ : ___ : ___ : ___ : ___ : ___ : ___	Favorable

Section 6: Behavioral Intentions

Given the above scenario, please indicate your agreement or disagreement with the following statements.

	Strongly disagree					Strongly agree			
1. I intend to make an apparel product purchase through SSTs in the near future.	1	2	3	4	5	6	7	N/A	

		Strongly disagree					Strongly agree		
		1	2	3	4	5	6	7	
2.	It is likely that I will make a purchase using SSTs.								N/A
3.	I expect to purchase through SSTs in the near future.								N/A

Section 7: General Questions about using self-service technology (e.g., self check-outs) when shopping

- | | | Not Familiar at all | | | | | Extremely Familiar | |
|----|--|---------------------|-----|-----|-----|-----|--------------------|-----|
| | | ___ | ___ | ___ | ___ | ___ | ___ | ___ |
| 1. | How familiar are you with self-service technology? | | | | | | | |
| 2. | Have you ever purchased any merchandise using self-service technologies (SSTs)? | | | | | | | |
| | ___ Yes (If yes, why: _____) | | | | | | | |
| | ___ No (If no, why: _____) | | | | | | | |
| 3. | What was your experience with using self-service technologies (SSTs)? | | | | | | | |
| | ___ Positive Experience (If you had positive experiences, why? _____) | | | | | | | |
| | ___ Negative Experience (If you had negative experiences, why? _____) | | | | | | | |
| 4. | When you purchase items, how many times do you use SSTs per week? (excluding ATMs) | | | | | | | |

Section 8: Demographic Information

1. Gender: Male Female
2. Age: _____
3. Major: _____
4. Ethnicity: African American Asian or Pacific Islander
 Caucasian/White Hispanic/Latino
 Native American Other Ethnic Background
5. Year at school: Freshmen Sophomore
 Junior Senior
 Graduate
6. What is your monthly income? (Including scholarships, earnings, allowances, etc.)
 under \$300 \$300~\$499 \$500~\$749
 \$750~\$999 \$1,000~\$1,299 \$1,300 and more

☺ **THANK YOU FOR YOUR TIME!**
YOUR PARTICIPATION IS GREATLY APPRECIATED. ☺

APPENDIX B
APPROVAL OF INSTITUTIONAL REVIEW BOARD (IRB) FOR THE USE OF
HUMAN PARTICIPANTS IN RESEARCH

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: Self-service Technology – Potential adoption in Apparel Retail Settings

Project Director: Dr. Kittichai (Tu) Watchravesringkan and Dr. Nancy Nelson Hodges

Participant's Name: _____

What is the study about?

The purpose of the study is to investigate the importance of motivational factors (intrinsic vs. extrinsic) and their relationships with consumers' adoption of SST in the context of apparel shopping.

Why are you asking me?

You are eligible to participate in this study because you are at least 18 years old, read and speak English, and are likely to use self service technology when shopping for apparel products.

What will you ask me to do if I agree to be in the study?

If you agree to participate, your participation will involve reading a brief hypothetical scenario in the survey about apparel shopping with an opportunity to use self-service technology to check out your merchandise. Then, you will be asked to fill out a survey pertaining to your perception of self-service technologies and potential to use them when shopping for apparel products. It will take 10-15 minutes to complete this study. There are no right or wrong answers to the questions. You are allowed to work at your own pace. You may choose not to answer some or all of the questions. You may stop filling out this survey at any time if you feel uncomfortable.

Is there any audio/video recording?

No.

What are the dangers to me?

There are no anticipated risks from participating in this research. The Institutional Review Board at University of North Carolina at Greensboro has determined that participation in this study poses no risk to participants.

If you have any concerns about your rights or how you are being treated please contact Mr. Eric Allen in the Office of Research Compliance at UNCG at (336) 256-1482. Questions about this project or benefits or risks associated with being in this study can be answered by Kittichai (Tu) Watchravesringkan by calling 336-256-2474 or sending an email at k_watchr@uncg.edu.

Are there any benefits to me for taking part in this research study?

There are no direct benefits to participants in this study.

Are there any benefits to society as a result of me taking part in this research?

This research benefits society by helping us understand the impact of motivational factors on consumers' attitudes and behavioral intentions toward using self-service technology in the apparel shopping context. That could lead to improved marketing and better services to customers.

Will I get paid for being in the study? Will it cost me anything?

There are no costs to you or payments made for participating in this study.

How will you keep my information confidential?

Only principal investigators and the student researcher will have access to information you provided. In order to maintain your confidentiality, neither your name nor address will be asked. Your answers will be kept confidential. Questionnaires will be assigned an id number so that all participants remain anonymous. No link will be made between participant's names and their survey answers. The research data will be kept for 3 years in a locked filing cabinet in a locked private office on UNC-Greensboro campus, after which all documents will be shredded and computer files will be deleted. All information obtained in this study is strictly confidential unless disclosure is required by law.

What if I want to leave the study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do withdraw, it will not affect you in any way. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. Your instructor will not be aware of who participated in the study and who did not.

Voluntary Consent by Participant:

By signing this consent form you are agreeing that you read it, or it has been read to you, and you fully understand the contents of this document and openly and willing consent to take part in this study. All of your questions concerning this study have been answered. By signing this form, you are agreeing that you are 18 years of age or older and are agreeing to participate described to you by Sooeun Cho.

Signature: _____ Date: _____



THE UNIVERSITY of NORTH CAROLINA
GREENSBORO

Dear Students:

I am a doctoral student majoring in Consumer, Apparel, and Retail Studies at the University of North Carolina at Greensboro. I am conducting research to better understand consumers' attitudes and behavioral intention toward using self service technology in the apparel shopping context.

You are invited to voluntarily participate in this study and your input is important to my study. Please take about 10 to 15 minutes to complete this study. However, you can choose not to participate in this study as well. There is no risk or benefit to them by participating in this study. If you decide to participate in this study, you are agreeing that you are at least 18 years old and can read and understand English. There are no right or wrong answers to the questions. Your answers will be kept confidential. You are allowed to work at your own pace. You may stop filling out this survey at any time if you feel uncomfortable.

Thank you in advance for your participation. If you have any questions, please feel free to ask the researchers. We would be glad to assist you. In addition, if you have questions concerning your rights as a research subject, you may contact the University of North Carolina at Greensboro Institutional Review Board at 1-336-256-1482.

Sincerely,

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