Predicting Consumers' Intentions to Purchase Co-Designed Apparel Products on a Mass Customized Apparel Internet Shopping Site

Ju Young Kang
FLORIDA STATE UNIVERSITY

COLLEGE OF HUMAN SCIENCES

PREDICTING CONSUMERS’ INTENTIONS TO PURCHASE CO-DESIGNED APPAREL PRODUCTS ON A MASS CUSTOMIZED APPAREL INTERNET SHOPPING SITE

By

JU YOUNG KANG

A Thesis submitted to the Department of Textile and Consumer Sciences in partial fulfillment of the requirements for the degree of Master of Science

Degree Awarded: Summer Semester, 2008

Copyright © 2008 JU YOUNG KANG All Rights Reserved
The members of the Committee approve the thesis of Ju Young Kang defended on May 27, 2008.

Eundeok Kim
Professor Directing Thesis

Susan S. Fiorito
Committee Member

Leisa R. Flynn
Outside Committee Member

Approved:

Barbara Dyer, Chair, Textiles and Consumer Sciences

Billie J. Collier, Dean, College of Human Sciences

The Office of Graduate Studies has verified and approved the above named committee members.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Tables</td>
<td>v</td>
</tr>
<tr>
<td>List of Figures</td>
<td>vii</td>
</tr>
<tr>
<td>Abstract</td>
<td>viii</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Background</td>
<td>1</td>
</tr>
<tr>
<td>Purpose</td>
<td>2</td>
</tr>
<tr>
<td>Objectives</td>
<td>3</td>
</tr>
<tr>
<td>Definitions of Terms</td>
<td>4</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>7</td>
</tr>
<tr>
<td>Mass Customization</td>
<td>7</td>
</tr>
<tr>
<td>Apparel Mass Customization</td>
<td>9</td>
</tr>
<tr>
<td>Technology for Apparel Mass Customization</td>
<td>11</td>
</tr>
<tr>
<td>Consumers’ Co-Design Involvement in Apparel Mass Customization</td>
<td>13</td>
</tr>
<tr>
<td>Online Apparel Shopping</td>
<td>15</td>
</tr>
<tr>
<td>Conceptual Framework: Theory of Planned Behavior</td>
<td>17</td>
</tr>
<tr>
<td>Proposed Determinants</td>
<td>20</td>
</tr>
<tr>
<td>Attitude toward the Behavior and Intention</td>
<td>20</td>
</tr>
<tr>
<td>Co-Design-Related Attributes</td>
<td>21</td>
</tr>
<tr>
<td>Service/Website-Related Attributes</td>
<td>24</td>
</tr>
<tr>
<td>Subjective Norm and Intention</td>
<td>25</td>
</tr>
<tr>
<td>Perceived Behavioral Control and Intention</td>
<td>26</td>
</tr>
<tr>
<td>Desire for Uniqueness</td>
<td>27</td>
</tr>
<tr>
<td>Perceived Risk</td>
<td>28</td>
</tr>
<tr>
<td>Research Hypotheses</td>
<td>29</td>
</tr>
<tr>
<td>III. METHODS</td>
<td>32</td>
</tr>
<tr>
<td>Instrument Development</td>
<td>32</td>
</tr>
<tr>
<td>Stimulus Development</td>
<td>32</td>
</tr>
<tr>
<td>Questionnaire Development</td>
<td>37</td>
</tr>
<tr>
<td>Pretest</td>
<td>43</td>
</tr>
<tr>
<td>Sample Selection</td>
<td>44</td>
</tr>
<tr>
<td>Data Collection</td>
<td>44</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>45</td>
</tr>
<tr>
<td>IV. PRELIMINARY RESULTS</td>
<td>46</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 3.1. Co-Design Options in the Research Site......................................................... 35
Table 3.2. Body Measurements and Size in the Research Site.......................................... 36
Table 3.3. Customized Service Options in the Research Site............................................ 37
Table 3.4. Latent Variables ............................................................................................... 37
Table 3.5. Questionnaire Items Measuring Behavioral Intentions ..................................... 38
Table 3.6. Questionnaire Items Measuring Attitude Toward Customized Apparel ............ 40
Table 3.7. Questionnaire Items Measuring Subjective Norm .......................................... 41
Table 3.8. Questionnaire Items Measuring Perceived Behavioral Control ....................... 42
Table 3.9. Questionnaire Items Measuring Desire for Uniqueness ................................... 42
Table 3.10. Questionnaire Items Measuring Perceived Risk .......................................... 43
Table 4.1: Demographic Characteristics............................................................................ 47
Table 4.2. List of Respondents’ Majors........................................................................... 50
Table 4.3. Descriptive Statistics of Research Variables................................................... 51
Table 4.4. Reliability of Measures..................................................................................... 53
Table 5.1. Means, Standard Deviation, and Intercorrelations for Purchase Intention and
Predictors Variables........................................................................................................ 55
Table 5.2. Multiple Regression Analysis Summary for Attitude, Subjective Norm,
Perceived Behavioral Control, Desire for Uniqueness, and Perceived Risk
Predicting Purchase Intention ......................................................................................... 56
Table 5.3. Comparison of the Theory of Planned Behavior and Modified Version of the
T.P.B.................................................................................................................................. 59
Table 5.4. Respondents’ Beliefs about and Evaluations of Attributes Regarding
Customized Apparel......................................................................................................... 60
Table 5.5. Comparison of the Modified Theory of Planned Behavior and the Addition of
Other Factors...................................................................................................................... 61
Table 5.6. Comparison of Male and Female on Purchase Intention, Attitude, Subjective
Norm, Perceived Behavioral Control, Desire for Uniqueness, and Perceived Risk…………………………………………………………………………………………………….. 63

Table 5.7. Effect of the Need for a Consultant’s Help on Research Variables……………… 65
Table 5.8. Effect of the Need for Actual Fabric Samples on Research Variables…………… 67
Table 5.9. Effect of the Need for Latest Fashion Trends on Research Variables…………… 68
Table 5.10. Effect of the Experience with Mass Customizing Website on Research Variables…………………………………………………………………………………………………….. 70

Table 5.11. Chi-square Analysis of Experience with Mass Customizing Website Among Males and Females………………………………………………………………………………… 71
Table 5.12. Chi-square Analysis of the Need for Customized Service Among Males and Females………………………………………………………………………………………………………. 72
LIST OF FIGURES

Figure 2.1. Diagram of the Theory of Planned Behavior........................................ 18
Figure 2.2. Research Model................................................................................... 31
Figure 3.3. Attributes Influencing Consumers’ Attitudes toward Co-Designed Products... 39
ABSTRACT

Mass customization is quickly becoming a crucial business principle of the 21st century’s competitive market (Apeagyei & Otieno, 2007), and clothing products have been indicated as the most appropriate product category for mass customization (Goldsmith & Freiden, 2004). Including consumers in the design and product development process is an efficient strategy for companies to implement in order to react to the increased individualization of demand (Franke & Piller, 2003).

Previous studies have focused on consumers’ satisfaction with and interests in co-design involvement as well as their willingness to customize garments by selecting certain options for apparel mass customization. However, there has been a lack of empirical research describing what determinants in the co-design involvement and process affect consumers’ purchase intentions toward mass customized products. This study used the Theory of Planned Behavior to examine various predictors determining purchase intention toward mass customized apparel. Further, previous studies have not clearly identified co-design, service/website-related attributes, or consumers’ perceptions influencing positive consumer attitude and purchase intention toward mass customized apparel products. This study attempts to fill the void.

The purpose of this study is to predict consumers’ purchase intentions toward mass customized apparel products by assessing consumers’ 1) attitudes toward behavior, 2) perceptions of social pressures by others (i.e., subjective norm), 3) perceptions of ease or difficulty in the co-design process (i.e., perceived behavioral control), 4) desire for uniqueness, and 5) perceived risk. In the context of apparel mass customization, due to the lack of relevant studies regarding three major determinants (attitude toward behavior, subjective norm, and perceived behavioral control), the Theory of Planned Behavior (Azjen, 1985, 1991) was used with a mock mass customized business wear Internet shopping site. More specifically, the first three determinants (attitude, subjective norm, and perceived behavioral control) were based on the Theory Planned Behavior. The other two determinants (desire for uniqueness and perceived risk) were added in the proposed model of this study.
The mock mass customized apparel Internet shopping site used for this study allowed respondents to try co-designing women’s and men’s business wear by making choices among options for various garment components. These garment design options provided choices of silhouette, collar, pocket, hem, sleeve, length, pleat, color, and fabric. In order to provide an experience close to a real co-design process, this mock site generated virtual reality and interactive functions.

Data was collected from a convenience sample of college students. Before data collection for the main survey, a pretest was conducted with 10 college students in order to obtain respondents’ comments regarding directions of the stimulus contents and questionnaires. Data from 296 respondents were used for this study. Multiple regression was used to test the five hypotheses with purchase intention as the dependent variable and proposed predictors such as attitude toward behavior, subjective norm, perceived behavioral control, uniqueness, and perceived risk.

The findings of this study indicated that attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk significantly combined together to predict purchase intention. Attitude, subjective norm, and desire for uniqueness, among the five predictors, had significant relationships with purchase intention toward customized products on a mass customized apparel Internet shopping site. This modified T.P.B. with addition of desire for uniqueness yielded an improvement on the basic T.P.B. structure. The results of this study supported the T.P.B. as a prediction tool in examining purchase intention, and desire for uniqueness can be considered as a theoretical contribution of this study.

Interactive functions and a quick and convenient process among nine attributes were the most important attributes influencing consumers’ favorable attitudes toward customized apparel on a mass customized apparel Internet shopping site. This study also found that the average perceived risk of females was higher than the average perceived risk of males. Respondents who needed both a consultant’s help and actual fabric samples had a higher desire for uniqueness, attitude, and perceived behavioral control than those who did not. In addition, this study found that experience with mass customizing website had a significant effect on purchase intention toward customized apparel, attitude, perceived behavioral control, and desire for uniqueness.
Further, females were more likely to need actual fabric samples and to have higher perceived risk for purchasing the customized garment on the website than males.

In terms of implications provided by this study, the findings of this study demonstrates improved T.P.B. with the addition of desire for uniqueness in regard to purchase intention toward mass customized apparel via the Internet. Further, this study recommends positive word-of-mouth marketing, diverse advertising or promotion of apparel mass customization, and adoption or application of technology. A mass customized apparel Internet shopping site focusing on interactive function, a quick and convenient co-design process, and customized services should be developed. Finally, the target market of apparel mass customization should be based on the consumers who seek uniqueness.
CHAPTER I

INTRODUCTION

Background

Today’s consumers in segmented markets require a broader range of products, improved customer service, and unique retail experiences (Fiore, Lee, Kunz, & Campbell, 2001; Taplin, 1999; Yoh & Gaskill, 1999). Consumers of the dominant baby boomer generation have a sense of individualism, which makes them strive for customization and personalized products (Russell, 1993). With a focus on consumers’ interests in these factors, mass customization emerged in the late 1980s as a marketing concept (Lee & Chen, 2000).

Driven by an emphasis on niche markets within the global economy and by consumer demands for a sense of individuality in product options, mass customization makes a contribution to the eventual combination of “custom-made” and “mass-produced” products (Apeagyei & Otieno, 2007). Mass customization is defined as “the mass production of individually customized goods and services” (Pine, 1993, p. 48). Thus, mass customization works for segmentation of the individual in addition to working as not only a new manufacturing trend but also a dominant and somewhat revolutionary strategy for market segmentation (Baradaki, 2003; Goldsmith & Freiden, 2004; Yang et al., 2007). Franke and Piller (2003) examined the consumer return for adopting a mass customized product and found that the decision of whether or not to adopt it is affected by two determinants: one, “value of the customization (i.e., the increment of utility a customer gains from a product that fits better to her needs than the best standard product attainable)” and the other, “possible rewards from the design process such as flow experience or satisfaction with the fulfillment of a co-design task” (p. 594).

Mass customization is quickly becoming a crucial business principle of the 21st century’s competitive market (Apeagyei & Otieno, 2007). Further, clothing products were indicated as the most appropriate product category for mass customization (Goldsmith & Freiden, 2004). In the apparel industry, new technologies (e.g., computer-aided design [CAD], computer-
aided manufacturing [CAM], etc.) are used largely in design, pattern-making, and grading and are ultimately enabling apparel retailers to profitably carry out mass customization for apparel products. Thus, increasing numbers of apparel companies have begun to carry out mass customization in the past ten years (Burns & Bryant, 2002; Gilmore & Pine, 1997). More specifically, the implementation of customization options among the top one-hundred apparel companies increased 120 percent in 2000 compared with the previous year (Kelly, 2000). Also, according to Textile Month (2001), in Germany, 17 percent of apparel companies were projected to have accomplished customization by 2005.

Merging consumers into the design and production process is an efficient strategy for companies to implement in order to react to the increased individualization of demand (Franke & Piller, 2003). Several empirical findings (e.g., Choy & Loker, 2004, Kamali & Loker, 2002, Ulrich et al., 2003) have identified consumers’ high interest in and satisfaction with co-design involvement and the co-design process of apparel mass customization. Ulrich, Anderson-Connell, and Wu (2003) reported, “Co-design could be used as both a selling tool to help customers design desired products and as a research tool with feedback on design choices of individuals” (p. 409).

Previous studies have focused on consumers’ satisfaction with and interests in co-design involvement as well as their willingness to customize garments by selecting certain options for apparel mass customization (Choy & Loker, 2004; Kamali & Loker, 2002; Ulrich et al., 2003). However, there is a lack of empirical research describing what determinants in the co-design involvement and process affect consumers’ purchase intentions toward mass customized products, using the Theory of Planned Behavior in order to predict consumers’ purchase intentions on a mass customized apparel Internet shopping site. Previous studies have not clearly identified co-design, service/website-related attributes, or consumers’ perceptions influencing positive consumer attitude and purchase intention toward mass customized apparel products.

**Purpose**

The purpose of this study is to predict consumers’ purchase intentions toward mass customized apparel products by assessing consumers’ 1) attitudes toward behavior, 2)
perceptions of social pressures by others (i.e., subjective norm), 3) perceptions of ease or difficulty in the co-design process (i.e., perceived behavioral control), 4) desire for uniqueness, and 5) perceived risk. In order to examine this purpose, the Theory of Planned Behavior (Azjen, 1985, 1991) was used with a mock mass customized apparel Internet shopping site. More specifically, the first three determinants (attitude, subjective norm, and perceived behavioral control) were based on the Theory Planned Behavior. The other two determinants (desire for uniqueness and perceived risk) were added in the proposed model of this study.

In addition, the mock mass customized apparel Internet shopping site used for this study allowed respondents to customize women’s and men’s business wear by choosing co-design options. These clothing design options provided choices for silhouette, collar, pocket, hem, sleeve, color, and fabric. In order to simulate a co-design experience, this mock site generated virtual reality and interactive functions. Specifically, whenever respondents selected or changed the co-design options, the computer illustration or image showing their own designed garments changed according to their selection. This site also generated photorealistic images of the fabrics that respondents select. Furthermore, this mock web site allowed respondents to choose customized services, such as the availability of a consultant during the co-design of their garments, the ability to view actual samples of the fabrics that respondents select, and access to information about the latest fashion trends for business wear. Thus, this website provided respondents with an overall experience that is close to a real co-design experience.

The findings of this study make the following contributions: 1) a better understanding of consumers’ attitudes, subjective norm, perceived behavioral control, desire for uniqueness, perceived risk, and purchase intentions toward customized apparel, 2) insight of significant attributes influencing consumers’ positive attitude toward mass customized apparel, 3) a better understanding of the target market which can be utilized to accomplish success in apparel mass customization, and 4) critical managerial implications that will lead to improved sales and profits in the implementation of apparel mass customization via the Internet.

Objectives

The overall objective of this study is to examine whether three determinants of the Theory of
Planned Behavior (attitude, subjective norm, and perceived behavioral control) and two determinants (desire for uniqueness and perceived risks) additionally proposed in this study are valid to use in order to predict consumers’ purchase intentions toward customized products on a mass customized apparel Internet shopping site. The specific objectives of this study are as follows:

1) To examine whether consumers’ attitudes toward mass customized products influences their intention to purchase mass customized products on a mass customized apparel Internet shopping site.
   1-A) To investigate what co-design-related attributes affect consumers’ attitudes toward mass customized products on a mass customized apparel Internet shopping site.
   1-B) To investigate what service/website-related attributes affect consumers’ attitudes toward mass customized products on a mass customized apparel Internet shopping site.

2) To examine the relationship between consumers’ perceptions of the extent to which significant referents approve of mass customized products (i.e., subjective norm) and consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site.

3) To examine the relationship between consumers’ perceptions of ease or difficulty in the co-design process (i.e., perceived behavioral control) and consumers’ intentions to purchase mass customized products on a mass customized apparel Internet shopping site.

4) To examine whether desire for uniqueness affects consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site.

5) To examine whether perceived risk affects consumers’ intentions to purchase mass customized products on a mass customized apparel Internet shopping site.

**Definitions of Terms**

**Attitude toward the behavior**: The manner in which a particular behavior is evaluated, whether positively or negatively (Ajzen, 1991).

**Behavior**: “[T]he manifest, observable response in a given situation with respect to a given target” (Ajzen, 2006).
**Behavioral beliefs:** Beliefs about the likely result of the behavior or other attributes of the behavior (Ajzen, 2002).

**Body scanning:** “[D]evice that provides an exact set of measurements…capturing a three-dimensional image of a person’s body, electronically” (Keeling, 1997, p. 11).

**Computer-Aided Design:** “[I]nformation technologies used in design processes” (Ha & Fiorito, 2007, p. 239); “CAD systems are now used extensively in design” (Ulrich et al., 2003, p. 402).

**Computer-Aided Manufacturing:** “[I]nformation technologies used in manufacturing processes” (Ha & Fiorito, 2007, p. 239); “CAD systems are now used extensively in pattern-making, grading, and marker-making” (Ulrich et al., 2003, p. 402).

**Choice:** In the context of this study, “choice” refers to “unrestrained navigation in cyberspace” (Ha & James, 1998, p. 462); “the presence of choice of color, speed, language and other aspects of alternatives” (Ha & James, 1998, p. 465).

**Co-design:** “[T]he process that a customer follows to choose an individualized combination of product style, fabric, color and size from a finite group of options” (Kamali & Loker, 2002, p. 9).

**Control beliefs:** An individual’s perception of whether or not certain factors are present that may facilitate or impede the individual’s performance or a particular behavior (Ajzen, 2002).

**Experience with mass customizing website:** Experiences of people who have ever visited a website that offered customized products.

**Interactivity:** “[T]he extent to which users can participate in modifying the form and content of a mediated environment in real time (Steuer, 1992, p. 84); “[T]he extent to which the communicator and the audience respond to, or are willing to facilitate, each other’s communication needs” (Ha & James, 1998, p. 461).

**Intention:** An individual’s readiness to perform a certain action (Ajzen, 2006).

**Mass customization:** “[T]he mass production of individually customized goods and services” (Pine, 1993, p. 48).
**Normative beliefs:** “[T]he perceived behavioral expectations of such important referent individuals or groups as the person’s spouse, family, friends, and--depending on the population and behavior studied--teacher, doctor, supervisor, and coworkers” (Ajzen, 2006); “[B]eliefs about the normative expectations of other people” (Ajzen, 2002, p. 665).

**Perceived behavioral control:** Individuals’ perceptions of their ability to perform a given behavior in situations in which there are restrictions on action (Ajzen, 1991).

**Subjective norm:** Consumers’ perceptions of social pressures placed on them by others (Ajzen, 1991).
CHAPTER II
LITERATURE REVIEW

This chapter offers an overview of mass customization and the conceptual framework of the Theory of Planned Behavior (Ajzen, 1985, 1991). Various topics about literature on mass customization are reviewed, such as apparel mass customization, technology for apparel mass customization, and consumers’ co-design involvement for apparel mass customization. The growth of online shopping and consumers’ behaviors and attitudes toward online apparel shopping are also explained. The conceptual framework for this research is based on the Theory of Planned Behavior in order to examine consumers’ attitudes toward the customized apparel products, subjective norm, and perceived behavioral control, which in turn is done in order to predict their intentions to purchase the co-designed products on a mass customized apparel Internet shopping site. Five independent variables including consumers’ attitudes toward the behavior, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk are explored with one dependent variable, which is purchase intention toward the co-designed products on a mass customized apparel Internet shopping site.

Mass Customization

Pine (1993) and Davis (1987) first introduced and described mass customization as a new business approach that would gratify customers’ immediate desires. Pine (1993) stated that consumers’ involvement in design choice, delivery, or production options would fulfill consumers’ wants and needs. Other researchers described mass customization as “a strategy that creates value by some form of company–customer interaction at the fabrication/assembly stage of the operations level to create customized products with production cost and monetary price similar to those of mass produced products” (Kaplan & Haenlein, 2006, p. 176–177).

Furthermore, Gilmore and Pine (1997) explained that mass customization could be implemented by modifying the standard product as well as the representation of the product to meet an individual’s demand. They suggested a model of mass customization and identified four approaches to customization from the view of customizers: cosmetic, transparent, adaptive, and
collaborative. In the first approach, cosmetic customization merely modifies the representation of the product, not the product itself. Transparent customization also modifies the representation of the product; however, it goes one step further and modifies the actual nature of the product. Adaptive customization, on the other hand, provides a standard and customizable product for consumers, which consumers can then modify on their own. Finally, in collaborative customization, the product design and the representation of the products are both changed; this type of customization requires communication between product developers and individual consumers in order to develop their customized products. These four approaches constitute the model of mass customization that businesses can use.

Duray et al. (2000) examined four dimensions of mass customization: fabricators, involvers, modularizers, and assemblers. First, fabricators engage individuals in creating unique designs and fabrications with high levels of the individuals’ involvement. Second, involvers allow individuals to identify unique requirements during the design and fabrication of products. Third, modularizers identify requirements of the product in the design and fabrication stage. Finally, assemblers offer customization by providing a high range of choices apart from the direct participation of individual consumers. The researchers also argued that consumers’ involvement and modularity were the significant attributes that differentiated the firms from one another in terms of selection of processes, planning methods, implementation of technology, and variables related to business performance. Consequently, based on Gilmore and Pine’s (1997) and Duray et al.’s (2000) studies, it is evident that mass customization for apparel products is facilitated by the use of collaborative customization involving fabricators, due to consumers’ strong interests in modification in order to produce unique product design and better fit (Lee, Kunz, Fiore, & Campbell, 2002).

The objective of mass customization is to provide higher-quality, low-cost, and unique products, as well as products that closely match consumers’ needs and wants from design to delivery (Fiore et al., 2001; Kamali & Loker, 2002; Pine, 1993). Mass customization also seeks to offer product choices that are designed, selected, and fit to consumers through the use of information and manufacturing technology (Anderson, 1997; Gilmore & Pine, 1997). Thus, mass customization contributes to (1) an Internet-based interactive exchange of information and (2)
production flexibility facilitated by the use of just-in-time inventory and robotic technology (Lampel & Mintzberg, 1996).

With these objectives in mind, several growing U.S. industries have implemented mass customization. Specifically, Dell receives orders for $6 million worth of mass-customized computers per day (Falkenberg, 1998). In addition, many businesses, such as automobile companies (landrover.com), computer companies (gateway.com), jewelers (adiamondisforever.com and boucheron.com), cosmetics companies (exface.com and reflect.com), greeting card companies (hallmark.com), and entertainment firms are actively pursuing mass customization via the Internet with a variety of products (Kamali & Loker, 2002; Pine, 1993).

**Apparel Mass Customization**

Several studies have mentioned the potential of apparel mass customization in the future (Anderson-Connell, Ulrich, & Brannon, 2002; Brannon, 2000; Gilmore & Pine, 1997; Jacob, 2007; Kim & Johnson, 2007). Previous research has predicted that leading clothing manufactures would accept not only mass customization for at least some of their products but also the coexistence of mass customization and mass production (Alexander, 1999; Brannon, 2000). Kim and Johnson (2007) stated that the outlook for apparel mass customization is very positive despite the fact that it is still in the process of being developed. They argued that apparel mass customization in production would culminate in a reduction of mass-produced clothing, more specialty designs for the individual consumer, and improvement of apparel quality at a lower cost. According to Jacob (2007), the emergence of apparel mass customization technologies and processes actually renders the remaining U.S. apparel industry more viable. He also stated that the only factor that deters companies from outsourcing mass customization production to Asian countries may be the associated “current delivery delays” (p. 360). His study suggested Mexican and Caribbean production options in order to achieve effective mass customization production.

In the past ten years, increasing numbers of apparel companies have begun to carry out mass customization (Burns & Bryant, 2002; Gilmore & Pine, 1997). Some companies provide customized apparel with online shopping as an additional service category of their business while other companies exclusively sell customized apparel as a specialty store (Cho, 2007). For
example, Levi’s Strauss and Lands’ End are apparel mass customization prototypes. Levi’s Strauss was the first well-known apparel retailer to offer customization when it launched its Original Spin line in 1999 (One to One Magazine, 2003). This custom-made space line is only executed at particular brick-and-mortar stores, such as the facility in San Francisco (Cho, 2007). Lands’ End (i.e., http://www.landsend.com) began to implement mass customization with online custom-clothing in 2001. This company has extended their product categories to include men’s, women’s, boys’, and girls’ outerwear (e.g., coats, jackets, vests, pants), underwear, hats, gloves, and scarves, as well as home furnishings, bedding, and window treatments with color and style options. For instance, Lands’ End’s pants provide consumers with overall style, color, waistline (i.e., above, at or below the navel), leg style (i.e., straight or tapered), fit, and pockets options (Shin, 2003). Lands’ End’s online consumers obtain their own customized pants in three to four weeks at a price of $54. Thus, Levi’s Strauss and Lands’ End are developing gradually as apparel mass customization prototypes.

Other companies that utilize mass customization are IC3D (i.e., http://www.ic3d.com) and Brooks Brothers. IC3D launched its custom made-to-measure jeans in 1996 in order to provide a solution for better fitting in the apparel market. The line has also expanded into bags, dresses, jackets, and pants. For exact measurements including waist, widest point, front and back rise, mid and full crotch, thigh, knee, length, bent, and inseam, IC3D provides measurement instructions for consumers to use to measure their size. Also, it allows consumers to select from 48 styles, 12 colors with 4 washes each, 3 fits (i.e., form fit, natural, relaxed), 3 leg styles (i.e., classic, wide, slim), 4 ankle styles (i.e., straight, tapered, bootcut, flared), 6 waists (i.e., classic, tabfront, low waist), front and back pockets, 4 fly styles, labels, trim, and threads. In addition, according to David (2007), Brooks Brothers, which has provided special-order apparel for two centuries, creates high-quality customized clothing items, from shirts to suits, through its use of Gerber Technology’s modernized AccuMark Made-to-Measure (M.T.M) program. This M.T.M offers automation from pattern modification and allows consumers to choose from more than 1,500 hand-selected fabrics and order customized dress shirts, suits, pants, and coats for personalized fit and style.

Another company that emphasizes 3D virtual reality with technology is My Virtual Model, Inc. (i.e., http://www.myvirtualmodel.com). This company has created the norm for
virtual identity by providing virtual changing rooms, models to personalize, and virtual weight loss applications since 2000. This website provides 3D human avatars, 3D visualization, and social shopping interaction in order to make online apparel shopping a fun as well as successful venture. It allows consumers to select and create their own 3D model by specifying body shape, height, weight, bust size, waist size, face color, eye color, nose, lips, hairstyle, and hair color. Their 3D model provides consumers with an indirect opportunity to try on clothes via the Internet. Through the 3D model, consumers can choose styles from several retail apparel brands: Lands’ End, Sears, H&M, Adidas, Speedo, Levi Strauss Signature, and Couture Candy. Also, this company is related to virtual social networks including Facebook, gURL, MySpace, and iVillage.com. Thus, My Virtual Model Inc. is one of the companies offering advanced 3D technologies for a new way to customize apparel products.

As a result of the success of these preliminary applications of mass customization, many companies, including Americanfitclothing.com, L.L.Bean, T-shirt.com, Nike, 99dogs.com, Ergoni.com, Nicholas-joseph.com and Target, are participating in apparel mass customization. Indeed, the implementation of customization options among the top one hundred apparel companies increased 120 percent in 2000 compared with the previous year (Kelly, 2000).

**Technology for apparel mass customization**

Relationships between technology and providing customized products had a positive influence on the implementation of time-based and consumer-centric strategies (Kamali & Loker, 2002; Loker & Oh, 2002). Lee et al. (2002) described apparel mass customization as “a technology-assisted process,” which means that technology applications, including computer-aided design, the Internet, and adjustable manufacturing, are being used in order to fulfill individualized design choices and create better-fitting garments (p. 139).

One of the technologies used in apparel mass customization is digital printing. This refers to “the process of creating printable designs for fabric by computer, which can be sent directly from the computer to fabric-printing machinery without the use of screens and/or color separations” (Cambell & Kim, 1999). Digitally engineered prints can be created to produce prints that go across seams, darts, and other structural design details (as cited in Park, 2004). Digital printing is able to dramatically alter a manufacturer’s ability to meet a consumer’s demand for customized fabric designs and is able to provide consumers with direct involvement
in the fabric design process (Anderson-Connell, 2002). In addition, digital images on the Internet allow images of products to be exchanged immediately between consumers and product developers (Anderson-Connell, 2002).

Computer-aided design (CAD) and computer-aided manufacturing (CAM) have been important parts of the development and implementation of mass customization (Blair, 1999; Lee, 2000). CAD programs, which are used largely in design, pattern-making, grading, and marker-making, offer the technology for design creation or manipulation (Ulrich et al., 2003). According to Yan and Fiorito (2002, 2007), although CAD/CAM is the significant information technology used in manufacturing and design systems, CAD/CAM technology has not been widely used and adopted by the U.S. apparel industry, due to system expense and lack of experts who have CAD/CAM skills. Yan and Fiorito (2007) also indicated that the most significant reasons for adopting CAD/CAM in the U.S. apparel industry were “improved first-pass product quality, improved ability to meet retailer standards on product delivery, and reduced through[0]ut time for product assembly” (p. 240). CAD/CAM adoption by the apparel industry is on the rise (Apeagyei & Otieno, 2007); this will enable CAD/CAM to become the primary tool of the apparel industry in order to meet customers’ individual needs by customizing apparel (Apeagyei & Otieno, 2007).

In addition, 3D technologies in mass customization and pattern grading are somewhat new, not easily approachable, and still at the developmental level (Apeagyei & Otieno, 2007). According to Fralix (2001), body scanning makes use of lights or lasers and generates measurement data by computer-aided pattern in order to measure the body in three dimensions and to create individually sized patterns (as cited in Park, 2004). Although technology may facilitate performing mass customization, the various parts of the process, such as body scan data, are far from automatically integrating with all CAD systems (Apeagyei & Otieno, 2007; Carrere, Istock, Little, Hong, & Plumlee, 2001). Apeagyei and Otieno (2007) stated that 3D technology can help consumers virtually check their body fit, but this application of 3D technology still needs to be refined further. They stated that the use of only one method, either 2D or 3D, will not fully address the needs of mass customization. They also argued that body-scanning and extraction of anthropometrical data are ways to acquire measurements for the manufacture of apparel for mass customization. In other words, improving the custom-fit of a garment using
measurements from body scanning is a significant factor in the implementation and success of mass customization for apparel (Anderson et al., 1997; Kim & Kim, 2007; Loker et al., 2004). Consequently, the utilization of CAD systems together with the development of body scanners brings mass customization closer to implementation.

Consumers’ Co-Design Involvement in Apparel Mass Customization

Merging the consumer into the product design and development process could become an efficient strategy to fulfill consumers’ increasing individual demands (Franke & Piller, 2003). Customer involvement in the design stage may allow consumers to have different and better shopping experiences. Anderson-Connell et al. (2002) described four approaches of collaborative customization: clothes clones, totally custom, co-design with a trained person, and design options with standard sizes. The first approach, clothes clones, is simply a duplication of consumers’ particular favored clothing item and style in seasonal fabrics or colors. In the second approach, totally custom, consumers can design the garment, fabric, and colors, and select their fit preference. The third approach, co-design, could either incorporate design options or be completely customized. It could also simply incorporate a design choice menu with garments for customized fit and design. Finally, design options provide consumers with selections from a menu not only of design components but also custom designed product creations in standard sizes, through the use of CAD software. Thus, the collaborative customizer allows consumers to participate in the product design and development process, which is termed co-design in the apparel industries (Anderson-Connell et al., 2002). This is the primary basis of this research.

Several empirical findings have indicated that consumers were highly interested in co-design involvement in apparel mass customization. Kamali and Loker (2002) examined the design involvement of the consumer for apparel mass customization, based on channel theory and Duray’s typology. They provided respondents with fictitious websites in t-shirt product design. These websites had three different design involvement levels: the control group (i.e., low levels of design involvement), the limited customization group (i.e., medium levels of design involvement), and the advanced customization group (i.e., high levels of design involvement). They found that all three treatment groups showed positive interest in involvement in the design process, the website interface, and the purchase of their co-designed garments. There was no
significant relationship between consumer satisfaction and the availability of a large number of design options for a mass customization product.

Another study focused on consumers’ co-design involvement; Ulrich et al. (2003) described consumers’ satisfaction with and participation in co-design for mass customization. Their study measured the clothing involvement and innovativeness of the respondents regarding consumer co-design of apparel through the self-report scales for consumer involvement and consumer innovativeness. They found that the ease with which consumers were able to make design decisions had a positive relation to their satisfaction with the co-designed images. Respondents had comfort, ease, and satisfaction with the co-design process. Furthermore, other researchers (Choy & Loker, 2004) identified customer involvement based on Duray’s conceptual framework. This study provided respondents with a mock website for mass customized wedding gowns by means of an e-mail survey. They found that over 50% of the respondents would spend “as much time as needed” for a co-designed wedding gown and most of the respondents would wait for a long time (i.e., one, three or six months) for delivery of the product (p. 83). Respondents had a high level of interest in the co-design process and preferred to customize their own wedding gown design, viewing it as an exciting experience. Hence, several pieces of empirical evidence supported consumers’ high level of interest in co-design involvement and the potential of apparel mass customization.

In addition, two other studies supported consumers’ acceptance of apparel mass customization. To begin with, Lee et al. (2002) focused on product, process, and place as they relate to consumers’ co-design and body scanning. They found that the preferred customized product types were jeans and swimwear and that the preferred customized product features were fit and size. Respondents wanted not only quick and convenient customizing processes but also assistants who would suggest certain design choices in the process of co-design. Also, respondents had a preference for going to a local specialty store for the body scanning and co-design processes. Thus, Lee et al.’s study provided information regarding apparel merchandising issues related to consumer involvement in customizing design and fit. On the other hand, another previous study (Fiore et al., 2001) examined a measure of the effect of optimum stimulation level (O.S.L.), which is defined as “a property that characterizes an individual’s general response to
environmental stimuli” and “a preferred level of stimulation” (p. 101), on consumer behavior from apparel mass customization. They argued that respondents with a high optimum stimulation level tried co-design more for the stimulation of the experience than respondents with a lower O.S.L. In addition, there was no relationship between level of O.S.L. and commitment to using body scanning. They also found that respondents with a high O.S.L. wanted to customize experiential products (intimate apparel, exercise wear, bridal wear, and special occasion wear) rather than utilitarian products (outerwear, jeans, business suits, sweaters, and protective work clothing). As a result, Fiore et al.’s study emphasized that O.S.L. was a significant factor in commitment to co-design, not only as an exciting experience but also for the creation of a unique product.

Online Apparel Shopping

The Internet is regarded as a significant vehicle or medium for both consumers and businesses (Herbig & Hale, 1997) in order to make one-to-one personalization viable for a wide range of businesses (Schibsted, 2001). In other words, the Internet develops not only an interactive relationship between company and consumer but also the personalization of the web experience (Zemke & Connellan, 2001). The Internet’s interactive nature and information-rich capabilities are able to enhance the overall shopping experience by making product information more available and by allowing consumers to directly compare one product to another (Alba et al., 1997).

According to April 2005 eMarketer, the population of the online shoppers ages 14 and older in the United States was around 114.2 million in 2005 and it is expected to rise to 124.9 million by 2008 (as cited in Grau, 2005). Also, the amount of money spent on Internet commerce is supposed to increase by 18% in 2007, reaching $259 billion; this means that a growing number of consumers feel comfortable with online shopping (eMarketer, 2007). According to “The State of Retailing Online 8.0” by a Shop.org survey (2005), shopping on the Internet constituted 6.5 percent of retail sales in 2004, up from 5.4 percent in 2003. In 2005, online sales were expected to comprise 7.7 percent of the total retail sales for that year (as cited in Burns, 2005). Thus, in recent years an increased number of U.S. consumers have done their shopping via the Internet (Seock & Norton, 2007a).
Internet shopping has certainly increased due to an extensive variety of product selections, low shipping costs, and the large potential market size (Silverman, 1999). Several previous studies identified the compelling advantages of and benefits of online shopping, which include convenience, the vast array of alternative products available, the quicker access to alternatives, low shipping costs, large potential market size, pre-shopping opportunities, better bargains, other social experiences, and the acquisition of knowledge of new trends (Corcoran, 2006; Lee & Johnson, 1999; Neilson, 1999; Seock & Norton, 2007a; Silverman, 1999).

Sales have increased specifically in the online apparel shopping context as well; according to 2000 NPDFFashionworld, sales of online apparel reached $5.9 billion in 2000, up from $2.9 billion in 1999 (as cited in Lee, 2004). According to Cyberatlas (2001), apparel products have been purchased via the Internet by more than a third of online shoppers in the U.S. (as cited in Lee, 2004). In “The State of Retailing Online 8.0” by a Shop.org survey in 2005, the revenue growth rate of apparel retail in 2003 and 2004 was 24 percent (as cited in Grau, 2005). Thus, in recent years, online apparel sales have grown rapidly and an increasing number of consumers are purchasing apparel products via the Internet.

Several previous studies have revealed consumers’ demographic and psychological characteristics related to online apparel purchases. Empirical findings supported the argument that women were more likely to shop for apparel online or to shop more often for clothing than men (Chigger, 2001; Flynn, Goldsmith, & Kim, 2000; Goldsmith & Flynn, 2004). Goldsmith and Flynn (2004) revealed that age, income, clothing innovativeness, and the continuing involvement with fashionable clothing had no highly significant influence on online apparel shopping, while innovativeness in shopping online and previous experience with catalog shopping were significantly related to online shopping for clothing. Similarly, potential online shopping customers were more likely to have patronized alternative non-store shopping methods, including catalogues (Shim & Drake, 1990a). Thus, the consumer being a woman, having innovativeness in shopping online, and having previous experience with other non-store shopping methods were important factors in determining whether a shopper was likely to purchase apparel products via the Internet (Chigger, 2001; Flynn et al., 2000; Goldsmith & Flynn, 2004).
In terms of consumers’ online apparel shopping behavior, Corcoran (2006) found that consumers positively evaluated their online shopping experiences with the advantages of online apparel shopping; these advantages included convenience and the availability of a variety of styles, colors and sizes. This study also revealed that consumers were likely to buy casual wear, accessories, intimates, and active/sportswear. The main reason why consumers avoided online shopping was the lack of opportunity for trying on the apparel (60 percent) (Corcoran, 2006). Although online apparel shopping has major disadvantages, including consumers’ lack of ability to touch, see, and try on clothing items, apparel products are some of the most-purchased items bought through Internet shopping (Silverman, 1999).

Emerging technologies can further facilitate the online shopping experience, which in turn can result in improved sales (Ross, 2000). For instance, emerging technologies include virtual models incorporating consumers’ real-life body measurements, zoom technology that gives a consumer an in-depth look at the fabric and yarn, and color management systems that ensure that the color on a consumer’s computer screen matches the color of the product (Ross, 2000). In addition, a previous study stated that online apparel shopping would provide quick comparative shopping, immediate update of the product, and various features to allow consumers to envision how garments would look on themselves, such as virtual dressing rooms and virtual models (Dickerson, 2003).

**Conceptual Framework: Theory of Planned Behavior**

Several studies regarding online apparel shopping have applied the Theory of Reasoned Action/Planned Behavior to explain consumers’ behaviors and intentions. However, there has been a lack of empirical research regarding consumers’ purchase intentions and behaviors toward co-designed/ mass customized apparel products based on the Theory of Planned Behavior. The conceptual framework for this research is based on Theory of Planned Behavior in order to predict and explain consumers’ purchase intentions toward co-designed apparel on a mass customized apparel Internet shopping site.

The eventual goal of the Theory of Planned Behavior (T.P.B.) (Ajzen, 1985, 1991) is to explain how consumers can change their behavior and to predict intentional and deliberate
behavior because behavior can be intentional and planned. With the addition of perceived behavioral control, the T.P.B. extended the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The Theory of Reasoned Action can appropriately predict straightforward voluntary behaviors (Armitage & Conner, 2001). However, Ajzen (1985, 1991) discovered that behavior appeared not to be completely voluntary and under control. Thus, the T.P.B. is developed by three antecedents of intention to perform a behavior (BI): attitude toward the behavior (A), subjective norm (SN), and perceived behavioral control (PBC). The three antecedents are associated with each other, with intention, and with actual behavior. Ajzen’s three considerations are key to explaining how individuals’ behaviors can be changed.

\[ A \propto \sum b_i e_i \]

\[ SN \propto \sum n_i m_i \]

\[ PBC \propto \sum c_i p_i \]

\[ \text{Behavioral Intention} \]

\[ \text{Behavior} \]

**Figure 2.1:** Diagram of the Theory of Planned Behavior (Ajzen, 1991)

The following are conceptual considerations of the T.P.B.:

1. *Intention* is defined as an individual’s readiness to perform a certain action. Intention directly precedes behavior. The intention incorporates attitude toward behavior, subjective norm, and perceived behavioral control (Ajzen, 1985, 1991, 2002).
(2) *Behavior* refers to an individual’s evident response to a specific target in a particular situation (Ajzen, 1985, 1991, 2002).

(3) *Attitude toward behavior* is defined as the manner in which a particular behavior is evaluated, whether positively or negatively. Attitude is influenced by behavioral beliefs, which are “beliefs about the likely consequences or other attributes of the behavior” (Ajzen, 2002, p.665). Hence, attitude toward the behavior (A) is a function of two components:

1) beliefs \((b_i)\) that performing a behavior has certain attributes; and

2) the evaluation of those beliefs \((e_i)\).

The overall attitude score was derived as the summation of the products of both the score of \(b_i\) and the score of \(e_i\) (Ajzen, 1985, 1991, 2002). This model is represented in the following formula:

\[
A \propto \Sigma b_i e_i
\]

(4) The *subjective norm* (SN) was defined as the consumer’s perception of social pressures placed on her by others. The subjective norm (SN) is influenced by two determinants:

1) the individual’s normative beliefs \((n_i)\), which indicate that specific individuals or groups think that the individual should or should not perform the behavior.

2) the individual’s motivation to comply with those referents \((m_i)\). The willingness to comply with normative beliefs indicates how an individual believes that significant others will view a certain behavior – positively or negatively.

Significant others identified for the purposes of the study included the person’s spouse, friends, and colleagues; individuals also considered the effects of social status and the media.

The overall subjective norm score was derived as the summation of the products of both the score of \(n_i\) and the score of \(m_i\) for all the referents (Ajzen, 1985, 1991, 2002). This model is represented in the following formula:

\[
SN \propto \Sigma n_i m_i
\]
(5) *Perceived behavioral control* refers to individuals’ perceptions of their ability to perform a given behavior in a situation in which there are restrictions on action (Ajzen, 1985, 1991, 2002). Perceived behavioral control accounts for involuntary behavior and can affect actual implementation of a behavior. In other words, it indicates an individual’s perception of ease or difficulty by assessing whether he or she has the necessary resources and opportunities required to perform a behavior. Thus, perceived behavioral control (PBC) is determined by two factors:

1) control beliefs ($c_i$), which is defined as “beliefs about the presence of factors that may further or hinder performance of the behavior” (Ajzen, 2002, p. 665). perceived power ($p_i$) of the control factor. The products of these factors are aggregated, as can be seen in the equation below:

$$\text{PBC} \propto \sum c_ip_i$$

**Proposed Determinants**

Five independent variables including consumers’ attitudes toward the behavior, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk are discussed, with consumers’ purchase intentions as a dependent variable. The first three determinants such as attitude, subjective norm, and perceived behavioral control are based on the Theory of Planned Behavior. The other two determinants such as desire for uniqueness and perceived risk are added in the proposed model of this study.

**Attitude toward Behavior and Intention**

George (2002) mentioned that the relationship between attitude toward the traditional retailer and purchase intention has been thoroughly explored in the past. In the Internet context, previous research stated that favorable attitude encouraged ease of online transactions and the adoption of e-commerce (Jarvenpaa & Tractinsky, 1999; Pavlou, 2002a; Pavlou, 2002b). Several research studies have been conducted to investigate the relationship between attitude toward Internet shopping and purchase intention (George, 2002; Goldsmith & Bridges, 2000; Kwon &
Lee, 2003). Positive attitude toward Internet shopping significantly affected intention to purchase via the Internet. Evans, Christiansen, and Gill (1996) found that consumers’ attitudes toward shopping positively influenced their shopping center patronage intention. Similarly, Jarvenpaa and Tractinsky (1999) revealed that consumers' positive attitudes toward an Internet store positively affected their willingness to purchase from the Internet store.

In the context of online apparel shopping, several research studies have shown that consumers who had more favorable attitudes toward online shopping had greater apparel buying intention via the Internet (Kim et al., 2003; Watchravesringkan & Shim, 2003; Yoh, Damhorst, Sapp, & Lazniak, 2003). Other researchers have revealed that respondents’ attitudes toward their favorite apparel websites had a positive influence on their intentions to not only search for information within those websites but also to purchase apparel from those websites (Seock & Norton, 2007a). Also, Shim and Drake (1999b) found that consumers’ attitudes toward the electronic shopping mode had a strong effect on their intentions to purchase apparel via the electronic shopping mode. Similarly, it was determined that a positive attitude toward Internet shopping positively influenced intention to use the Internet and to purchase apparel via the Internet, based on an online pre-purchase intention model (Shim et al., 2001).

Extant research found that respondents’ attitudes toward the behavior had a significant impact on their purchase intention toward American alligator leather apparel (Summers et al., 2006; Xu, 2000). Similarly, Belleau et al. (2007) stated that the more favorable Generation Y consumers’ attitudes toward emu leather, the higher their purchase intention toward emu leather apparel products. Therefore, attitude is a strong determinant of behavioral intention and plays an important role in forming behavioral intention (Blackwell et al., 2001).

In the context of mass customization, the co-design-related and service/website-related attributes during the co-design process may significantly affect consumers’ attitudes toward co-designed/customized apparel products. In order to examine consumers’ attitudes, each attribute consists of the co-design-related and service/website-related attributes in this study.

**Co-design-related attributes.** During the co-design process, several co-design-related attributes may highly influence consumers’ attitudes toward the co-designed products on a mass
customized apparel Internet shopping site. Co-design-related attributes may include a variety of style choices, a variety of color choices, a variety of fabric choices, perceived usefulness of co-design, customized fit, and consumers’ enjoyment of the co-design process.

To begin with, previous studies have supported the importance of perceived usefulness in interactive shopping. Perceived usefulness refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). Lee et al. (2006) found that perceived usefulness was a much more significant factor in enhancing consumers’ attitudes and behavioral intentions toward an online retailer than perceived ease of use. Similarly, several pieces of empirical evidence supported the idea that perceived usefulness was a significant determinant of attitude toward interactive shopping and toward an online retailer (Chen & Tan, 2004; Childers et al., 2001; Lin & Lu, 2000).

Enjoyment is a strong component of attitude toward interactive shopping (Childers, Carr, Peck, & Carson, 2001). Mathwick and Rigdon (2004) revealed that when consumers engaged in an enjoyable online experience, it seemed that their attitudes toward the firm’s website and its brands were improved. They also found that the quality of the enjoyable online experience was affected by three determinants: the level of navigational challenge in online search activities, the consumers’ ability to address the challenging tasks with technology-related skills, and the level of decisional control by the consumer. Other researchers have revealed that enjoyment greatly influenced technology acceptance for specific word processing and graphics programs (Davis, Bagozzi, & Warshaw, 1992) and for microcomputer usage (Igbaria, Parasuraman, & Baroudi, 1996). Further, Lee et al. (2006) found that perceived enjoyment had an important indirect effect rather than a direct effect on behavioral intention toward an online retailer. In the online shopping context, enjoyment is a significant determinant both directly and indirectly (Mathwick, 2002; Lee et al., 2006). Although there has been no study regarding consumers’ enjoyment during the mass customization process, based on other literature in other field, it seems reasonable to suggest that enjoyment may strongly affect consumers’ attitudes toward co-designed/customized products.

Further, several empirical findings (e.g., Kamali & Loker, 2002, Ulrich et al., 2003) have supported the importance of availability of various design options and levels of design
involvement. Ulrich et al. (2003) stated that design options allow consumers to make design variation choices from a menu. They also found that respondents provided comments on the style bank’s design options and proposed a range of enhancements, which included providing fabric patterns, more sleeve selections, neckline and pocket options, and more light and neutral color choices.

In another study, Kamali and Loker (2002) provided respondents with fictitious websites in t-shirt product co-design. These websites had three different design involvement levels: the control group, the limited customization group, and the advanced customization group. Specifically, the control group offered 5 ready-to-wear garments that had 3 pre-designed styles, colors, and graphic images. The limited group offered a total number of 50 possible combinations (i.e., $2 \times 5 \times 5$), meaning a total of 2 styles, 5 colors, and 5 graphic images. The advanced customized group offered 37,500 possible combinations, meaning a total of 5 neckline options, 5 sleeve options, 20 color options, 3 bodice lengths, 5 graphic images, and 5 placements/sizes (i.e., $5 \times 5 \times 20 \times 3 \times 5 \times 5 = 37,500$). Consequently, the advanced customization group was most willing to purchase a co-designed T-shirt (91%) while the limited and control customization groups were willing to purchase the co-designed product at 83% and 88%, respectively. Therefore, several research studies have identified that consumers wanted a variety of color, design, and fabric choices during the co-design process.

Several research studies have also emphasized the importance of better fit in the implementation of apparel mass customization (Anderson-Connell et al., 2002; Fiore et al., 2001; Lee et al., 2002). Fiore et al. (2001) stated two important options of apparel mass customization; one is body scanning for a better-fitting product, and the other is co-design for a unique design outcome. Specifically, Lee et al. (2002) examined the features that consumers preferred for the five product types (i.e., jeans, swimwear, dresses, intimate apparel, and special occasion wear) for customizing apparel. They found that “fit to body shape” was the most significant attribute in customizing apparel products, followed by overall style, colors, fabrics, and garment details (p. 142). Anderson-Connell et al. (2002) mentioned the importance of consumers’ lack of satisfaction with the fit and sizing available in mass-produced apparel and their interest in the potential to customize garments’ fits in order to suit the individual. Thus, customized fit has been
an important consideration of co-design (Anderson-Connell et al., 2002) and may influence consumers’ positive attitudes toward co-designed products on a mass customized apparel Internet shopping site.

**Service/Website-related attributes.** Although service and satisfaction may not necessarily be directly related to one another, service allows customer satisfaction to increase by providing additional value for customers (Anderson & Mittal, 2000). Moss and Brannon (1999) revealed that high ratings could not be achieved simply by providing an interactive customization experience. They suggested that customization must be incorporated into other stimulating services. Thus, combining product- and service-based strategies provides the largest potential for success in mass customization (Piller, 2001).

Service/website-related attributes may influence consumers’ attitudes toward a co-designed product on a mass customized apparel Internet shopping site. However, existing literature regarding apparel mass customization did not examine how service/website-related attributes of a mass customized apparel Internet shopping site affect consumers’ attitudes and purchase intentions. Service/website-related attributes may include the availability of a consultant, a quick and convenient process, interactive functions, and virtual reality with advanced technology.

To begin with, previous studies have supported the importance of the availability of a consultant and a quick and convenient process in order for consumers to have a positive attitude toward customized products. In the apparel mass customization context, Anderson et al. (1997) defined co-design as modifying design options and personal fit with the help of a well-trained assistant. They also explained that co-design indicated consumers’ descriptions of a collaborative relationship between a consumer and an individual – someone who is skilled in operating computer-aided design (CAD) images and in assisting as a consultant during the design of a garment. When consumers perceive that a design choice entails a high level of risk, guidance from a design manager may allow consumers to increase their own confidence in purchasing co-designed garments (Ulrich et al., 2003). Similarly, Lee et al. (2002) found that for assistance in co-design, female respondents were likely to prefer specialized salespersons who are experienced with apparel design offering advice regarding suitable choices rather than a general salesperson.
On the other hand, empirical findings supported the importance of the quick and convenient process. Consumers wanted quick and easy transactions at the website and wanted the website not to waste their time. Lee et al. (2002) revealed that respondents preferred quick and convenient processes in the co-design process of apparel mass customization. These time-related factors strongly influenced customers’ judgments of website quality (Wolfinbarger & Gilly, 2003). Thus, the availability of a consultant and the quick and convenient process may be significantly associated with consumers’ positive attitudes toward co-designed products on a mass customized apparel Internet shopping site.

Although there has been a lack of study regarding how virtual reality and interactive functions of mass customization affect consumers’ attitudes toward co-designed and customized products, both interactive functions and virtual reality with advanced technology may have a strong effect on consumers’ positive attitudes toward mass customized products and on consumer satisfaction. Ballantine (2005) found that both the level of interactivity and the amount of information provided by the website positively affected consumer satisfaction. In the context of mass customization, allowing the consumer to view the apparel using virtual 3D try-on technology might help consumers to have better success selecting garments that fit well and are styled appropriately with regard to a consumer’s body type (Kamali & Loker, 2002). Websites related to mass customization embrace a high level of interactivity (Lee, 2004). The interactive functions of the Internet, which include the capability to not only customize the site and product but also offer interaction to consumers, offer a business medium for consumer involvement (Jonies et al., 2003; Page & Lepkoska-Whire, 2002; Park & Kim, 2003). Therefore, mass customization is crucial in the establishment of “effective two-way interactive communication channels” between the customer and the marketer for consumer-driven systems (Baradaki, 2003, p. 465). Consequently, several pieces of empirical evidence support the importance of both interactive functions and virtual reality with advanced technology in consumers’ positive attitude and satisfaction.

**Subjective Norm and Intention**

Empirical evidence supports the idea that the subjective norm is an important predictor of purchase intention (Rabolt & Drake, 1985; Robertson et al., 1984). Also, respondents’
perceptions of the social pressure placed on them to buy American alligator leather apparel were found to have a significant influence on their purchase intention (Summers et al., 2006). In other words, the individual’s perceptions that specific individuals or groups think that the individual should or should not purchase American alligator leather had an effect on their intention to buy American alligator leather apparel products. Similarly, Kim et al. (2003) found that the subjective norm was positively related to behavioral intention toward online apparel shopping.

On the other hand, previous studies reported that the subjective norm was not significantly related to online shopping behavior (Jarvanpaa & Tod, 1997; Shim et al., 2001). In addition, Belleau et al. (2007) stated that the subjective norm had little or no influence on Generation Y consumers’ purchase intentions. In other words, college-aged consumers felt little or no social pressure to comply with peer or other referents in the purchase of emu leather.

**Perceived Behavioral Control and Intention**

The addition of perceived behavioral control in the latter is the main difference between Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and T.P.B. (Ajzen, 1991). According to the T.P.B. (Ajzen, 1985, 1991), perceived behavioral control refers to an individual’s perceptions of not only their ability to perform a given behavior but also how easy or difficult it would be to perform the behavior. Perceived behavioral control explains involuntary behavior and can affect actual implementation of a behavior. In other words, this indicates whether an individual perceives a behavior as difficult or easy depending on his or her assessment of whether the necessary resources and opportunities required to perform a behavior are available.

In the online shopping context, although Internet shopping offers several benefits to consumers, the ability to access the Internet and other suitable resources (i.e., modem and high speed Internet connection) may be required for performing online shopping (Kim & Park, 2005). Empirical evidence supports the positive relationship between perceived behavioral control and purchase intentions (Johnson et al., 2003; Shim et al., 2001). According to Shim et al. (2001),

---

1 According to the Theory of Reasoned Action, a person’s behavioral intention is based on two attribute such as the individual’s attitude and subjective norm.
perceived behavioral control had a positive effect on information search intention online. Similarly, perceived behavior control via the online store was significantly related to purchase intentions via the online store and online search intention for product information (Kim & Park, 2005).

Perceived ease of and difficulty or complexity in use of the Internet significantly affect purchase intention via the Internet (Johnson, Lennon, Jasper, Damhorst, & Lakner, 2003; O’Cass & Fenech, 2003; Pavlov, 2003; Swinyard & Smith, 2003). Johnson et al. (2003) revealed that people who perceive less difficulty in using and accessing the Internet were more likely to use the Internet for purchasing products than those who perceived greater complexity. Similarly, attitude toward web retail and adoptions of Internet shopping were determined by perceived ease of use of the Internet (O’Cass & Fenech, 2003). According to Swinyard and Smith (2003), those who shopped on the Internet were more likely to perceive less complexity for searching for information and purchasing the product online than those who did not shop on the Internet.

In addition, consumers who had greater confidence in Internet shopping were more likely to purchase products via the Internet than those who had less confidence (Goldsmith & Goldsmith, 2002). Similarly, Shim et al. (2001) found that consumers who perceived more ease and had more confidence in Internet shopping were more likely to use the Internet for searching for product information. Further, the choice model for the Internet and other information sources developed by Ratchford et al. (2003) suggested that the use of specific types of sources depended on skills for using each source and ease of accessing the source. Ability to use and access the Internet had a highly significant influence on the use of the Internet for information searching (Ratchford et al., 2003). In other words, it is likely that the greater the perceived behavioral control via the online store is, the greater the search intention for product information via the online store will be.

Desire for Uniqueness

Several research studies have identified that uniqueness is one of the attributes of consumers’ desire for purchasing products. According to Snyder and Fromkin’s (1977) theory of uniqueness, individuals try to continue a sense of specialness in their process of self-definition in
comparison to others with regard to various aspects related to the self. Mass customization by the
use of computer-facilitated production is one strategy of providing for consumers’ need for
uniqueness (Tian et al., 2001). Snyder (1992) stated that the need for uniqueness may be
different across various persons and circumstances. A high level of uniqueness may be
associated with two factors: one factor is the influences present in a particular situation that
increase the feeling of similarity; the other is dispositional factors affecting the high demand for
uniqueness across diverse situations (Snyder, 1992). Therefore, the need for uniqueness is one of
the origins of consumers’ desire for purchasing products (Lynn, 1991; Synder, 1992; Synder &
Fromkin, 1980).

According to Lynn and Harris (1997), the desire for unique consumer products will
usually become greater as consumers attempt to acquire goods, services, and experiences that
few people get. They mentioned that specific indications of this desire encompass “an increased
tendency to acquire and use products that are scarce, innovative, customized, and/or outmoded as
well as an increased tendency to shop at small, unique retail outlets” (p. 604). The preference for
customized products was positively associated with both force of consumers’ self-attributed
uniqueness motivation and a more hidden variable related to consumers’ tendency to seek out
uniqueness by making purchases (Harris & Lynn, 1996). Customization allows a product to be
different from the standard product that most others possess, so the desire for unique consumer
products may demonstrate itself in a propensity to customize products (Lynn & Harris, 1997).

**Perceived Risk**

Fashion products are related to high levels of perceived risk due to their nature (Eastlick
& Feinberg, 1995; Kwon et al., 1991; Winakor, Canton, & Wolins, 1980). Risk-taking refers to
“the perceived probability of receiving a reward that is associated with the success of a proposed
situation” (MacCrimmon & Wehrung, 1986, p. 171). Performance risk is related to the
perception that a product may not fulfill personal anticipations (Kwon et al., 1991; Simpson &
Buckley, 1991). In general, consumers require some success before they will be prepared to risk
the results related to failure (Brockhaus, 1980). Consumers may choose to purchase a product
based on the extent to which their perceived risk is related to the product or purchase behavior
(Dickson & Littrell, 1997). Similarly, perceived risk as a situational and personal consumer
behavior affects product purchase and store choice (Dowling, 1986). Thus, several previous
studies found that perceived risk had an influence on purchase intention toward product shopping (Darden & Dorsch, 1990; Eastlick & Feinberg, 1995; Kim & Lennon, 2000; Kwon, Paek, & Arzeni, 1991).

**Research Hypotheses**

The following hypotheses were developed to predict consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site based on the review of previous literature. In the apparel mass customization context, due to the lack of relevant studies regarding three major determinants (i.e., attitude toward behavior, subjective norm, and perceived behavioral control) within the Theory of Planned Behavior (Ajzen, 1985, 1991), this study explored how consumers’ attitudes toward behavior, subjective norm, and perceived behavioral control influence consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site. In addition, in order to examine how desire for uniqueness and perceived risk are significantly related to consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site, both desire for uniqueness and perceived risk were added in the proposed model.

To begin with, in the context of online shopping, several empirical findings supported the supposition that consumers’ attitudes toward online shopping had an effect on purchase intentions via the Internet (Shim et al., 2001; Shim & Drake, 1999; Kim et al., 2003; Watchravesringkan & Shim, 2003; Yoh et al., 2003). The subjective norm was a significant predictor of consumers’ purchase intentions (Kim et al., 2003; Rabolt & Drake, 1985; Robertson et al., 1984; Summers et al., 2006). Further, previous studies identified that perceived behavioral control influenced consumers’ purchase intentions (Shim et al., 2001; Kim & Park, 2005).

H$_1$. Attitude toward mass customized products will positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site.

H$_2$. A consumer’s perceptions of the extent to which significant referents approve of mass customized products (i.e., subjective norm) will positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site.
H₃. Perceived behavioral control will positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site.

According to Ajzen (1991), “The Theory of Planned Behavior is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behavior after the theory’s current variables have been taken into account” (p. 199). In order to examine how desire for uniqueness and perceived risk affect consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site, the two additional predictors (i.e., desire for uniqueness and perceived risk) were included in the proposed model of this study. Harris and Lynn (1996) found that the preference for customized products was positively related to consumers’ self-attributed uniqueness motivation and tendency to seek out uniqueness. In addition, several previous studies identified that perceived risk for catalog and television apparel shopping had an influence on purchase intention and positive attitude toward apparel shopping (Eastlick & Feinberg, 1995; Kim & Lennon, 2000; Kwon, Paek, & Arzeni, 1991).

Therefore, based on the literature, the following hypotheses were generated:

H₄. Desire for uniqueness will positively influence consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site.

H₅. Perceived risk will positively influence consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site.
Figure 2.2: Research Model
CHAPTER III
METHODS

This chapter provides a description of instrument development, the pretest, the sample, data collection, and data analysis. This study was conducted via online survey with a self-administered questionnaire. Data was collected from a convenience sample of college students. Once all respondents browsed a research website, they completed the questionnaire. Multiple regression was used to test the research model.

Instrument Development

Stimulus Development

As the first step of this study, respondents were asked through paper-and-pencil questionnaires which apparel product types they would most like to customize. This step was conducted with 70 college students in order to determine which apparel types to include in a mock mass customized apparel Internet shopping site. Males were 24.3% of the respondents, and females were 75.7% of the respondents. Respondents with an apparel major made up 48.6% of the sample and those with non-apparel majors made up 51.4% of the sample. Respondents were currently pursuing undergraduate (44.3%) and graduate (55.7%) degrees. Most of the respondents were White/Caucasian (61.4%), followed by Asian (22.9%), Hispanic/Latino (10.0%), and African-American (4.3%).

Among six different product types, female respondents were most likely to be interested in customizing casual wear, followed by special occasion wear, business wear, active sportswear, bridal wear, and intimate apparel. Male respondents were most likely to customize casual wear, followed by business wear, active sportswear, special occasion wear, bridal wear, and intimate wear.

Even though business wear was not the respondents’ first choice, a mock mass customized apparel Internet shopping site for business wear was created as a stimulus of this study. The first reason for this choice was the lack of empirical data related to mass customized
business wear to be used in order to understand consumers’ reactions to the acceptance of mass customization. Previous studies (e.g., Cho, 2007; Choy & Loker, 2005; Kamali & Loker, 2002; Lee, 2004) regarding apparel mass customization used t-shirts, jeans, kidswear and wedding gowns as a stimulus. In addition, the second reason for the choice of business wear was the lack of empirical data for male respondents’ reaction to mass customization for apparel. The majority of respondents in previous studies (e.g., Fiore et al., 2001; Lee et al., 2002) were female. Several researchers (e.g., Anderson-Connell et al., 2002; Choy & Loker, 2005; Kamali & Loker, 2002; Ulrich et al., 2003) also examined only female respondents for their research. Based on the first step of this study, male respondents were more likely to customize business wear as a second choice than active sportswear and special occasion wear. Finally, the third reason for this choice was the lack of adoption of mass customized business wear in the U.S. apparel industry. Although increasing numbers of mass customized apparel Internet shopping sites are offering casual wear such as t-shirts and jeans, small numbers of companies have begun to carry out mass customized business wear. Thus, mass customized business wear is not widely diffused among consumers.

The mock mass customized apparel Internet shopping site used for this study allowed respondents to try co-designing women’s and men’s business wear by making choices among options for various garment components. These garment design options provided choices of silhouette, collar, pocket, hem, sleeve, length, pleat, color, and fabric. In these garment design options, male respondents had 108 choices for jacket design, 162 choices for shirt design, and 162 choices for pant design; female respondents had 216 choices for jacket design, 108 choices for shirt design, 243 choices for pant design, and 243 choices for skirt design. Table 3.1 shows the possible co-design options the research site provided.

In order to simulate the co-design experience, this mock site generated virtual reality and interactive functions. Specifically, whenever respondents selected or changed the co-design options, the computer illustration or image showing their own designed garments changed according to their selection. Also, this site generated photorealistic images of the fabric that respondents selected. Thus, all design options were available for respondents to combine and redesign in the co-design process. The complete website contained 12 pages, including a
welcome page; a definition of mass customization and co-design; a consent form; a page each for
women’s jackets, skirts, pants, shirts, and body measurements; and a page each for men’s jackets,
pants, shirts and body measurements. Table 3.2 shows the body measurements and sizes for male
and female respondents. In addition, this research website allowed respondents to select
customized services (availability of a consultant, actual fabric sample, and information regarding
the latest fashion trends) (Table 3.3).
Table 3.1: Co-Design Options in the Research Site

<table>
<thead>
<tr>
<th>Gender</th>
<th>Item</th>
<th>Fit or Silhouette</th>
<th>Collar &amp; Closure</th>
<th>Pocket</th>
<th>Sleeve</th>
<th>Pleat</th>
<th>Hems</th>
<th>Length</th>
<th>Fabric</th>
<th>Color</th>
<th>Total options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Jacket</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Shirts</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>162</td>
</tr>
<tr>
<td></td>
<td>Pants</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>162</td>
</tr>
<tr>
<td>Female</td>
<td>Jacket</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>216</td>
</tr>
<tr>
<td></td>
<td>Shirts</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>Pants</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>243</td>
</tr>
<tr>
<td></td>
<td>Skirts</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>243</td>
</tr>
<tr>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Body shape</strong></td>
<td><strong>Body shape</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Flat &amp; Robust)</td>
<td>(Triangle, Inverted Triangle, &amp; Hourglass)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td><strong>Height</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td><strong>Weight</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Build</strong></td>
<td><strong>Bust size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Muscular, Regular, &amp; Slender)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shoulder</strong></td>
<td><strong>Waist Size</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Broader &amp; Narrower)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sleeve</strong></td>
<td><strong>Sleeve</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(30.0&quot; to 40.0&quot;)</td>
<td>(30.0&quot; to 40.0&quot;)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Neck size</strong></td>
<td><strong>Jacket</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13.0&quot; to 18.0&quot;)</td>
<td>0 (XS) to 18(XL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Jacket</strong></td>
<td><strong>Pants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(34&quot; to 52&quot;, Small, Medium, Large)</td>
<td>0 (XS) to 18(XL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pants</strong></td>
<td><strong>Shirts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(30&quot; to 40&quot;, Short, Regular, Long)</td>
<td>0 (XS) to 18(XL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shirts</strong></td>
<td><strong>Skirts</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Small, Medium, Large, XL, 2XL)</td>
<td>0 (XS) to 18(XL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.3: Customized Service Options in the Research Site

<table>
<thead>
<tr>
<th>Item</th>
<th>Customized Service Options (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire</td>
<td>Do you need a consultant’s help in the process of co-designing your garments?</td>
</tr>
<tr>
<td></td>
<td>Do you want to receive actual fabric samples of the garments you co-designed by mail before the delivery of the finished products?</td>
</tr>
<tr>
<td></td>
<td>Do you want to receive the information of latest fashion trends for business wear by email?</td>
</tr>
</tbody>
</table>

Questionnaire Development

Table 3.4: Latent Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of questions</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase intention</td>
<td>2</td>
<td>Ajzen, 1991; Ajzen &amp; Fishbein, 1980; Belleau et al., 2007; Summers et al., 2006</td>
</tr>
<tr>
<td>Attitude</td>
<td>18</td>
<td>Ajzen, 1991; Noelin, 1999; Shim et al., 1989; Summers et al., 2006</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>4</td>
<td>Ajzen, 1991; Belleau et al., 2007; Kim &amp; Park, 2005; Summers et al., 2006</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>3</td>
<td>Conner and McMillan, 1999; Courneya, Bobick, &amp; Schinke, 1999; Godin et al., 1996; Netemeyer, Burton, &amp; Johnson, 1991; Sheeran &amp; Orbell, 1999</td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td>8</td>
<td>Lynn &amp; Harris, 1997</td>
</tr>
<tr>
<td>Perceived risk</td>
<td>6</td>
<td>Dickson &amp; Littrell, 1997</td>
</tr>
<tr>
<td>Demographic</td>
<td>9</td>
<td>The researcher</td>
</tr>
</tbody>
</table>
**Behavioral intention.** Behavioral intention refers to the consumer’s intention to purchase co-designed products on a mass customized apparel Internet shopping site. Respondents were asked to indicate their behavioral intention on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree) (Ajzen, 1991; Ajzen & Fishbein, 1980; Belleau et al., 2007; Summers et al., 2006).

**Table 3.5:** Questionnaire Items Measuring Behavioral Intentions

<table>
<thead>
<tr>
<th>Questionnaire Items Measuring Behavioral Intentions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scale</strong></td>
</tr>
<tr>
<td><strong>Questionnaire</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Attitude.** Attitude toward co-designed products on a mass customized apparel Internet shopping site encompassed nine general attributes representing various aspects of the co-design process and the service/website related factors provided by the website. Attitude was measured using an expectancy-value model (Noelin, 1999; Shim et al., 1989; Summers et al., 2006). The respondents’ evaluations of each attribute were weighed by their behavioral belief that mass customized products would provide each attribute.

(1) Respondents were asked to indicate on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) how important \( e_j \) each attribute was to them when co-designing/customizing apparel products.

(2) Respondents were asked to indicate on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree) how likely they felt it was that mass customized apparel products would provide each attribute \( b_i \).

The overall attitude score was derived as the summation of the products of the score of \( b_i \) and the score of \( e_j \) (Shim et al., 1989, 2001; Summers et al., 2006). In order to avoid order effects, the attributes were randomly ordered on each individual questionnaire (Shim et al., 2001).
**Figure 3.3:** Attributes Influencing Consumers’ Attitudes toward Co-Designed Products

- **Co-design related attributes**
  - A variety of design choices
  - A variety of fabric and color choices
  - Perceived usefulness
  - Enjoyment of the co-design process

- **Service/website related attributes**
  - The availability of a consultant
  - A quick and convenient process
  - Interactive functions
  - Virtual reality

\[
\text{Attitude toward co-designed/customized apparel} = \sum b_i e_i
\]
Table 3.6: Questionnaire Items Measuring Attitude toward customized / Co-Designed Apparel

<table>
<thead>
<tr>
<th>Beliefs ($b_i$)</th>
<th>Evaluation of attribute ($e_i$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Co-design provides a variety of unique style choices.</td>
<td>1. A variety of style choices is important in the co-design process.</td>
</tr>
<tr>
<td>2. Co-design provides a variety of fabric and color choices.</td>
<td>2. A variety of fabric and color choices is important in the co-design process.</td>
</tr>
<tr>
<td>3. Mass customization provides perceived usefulness.</td>
<td>3. The usefulness of co-design is important in the co-design process.</td>
</tr>
<tr>
<td>4. Co-design provides enjoyment.</td>
<td>4. Enjoyment of the co-design process is important.</td>
</tr>
<tr>
<td>5. Mass customization provides a better fit.</td>
<td>5. Availability of a better-fitting garment is an important benefit of a mass-customized product.</td>
</tr>
<tr>
<td>6. The availability of a consultant in a mass customized apparel Internet site is helpful.</td>
<td>6. Availability of a consultant is important in the co-design process.</td>
</tr>
<tr>
<td>7. A mass customized apparel Internet site has interactive functions.</td>
<td>7. Interactive functions are important in the co-design process.</td>
</tr>
<tr>
<td>8. Mass customization provides a quick and convenient co-design process.</td>
<td>8. Speed and convenience are important in the co-design process.</td>
</tr>
<tr>
<td>9. A mass customized apparel website provides an experience of virtual reality.</td>
<td>9. Virtual reality features are important in the co-design process.</td>
</tr>
</tbody>
</table>

Subjective norm. Respondents were asked to indicate the importance of referents (close friends, classmates, etc.) approving of co-designing/customizing products on a mass customized apparel Internet shopping site using four items reported in Ajzen (1991).

(1) Respondents’ normative beliefs were measured on a 7-point Likert scale (1 = strongly disagree; 7 = strongly agree). Respondents were asked to indicate their opinions.
regarding the likelihood that a specific referent would think they should or should not purchase co-designed products on a mass customized apparel Internet shopping site.

(2) Respondents’ motivation to comply with the referents (friends, colleagues, media) was measured on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). The overall subjective norm score was derived as the summation of the products of the score of \( n_i \) and the score of \( m_i \) for all of the referents (Belleau et al., 2007; Kim & Park, 2005; Summers et al., 2006).

Table 3.7: Questionnaire Items Measuring Subjective Norm

<table>
<thead>
<tr>
<th>Normative Belief (( n_i ))</th>
<th>On a Likert-type scale of strongly disagree (1) to strongly agree (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My close friends are likely to think that it would be good for me to co-design /customize garments on a mass customized apparel website.</td>
<td></td>
</tr>
<tr>
<td>2. Other important people around me are likely to think that it would be good for me to co-design / customize garments on a mass customized apparel website.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motivation to comply (( m_i ))</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My close friends influence my decision to co-design.</td>
<td></td>
</tr>
<tr>
<td>2. Other important people around me influence my decision to co-design.</td>
<td></td>
</tr>
</tbody>
</table>

**Perceived behavioral control.** Perceived behavioral control via the mass customized apparel Internet shopping site was assessed using three questions reported in Ajzen (1991). These items were then revised to reflect the current study’s purpose. Ajzen (2002) reported that “it is possible to obtain high reliabilities with direct measures of perceived behavioral control” (p. 671). Several studies measured perceived behavioral control through the standard direct approach (Conner and McMillan, 1999; Courneya, Bobick, & Schinke, 1999; Godin et al., 1996; Netemeyer, Burton, & Johnson, 1991; Sheeran & Orbell, 1999). Thus, respondents were asked to indicate their perception of the ease of the co-design process on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).
Table 3.8: Questionnaire Items Measuring Behavioral Intentions

<table>
<thead>
<tr>
<th>Scale</th>
<th>On a Likert-type scale of strongly disagree (1) to strongly agree (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire</td>
<td>1. I am confident that if I wanted to, I could co-design apparel products.</td>
</tr>
<tr>
<td></td>
<td>2. I believe that I have a lot of control over the process of co-designing / customizing products, because of my ability to use the Internet.</td>
</tr>
<tr>
<td></td>
<td>3. The apparel co-design process is easy for me.</td>
</tr>
</tbody>
</table>

Desire for uniqueness. The Desire for Unique Consumer Products (D.U.C.P.) scale (Lynn & Harris, 1997) was borrowed to measure respondents’ desire for uniqueness. This scale consists of eight items using a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Item scores were summed to create the D.U.C.P. score.

Perceived risk. Perceived risk was measured through a six-item index developed by Dickson and Littrell (1997), using a 7-point Likert scale. The six items represent four dimensions of perceived risk: general, satisfaction, time, and psychological (Dickson & Littrell, 1997).

Table 3.9: Questionnaire Items Measuring Behavioral Intentions

<table>
<thead>
<tr>
<th>Scale</th>
<th>On a Likert-type scale of strongly disagree (1) to strongly agree (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire</td>
<td>1. I am very attracted to rare objects.</td>
</tr>
<tr>
<td></td>
<td>2. I tend to be a fashion leader rather than a fashion follower.</td>
</tr>
<tr>
<td></td>
<td>3. I am more likely to buy a product if it is scarce.</td>
</tr>
<tr>
<td></td>
<td>4. I would prefer to have products custom-made rather than ready-made.</td>
</tr>
<tr>
<td></td>
<td>5. I enjoy having things that others do not.</td>
</tr>
<tr>
<td></td>
<td>6. I rarely pass up the opportunity to order custom features on the products I buy.</td>
</tr>
<tr>
<td></td>
<td>7. I like to try new products and services before others do.</td>
</tr>
<tr>
<td></td>
<td>8. I enjoy shopping at stores that carry merchandise that is different and unusual.</td>
</tr>
</tbody>
</table>
Table 3.10: Questionnaire Items Measuring Perceived Risk

<table>
<thead>
<tr>
<th>Scale</th>
<th>On a Likert-type scale of strongly disagree (1) to strongly agree (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire</td>
<td>1. In general, purchasing the customized garment on the mass customized apparel website is risky.</td>
</tr>
<tr>
<td></td>
<td>2. In general, purchasing any product through a mass-customized apparel website is risky.</td>
</tr>
<tr>
<td></td>
<td>3. The customized garment will end up not being as good as what I expected.</td>
</tr>
<tr>
<td></td>
<td>4. Purchasing the customized garment on the mass customized apparel website will end up wasting my time.</td>
</tr>
<tr>
<td></td>
<td>5. The customized garment on the mass customized apparel website will not fit properly.</td>
</tr>
<tr>
<td></td>
<td>6. The customized garment on the mass customized apparel website will not accurately express my self-image.</td>
</tr>
</tbody>
</table>

Pretest

Before data collection for the main survey, a pretest was conducted with 10 college students in order to obtain respondents’ comments regarding directions of the stimulus contents and questionnaires. These 10 college students consisted of 5 female and 5 male students with a variety of majors including psychology, family and child sciences, marketing, and English. Besides the questionnaire developed for the main survey, two additional open-ended questions regarding respondents’ opinions or comments on the questionnaire were asked.

Respondents were observed by the researcher who stood nearby during each individual pretest in the computer lab. The researcher observed respondents’ reactions as they browsed the website and completed the questionnaire. All respondents finished the surveys in approximately 15 minutes. After completing the pretest, respondents were interviewed about the website they browsed and the questionnaire they completed. The stimulus and questionnaire were revised through the results of the pretest and respondents’ comments. According to respondents’ comments, their classmates did not have a strong influence on
respondents’ decisions. Thus, in regard to two questionnaire items measuring subjective norm, the word “classmate” was changed to the phrase “other important people around them.”

**Sample Selection**

Data was collected from a convenience sample of college students representing a variety of majors in two universities in the southeastern United States. Three hundred one students volunteered to participate in this study. The survey was conducted online during the spring of 2008. Although the use of a college student sample limits generalization of findings to a wider range of consumers, these respondents have experience in and are comfortable with using technology as well as a high level of involvement in apparel and shopping; these are both important factors in determining how well consumers will accept the mass customization process (Pisut et al., 1998). Further, these young adults are prominent and influential consumers when it comes to purchasing more expensive clothing items and frequently purchase products via the Internet (Hogg et al., 1998; Silverman, 2000). Thus, young consumers have a particular importance as a target market for Internet-based commerce (Seock & Norton, 2007b). Further, the use of a college student sample continues the inquiry begun in previous research-based interpretation of this target market’s reaction to mass customization (Pisut et al., 1998; Wu et al., 1998).

**Data Collection**

For the main survey, an online survey was developed. Instructors at the participating universities (University of Florida and Florida State University) created a Listserv® and sent a recruiting email, including the URL of the questionnaire, to the 400 total college students. Three hundred one students of the 400 volunteered to participate in exchange for extra credit points toward their course grade. Thus, the selected sample was 400 students and the actual sample size was 301 students. Two hundred ninety six responses of these 301 were usable for data analysis. It took approximately fifteen minutes for respondents to complete the whole process, including the co-design process itself and the related questionnaire. All measures and procedures were approved by the Florida State University Institutional Review Board (IRB00000446).
The questionnaire was made up of seven measures: 1) behavioral intention, 2) attitude toward co-designed garments, 3) subjective norm, 4) perceived behavioral control, 5) perceived risk, 6) desire for uniqueness, and 7) demographic information.

**Data Analysis**

Reliability analysis was used to calculate internal consistency of the questionnaire items. Internal consistency reliability with Cronbach’s Alpha analysis indicated how consistently each individual item and all the items together measure the construct. Thus, Cronbach’s Alpha was used to investigate the reliability of the scales that measure five independent variables (attitude toward co-designed garments, subjective norm, perceived behavioral control, perceived risk, and desire for uniqueness,) and a dependent variable (purchase intention).

Description, percent, and frequencies were used to examine demographic information. Multiple regression was used to test the five hypotheses with purchase intention as the dependent variable and proposed predictors such as attitude toward behavior, subjective norm, perceived behavioral control, uniqueness, and perceived risk. According to a 95% ($p < .05$) significance rate, the hypotheses were supported or rejected.

An independent samples $t$-test was used to examine if other factors (gender, need for customized service, and experience for online customization) influenced research variables (purchase intentions and the five predictors). Chi-square was used to investigate gender difference in regard to the need for customized service and experience for online customization.
CHAPTER IV
PRELIMINARY RESULTS

This chapter includes a demographic description of the sample and a summary of research variables. In the summary of research variables, the overall mean score for the research variables is explained. Checking assumptions of multiple regression and internal reliability with Cronbach’s alpha is discussed.

Description of Sample

The selected sample was 400 and the actual sample was 301. Out of 301 responses collected, 296 were usable and were employed for the data analyses. Descriptive statistics of the sample consist of respondents’ demographic profiles, frequency of online shopping experience, experience with mass customizing website, and percentage of respondents’ clothes they had bought themselves in the previous twelve months.

Table 4.1 indicates the demographic profile of the sample. There were 126 male (42.6%) and 168 female (56.8%) respondents. The age range was from 17 to 46, with a mean age of 21.16 years. The largest group was 17-20 years old (59.3%), followed by 21-25 years old (34.2%). Most of the respondents’ hometowns were Florida (90.6%) and outside of Florida (9.5%). Within Florida, Gainesville was the most (18.9%), followed by Miami (8.1%), and Orlando (6.4%). The majors (Table 12) of the most respondents were sports management (23.3%), followed by business (21.3%), and advertising (17.9%). Respondents were pursuing undergraduate (81.4%) or graduate (17.9%) degree. Most of the respondents were White/Caucasian (62.8%), followed by Hispanic/Latino (12.5%) and Black/African-American (11.8%).

In terms of frequency of respondents’ online shopping experience, “once every three months or less” had the highest overall percentage of respondents (42.6%), followed by “once a month or less” (25.0%) and “once a year or less” (20.3%). Percentages of their clothes that respondents bought themselves in the previous 12 months were 80%-100% (47.6%), followed by 60%-80% (20.4%), and 40%-60% (16.3%).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>168</td>
<td>56.8%</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>126</td>
<td>42.6%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>294</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>17-20</td>
<td>175</td>
<td>59.3%</td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>101</td>
<td>34.2%</td>
</tr>
<tr>
<td></td>
<td>26-30</td>
<td>10</td>
<td>3.4%</td>
</tr>
<tr>
<td></td>
<td>31 or older</td>
<td>9</td>
<td>3.1%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>Hometown</td>
<td>Florida</td>
<td>268</td>
<td>90.6%</td>
</tr>
<tr>
<td></td>
<td>Gainesville, FL</td>
<td>56</td>
<td>18.9%</td>
</tr>
<tr>
<td></td>
<td>Miami, FL</td>
<td>24</td>
<td>8.1%</td>
</tr>
<tr>
<td></td>
<td>Orlando FL</td>
<td>19</td>
<td>6.4%</td>
</tr>
<tr>
<td></td>
<td>Tampa, FL</td>
<td>14</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>Jacksonville, FL</td>
<td>14</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>Tallahassee, FL</td>
<td>14</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>Outside of Florida</td>
<td>28</td>
<td>9.5%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>Majors</td>
<td>Sports Management</td>
<td>69</td>
<td>23.3%</td>
</tr>
<tr>
<td></td>
<td>Business</td>
<td>63</td>
<td>21.3%</td>
</tr>
<tr>
<td></td>
<td>Advertising</td>
<td>53</td>
<td>17.9%</td>
</tr>
<tr>
<td></td>
<td>Public Relations</td>
<td>30</td>
<td>10.1%</td>
</tr>
<tr>
<td></td>
<td>Others (27 majors)</td>
<td>81</td>
<td>27.4%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>296</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 - continued

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>241</td>
<td>81.4%</td>
<td></td>
</tr>
<tr>
<td>Graduante</td>
<td>53</td>
<td>17.9%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>294</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                      | White/Caucasian | 186      | 62.8%    |
|                      | Black/African American | 35 | 11.8%   |
|                      | Hispanic/Latino | 37      | 12.5%    |
|                      | Asian          | 18      | 6.1%     |
|                      | American Indian/Alaska Native | 4 | 1.4%    |
|                      | Hawaiian/Other Pacific Islander | 2 | 0.7%    |
|                      | Other          | 11      | 3.7%     |
| Total                | 294           |          |          |

|                      | Once an every 3 months or less | 126 | 42.6% |
|                      | Once a month or less          | 74  | 25.0% |
|                      | Once a year or less           | 60  | 20.3% |
|                      | Never                        | 19  | 6.4%  |
|                      | Once a week or less           | 14  | 4.7%  |
|                      | More than once a week         | 1   | 0.3%  |
| Total                | 294                         |      |        |

|                      | Yes                        | 201 | 68.6% |
|                      | No                         | 92  | 31.4% |
| Total                | 293                        |      |        |
Table 4.1 - continued

<table>
<thead>
<tr>
<th>Percentage of clothing they had bought themselves in the previous 12 months</th>
<th>80%-100%</th>
<th>60%-80%</th>
<th>40%-60%</th>
<th>20%-40%</th>
<th>0%-20%</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>80%-100%</td>
<td>140</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>294</td>
</tr>
<tr>
<td>60%-80%</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40%-60%</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20%-40%</td>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0%-20%</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>294</strong></td>
<td><strong>60</strong></td>
<td><strong>48</strong></td>
<td><strong>26</strong></td>
<td><strong>20</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Sum of percents may not be equal to 100 because of missing data.*
Table 4.2: List of Respondents’ Majors

<table>
<thead>
<tr>
<th>Major</th>
<th>Frequency</th>
<th>Major</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sports Management</td>
<td>69</td>
<td>Athletic Training</td>
<td>2</td>
</tr>
<tr>
<td>Business</td>
<td>63</td>
<td>Health Education and Behavior</td>
<td>2</td>
</tr>
<tr>
<td>Advertising</td>
<td>53</td>
<td>Law</td>
<td>2</td>
</tr>
<tr>
<td>Public Relations</td>
<td>30</td>
<td>Sociology</td>
<td>2</td>
</tr>
<tr>
<td>Telecommunication Management</td>
<td>11</td>
<td>Textile and Clothing</td>
<td>2</td>
</tr>
<tr>
<td>Tourism and Recreation Management</td>
<td>9</td>
<td>Agribusiness</td>
<td>1</td>
</tr>
<tr>
<td>English</td>
<td>7</td>
<td>Agriculture and Operations Management</td>
<td>1</td>
</tr>
<tr>
<td>Finance</td>
<td>7</td>
<td>Anthropology</td>
<td>1</td>
</tr>
<tr>
<td>Fitness/Wellness</td>
<td>5</td>
<td>Computer program</td>
<td>1</td>
</tr>
<tr>
<td>History</td>
<td>4</td>
<td>Criminology</td>
<td>1</td>
</tr>
<tr>
<td>Psychology</td>
<td>4</td>
<td>Decision Information Science</td>
<td>1</td>
</tr>
<tr>
<td>Accounting</td>
<td>3</td>
<td>Graphic Design</td>
<td>1</td>
</tr>
<tr>
<td>Economic</td>
<td>3</td>
<td>International Business</td>
<td>1</td>
</tr>
<tr>
<td>Event Management</td>
<td>3</td>
<td>Jewish Studies</td>
<td>1</td>
</tr>
<tr>
<td>Applied Physiology</td>
<td>2</td>
<td>Philosophy</td>
<td>1</td>
</tr>
<tr>
<td>Architecture</td>
<td>2</td>
<td>Spanish</td>
<td>1</td>
</tr>
</tbody>
</table>

Summary of Research Variables

Overall Mean Score for the Research Variables

The overall mean score of the research variables is summarized in Table 4.3. Purchase intention, attitude, subjective norm, perceived behavioral control, and perceived risk were measured on a seven-point Likert scale. Desire for uniqueness was measured on a five-point Likert scale. In addition, overall attitude and subjective norm scores were derived as the
summation of the score of behavioral belief and the score of evaluation and as the summation of both score of normative belief and the score of motivation comply, respectively. Thus, the maximum score for attitude and subjective norm were 49.00; the mean, maximum, and standard deviation scores of attitude and subjective norm were higher than other variables.

As a result, the mean score for purchase intentions was 3.73, the mean score for perceived behavioral control was 4.70, and the mean score for perceived risk was 3.80. The mean score for attitude toward customized apparel was 26.34, and the mean score for subjective norm was 14.68. In addition, the mean score for desire for uniqueness was 3.40

<table>
<thead>
<tr>
<th>Research Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase intention</td>
<td>1.00</td>
<td>7.00</td>
<td>3.73&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.67</td>
</tr>
<tr>
<td>Attitude toward customized apparel products</td>
<td>2.11</td>
<td>49.00</td>
<td>26.34&lt;sup&gt;a&lt;/sup&gt;</td>
<td>9.54</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>1.00</td>
<td>49.00</td>
<td>14.68&lt;sup&gt;a&lt;/sup&gt;</td>
<td>9.97</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>1.00</td>
<td>7.00</td>
<td>4.70&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.35</td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td>1.00</td>
<td>5.00</td>
<td>3.40&lt;sup&gt;b&lt;/sup&gt;</td>
<td>.76</td>
</tr>
<tr>
<td>Perceived risk</td>
<td>1.00</td>
<td>7.00</td>
<td>3.80&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.09</td>
</tr>
</tbody>
</table>

<sup>a</sup>Based on 7-point scales ranging from “1” (Strongly disagree) to “7” (Strongly agree) and  
<sup>b</sup>based on 5-point scales ranging from “1” (Strongly disagree) to “5” (Strongly agree)

**Correlations Among Research Variables**

Table 5.1 shows the correlations among research variables. All fifteen pairs of variables were significantly correlated. The strongest correlation, which would be considered a large effect size, was between attitude and perceived behavioral control, \( r (224) = .59, p < .001 \), followed by correlation between desire for uniqueness and perceived behavioral control, \( r (224) = .50, p < .001 \). This means that respondents who had relatively positive attitudes toward customized apparel were very likely to have high perceived behavioral control. Respondents who had relatively high desire for uniqueness were also very likely to
have high perceived behavioral control. On the other hand, the weakest correlation, which would be considered a small effect size, was between subjective norm and perceived risk, $r (224) = -.21, p < .001$, followed by correlation between purchase intention and perceived risk, $r (224) = -.22, p < .001$.

Purchase intention was also positively correlated with attitude toward customized apparel ($r = .38$), subjective norm ($r = .40$), perceived behavioral control ($r = .38$), and desire for uniqueness ($r = .38$) and was negatively correlated with perceived risk ($r = -.22$). A respondent’s attitude toward customized apparel was positively correlated with subjective norm ($r = .27$) and desire for uniqueness ($r = .42$) and was negatively correlated with perceived risk ($r = -.45$). Subjective norm was positively correlated with perceived behavioral control ($r = .47$) and desire for uniqueness ($r = .43$) and was negatively correlated with perceived risk ($r = -.21$). Perceived behavioral control was negatively correlated with perceived risk ($r = -.33$). Desire for uniqueness was negatively correlated with perceived risk ($r = -.34$).

Assumption Test and Reliability

Checking the assumptions for multiple regression was conducted by 1) normally distributed residuals, 2) linear relationship between predicted $Y_p$ and observed $Y_o$, and 3) homoscedasticity. A histogram for residuals and a normal probability plot for residuals were examined to check normally distributed residuals. A scatter plot was examined to observe the linear relationship between predicted $Y_p$ and observed $Y_o$. When the three assumptions were examined, strong evidence for violation of the assumptions was not found.

Cronbach’s alpha was used to assess the internal consistency reliability of questionnaire items (Table 4.4). The items did not have very different means and SDs, and the unstandardized alpha was used. All resulted values were positive and ranged between .82 and .93. These provided good support for internal consistency reliability because all alphas were greater than .70.
**Table 4.4: Reliability of Measures**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td>2</td>
<td>.92</td>
</tr>
<tr>
<td>Attitude (A)</td>
<td>18</td>
<td>.93</td>
</tr>
<tr>
<td>Subjective norm (SN)</td>
<td>4</td>
<td>.82</td>
</tr>
<tr>
<td>Perceived behavioral control (PBC)</td>
<td>3</td>
<td>.83</td>
</tr>
<tr>
<td>Desire for uniqueness (DU)</td>
<td>8</td>
<td>.86</td>
</tr>
<tr>
<td>Perceived risk (PR)</td>
<td>6</td>
<td>.86</td>
</tr>
</tbody>
</table>
CHAPTER V
ANALYSIS OF RESEARCH MODELS

Research Models

Hypothesis Test

Multiple regression was conducted to test the hypotheses with purchase intention toward co-designed products on a mass customized apparel Internet shopping site as the dependent variable and five predictors as independent variables (Table 5.2). The means, standard deviations, and intercorrelations are reported in Table 5. The data analysis only included the respondents who provided complete responses for all the variables, so 70 participants were missing a score on one or more variables. The resulting final sample size for the data analysis was 226. The regression model that predicts purchase intention from attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk was statistically significant, $F(5, 220) = 15.58, p < .001$. Thus, the five predictors combined together significantly predict purchase intention (Table 5.1).

The beta coefficients are presented in Table 16. Attitude, subjective norm, and desire for uniqueness significantly predicted purchase intention when all five variables were included. The $R^2$ value was .26. This indicated that 26% of the variance in purchase intention was explained by the model. According to Cohen (1988), this is a large effect. Attitude, subjective norm, and desire for uniqueness are the only variables that are significantly adding to the prediction when the other four variables are already considered.
Table 5.1: Means, Standard Deviation, and Intercorrelations for Purchase Intention and Predictor Variables (N = 226)

<table>
<thead>
<tr>
<th>Variables</th>
<th>$M$</th>
<th>$SD$</th>
<th>$A$</th>
<th>$SN$</th>
<th>$PBC$</th>
<th>$DU$</th>
<th>$PR$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention (I)</td>
<td>3.64</td>
<td>1.68</td>
<td>0.38***</td>
<td>0.40***</td>
<td>0.38***</td>
<td>0.38***</td>
<td>0.22***</td>
</tr>
<tr>
<td>Attitude (A)</td>
<td>26.38</td>
<td>9.49</td>
<td>--</td>
<td>0.27***</td>
<td>0.59***</td>
<td>0.42***</td>
<td>0.45***</td>
</tr>
<tr>
<td>Subjective norm (SN)</td>
<td>14.30</td>
<td>10.16</td>
<td>--</td>
<td>0.47***</td>
<td>0.43***</td>
<td>0.21***</td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral Control (PBC)</td>
<td>4.63</td>
<td>1.36</td>
<td>--</td>
<td>0.50***</td>
<td>0.33***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness (DU)</td>
<td>3.36</td>
<td>0.77</td>
<td>--</td>
<td>0.34***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk (PR)</td>
<td>3.75</td>
<td>1.10</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001.
Table 5.2: Multiple Regression Analysis Summary for Attitude, Subjective Norm, Perceived Behavioral Control, Desire for Uniqueness, and Perceived Risk Predicting Purchase Intention (N = 226)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SEB</th>
<th>ß</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude (A)</td>
<td>.04</td>
<td>.01</td>
<td>.21</td>
<td>2.80**</td>
</tr>
<tr>
<td>Subjective norm (SN)</td>
<td>.04</td>
<td>.01</td>
<td>.25</td>
<td>3.71***</td>
</tr>
<tr>
<td>Perceived behavioral control (PBC)</td>
<td>.08</td>
<td>.10</td>
<td>.06</td>
<td>.78</td>
</tr>
<tr>
<td>Desire for uniqueness (DU)</td>
<td>.33</td>
<td>.16</td>
<td>.14</td>
<td>2.09*</td>
</tr>
<tr>
<td>Perceived risk (PR)</td>
<td>.00</td>
<td>.10</td>
<td>.02</td>
<td>.03</td>
</tr>
<tr>
<td>Constant</td>
<td>.61</td>
<td>.52</td>
<td>.79</td>
<td></td>
</tr>
</tbody>
</table>

Note. R² = .26; F(5, 220) = 15.58, p < .001.
*p < .05; **p < .01; ***p < .001.

The first hypothesis postulated that attitude toward mass customized products would positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site. Respondents’ attitudes toward mass customized products significantly influenced their purchase intention, and the results were statistically significant (t = 2.80, p = .006 < .01). The result indicates that the more favorable the respondents’ attitudes toward mass customized products, the higher the respondents’ purchase intentions. Therefore, Hypothesis 1 was supported.

The second hypothesis postulated that a consumer’s perceptions of the extent to which significant referents approve of mass customized products (i.e., subjective norm) would positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site. Subjective norm also had a positive influence on respondents’ purchase intentions, and the result was statistically significant (t = 3.71, p = .000 < .001). The result indicated that the more positive subjective norm belief for mass customized products, the higher the respondents’ purchase intentions. Therefore, Hypothesis 2 was supported.
The third hypothesis postulated that perceived behavioral control would positively influence purchase intention toward mass customized products on a mass customized apparel Internet shopping site. Perceived behavioral control did not influence consumer purchase intention when the effects of other predicting variables were considered ($t = .78, p = .06 > .05$). To further explore this variable, simple regression was conducted to investigate how well perceived behavioral control predicted purchase intention. The result was statistically significant, $F(1, 284) = 40.91, p = .000$. The $R^2$ value was $.13$. When perceived behavioral control was considered alone as a predictor of purchase intention, its positive effect was statistically significant. Therefore, Hypothesis 3 was not fully supported.

The fourth hypothesis postulated that desire for uniqueness would positively influence consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site. Desire for uniqueness had a positive influence on purchase intention toward mass customized products on a mass customized apparel Internet shopping site, and the results were statistically significant ($t = 2.09, p = .038 < .05$). The result indicated that the higher the respondents’ desire for uniqueness, the higher the respondents’ purchase intention. Therefore, Hypothesis 4 was supported.

The fifth hypothesis postulated that perceived risk would negatively influence consumers’ purchase intentions toward mass customized products on a mass customized apparel Internet shopping site. The result shows that perceived risk did not influence consumer purchase intention ($t = -.03, p = .98 > .05$) when all five variables were included. To further explore this predictor, simple regression was conducted to examine how well perceived risk predicted purchase intention. The result was statistically significant, $F(1, 275) = 11.91, p = .001$. The $R^2$ value was $.04$. Thus, when perceived risk was considered alone as a determinant of purchase intention, its negative effect was statistically significant. Therefore, Hypothesis 5 was not fully supported.

Among the five predictors, the most important predictor of purchase intention toward mass customized products was subjective norm ($\beta = .25$), which was followed in importance by attitude ($\beta = .21$) and desire for uniqueness ($\beta = .15$).
Comparison of the Theory of Planned Behavior and Modified Version of the T.P.B.

Table 5.3 summarized a comparison of the T.P.B. and a modified version of the T.P.B. adding desire for uniqueness and perceived risk. This modified T.P.B. with the addition of desire for uniqueness indicated the effect of independent variables for attitude ($\beta = .22, p < .01$), subjective norm ($\beta = .25, p < .001$), perceived behavioral control ($\beta = .07, p > .05$), and desire for uniqueness ($\beta = .15, p < .05$). This enhanced model yielded an adjusted $R^2 = .25$, a significant improvement ($F_{\text{change}} = 4.72^*$) on the basic T.P.B. structure. The addition of desire for uniqueness reduced the contribution of attitude and subjective norm. Thus, the modified model structure with the addition of desire for uniqueness had a significant impact on the traditional T.P.B. variables.

On the other hand, the modified T.P.B. with the addition of both desire for uniqueness and perceived risk indicated the effect of independent variables for attitude ($\beta = .21, p < .01$), subjective norm ($\beta = .25, p < .001$), perceived behavioral control ($\beta = .06, p > .05$), desire for uniqueness ($\beta = .14, p < .05$), and perceived risk ($\beta = .02, p > .05$). This model yielded an adjusted $R^2 = .25$, not a significant improvement ($F_{\text{change}} = .001$) on the basic T.P.B. structure.
Table 5.3: Comparison of the Theory of Planned Behavior and Modified Version of the T.P.B.

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>$\beta$</th>
<th>Adjusted $R^2$</th>
<th>$F$ of change in $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>T.P.B.</td>
<td>A</td>
<td>.24***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN</td>
<td>.28***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PBC</td>
<td>.12 ns</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Modified T.P.B.</td>
<td>A</td>
<td>.22**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN</td>
<td>.25***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PBC</td>
<td>.07 ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DU</td>
<td>.15*</td>
<td>.25</td>
<td>4.72*</td>
</tr>
<tr>
<td>Modified T.P.B.</td>
<td>A</td>
<td>.21**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SN</td>
<td>.25***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PBC</td>
<td>.06 ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DU</td>
<td>.15*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PR</td>
<td>.002 ns</td>
<td>.25</td>
<td>2.23 ns</td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$; ns = non-significant

Attributes Influencing Attitude

In regard to respondents’ beliefs ($b_i$), the most important attribute for mass customized apparel on a mass customized apparel Internet shopping site was interactive functions ($M = 29.31$), which was followed by a quick and convenient process ($M = 5.07$) and availability of a consultant ($M = 27.14$). On the other hand, in regard to respondents’ evaluations ($e_i$), the most important attribute for positive attitude toward mass customized apparel on a mass customized apparel Internet shopping site was a variety of color and fabric choices ($M = 5.78$), which was followed by a variety of unique style choices ($M = 5.63$) and a better fitting garment ($M = 5.60$).

Consequently, in regard to respondents’ attitudes ($b_ie_i$), the most important attribute for mass customized apparel on a mass customized apparel Internet shopping site was
interactive functions \((M = 29.31)\), which was followed by a quick and convenient co-design process \((M = 28.44)\) and availability of a consultant \((M = 27.14)\).

**Table 5.4**: Respondents’ Beliefs about and Evaluations of Attributes Regarding Customized Apparel

<table>
<thead>
<tr>
<th>Attribute</th>
<th>(b_{ei})</th>
<th>(b_i)</th>
<th>(e_i)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interactive functions</td>
<td>29.31</td>
<td>5.20</td>
<td>5.46</td>
</tr>
<tr>
<td>2. A quick and convenient co-design process</td>
<td>28.44</td>
<td>5.07</td>
<td>5.47</td>
</tr>
<tr>
<td>3. A better fitting garment</td>
<td>27.14</td>
<td>4.70</td>
<td>5.60</td>
</tr>
<tr>
<td>4. Availability of a consultant</td>
<td>26.16</td>
<td>4.97</td>
<td>5.04</td>
</tr>
<tr>
<td>5. A variety of unique style choices</td>
<td>25.91</td>
<td>4.52</td>
<td>5.63</td>
</tr>
<tr>
<td>6. Enjoyment of the co-design process</td>
<td>25.83</td>
<td>4.79</td>
<td>5.23</td>
</tr>
<tr>
<td>7. Experience of virtual reality</td>
<td>25.13</td>
<td>4.67</td>
<td>5.27</td>
</tr>
<tr>
<td>8. Perceived usefulness of the co-design process</td>
<td>25.02</td>
<td>4.68</td>
<td>5.23</td>
</tr>
<tr>
<td>9. A variety of color and fabric choices</td>
<td>22.51</td>
<td>3.89</td>
<td>5.78</td>
</tr>
</tbody>
</table>

**Effect of Other Factors on Research Variables**

**Comparison of the Modified T.P.B. and Addition of Other Factors**

In order to examine the relationship between other factors and purchase intention, other factors were added in dependent variables for multiple regression. Table 5.5 summarizes a comparison of the modified T.P.B. and the modified model adding other factors (gender, experience with mass customizing website, frequency of online shopping, customized service with consultant, actual fabric, and fashion trend).

This modified T.P.B. with the addition of other factors indicated the effect of independent variables for attitude \((\beta = .22, p < .01)\), subjective norm \((\beta = .27, p < .001)\), perceived behavioral control \((\beta = .04, p > .05)\), desire for uniqueness \((\beta = .14, p < .05)\), perceived risk \((\beta = .02, p > .05)\), gender \((\beta = .04, p > .05)\), experience with mass customizing
website ($\beta = .10, p > .05$), frequency of online shopping ($\beta = .05, p > .05$), customized service with consultant ($\beta = -.01, p > .05$), customized service with actual fabric sample ($\beta = - .05, p > .05$), and customized service with fashion trend information ($\beta = .002, p > .05$). This model yielded an adjusted $R^2 = .25$, not a significant improvement ($F_{\text{change}} = .83$) on the modified T.P.B. structure. Thus, other factors were not more important determinants than attitude, subjective norm, and desire for uniqueness. However, experience with mass customizing website was the most important factor among the other factors.

| Table 5.5: Comparison of the Modified T.P.B. and the Addition of Other Factors |
|---------------------------------|-----------------|--------|--------|
| Model                           | Variables       | $\beta$ | Adjusted $R^2$ | $F$ of change in $R^2$ |
| Modified T.P.B.                 | A               | .20**  | .20**  | .20**  |
|                                 | SN              | .26*** | .26*** | .26*** |
|                                 | PBC             | .06 ns | .06 ns | .06 ns |
|                                 | DU              | .15*   | .15*   | .15*   |
|                                 | PR              | .00 ns | .00 ns | .00 ns |
|                                 | Gender          | .04 ns | .04 ns | .04 ns |
|                                 | Experience with mass customizing website | .10 ns | .10 ns | .10 ns |
|                                 | Frequency of online shopping | .05 ns | .05 ns | .05 ns |
|                                 | Service-consultant | -.01 ns | -.01 ns | -.01 ns |
|                                 | Service-fabric   | -.05 ns | -.05 ns | -.05 ns |
|                                 | Service-trend    | .002 ns | .24    | .24    |

*p < .05; **p < .01; ***p < .001; ns = non-significant
Gender

In order to examine whether males and females differ on research variables such as purchase intention, attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk, an independent samples t-test was used (Table 5.6). Males were different from females with regard to perceived risk. When examining the two group means, the average perceived risk for females ($M = 3.91$) was higher than the average perceived risk for males ($M = 3.64$), and the result was statistically significant, $t(278) = -2.061, p < .05$. On the other hand, males did not differ significantly from females on purchase intention, attitude, subjective norm, perceived behavioral control, and desire for uniqueness ($p > .05$).
Table 5.6: Comparison of Male and Female on Purchase Intention, Attitude, Subjective Norm, Perceived Behavioral Control, Desire for Uniqueness, and Perceived Risk

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>3.73</td>
<td>1.72</td>
<td></td>
<td></td>
<td>.94</td>
</tr>
<tr>
<td>Females</td>
<td>3.71</td>
<td>1.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td>Males</td>
<td>26.57</td>
<td>10.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>26.17</td>
<td>9.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.50</td>
</tr>
<tr>
<td>Males</td>
<td>14.21</td>
<td>9.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>15.02</td>
<td>10.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.64</td>
</tr>
<tr>
<td>Males</td>
<td>4.65</td>
<td>1.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>4.72</td>
<td>1.33</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.21</td>
</tr>
<tr>
<td>Males</td>
<td>3.32</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>3.44</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04*</td>
</tr>
<tr>
<td>Males</td>
<td>3.64</td>
<td>1.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>3.91</td>
<td>1.10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001

Need for Customized Service

In order to examine whether respondents who needed customized service and those who did not need customized service differ on research variables such as purchase intention, attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk, an independent samples t-test was used.
Need for a consultant’s help. Table 5.7 indicates that respondents who needed a consultant’s help were different from those who did not need a consultant’s help with regard to attitude ($p = .02$), perceived behavioral control ($p = .04$), and desire for uniqueness ($p = .01$). When examining the two group means, the average attitude value for respondents who needed a consultant’s help ($M = 28.89$) was higher than the value ($M = 25.60$) for respondents who did not need a consultant’s help. The average perceived behavioral control value for respondents who needed a consultant’s help ($M = 4.95$) was higher than the value ($M = 4.62$) for respondents who did not need a consultant’s help. Further, the average desire-for-uniqueness value for respondents who needed a consultant’s help ($M = 3.62$) is significantly higher than the value for respondents who did not need a consultant’s help ($M = 3.34$). On the other hand, respondents who needed a consultant’s help did not differ from respondents who did not need a consultant’s help with regard to purchase intention ($p > .05$), subjective norm ($p > .05$), and perceived risk ($p > .05$).
Table 5.7: Effect of the Need for a Consultant’s Help on Research Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Need for a Consultant’s Help</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td></td>
<td>-1.32</td>
<td>287</td>
<td>.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.97</td>
<td>1.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.66</td>
<td>1.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>-2.35*</td>
<td>251</td>
<td>.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>28.90</td>
<td>9.40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>25.60</td>
<td>9.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td>-1.62</td>
<td>276</td>
<td>.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>16.60</td>
<td>9.61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>14.27</td>
<td>9.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td>-2.06*</td>
<td>139.68</td>
<td>.04*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>4.95</td>
<td>1.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>4.62</td>
<td>1.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td></td>
<td>-2.60</td>
<td>277</td>
<td>.01**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.62</td>
<td>.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.33</td>
<td>.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk</td>
<td></td>
<td>.91</td>
<td>276</td>
<td>.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.69</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.83</td>
<td>1.07</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*aThe t and df were adjusted because variances were not equal.

*p < .05; **p < .01; ***p < .001
**Need for actual fabric samples.** Table 5.8 shows that respondents who needed actual fabric samples were significantly different from those who did not need actual fabric samples with regard to attitude ($p = .000$), perceived behavioral control ($p = .001$), and desire for uniqueness ($p = .002$). When examining the two group means, the average attitude value for respondents who needed actual fabric samples ($M = 28.88$) was higher than the value ($M = 24.39$) for those who did not need actual fabric samples. The average perceived behavioral control value for respondents who needed actual fabric samples ($M = 4.99$) was higher than the value ($M = 4.48$) for those who did not need actual fabric samples. Further, the average desire-for-uniqueness value for respondents who needed actual fabric samples ($M = 3.56$) was higher than the value for those who did not need actual fabric samples ($M = 3.28$). On the other hand, respondents who needed actual fabric samples did not differ from those who did not need actual fabric samples with regard to purchase intention ($p > .05$), subjective norm ($p > .05$), and perceived risk ($p > .05$).
Table 5.8: Effect of the Need for Actual Fabric Samples on Research Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Need for Actual Fabric Samples</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td></td>
<td>-1.23</td>
<td>285</td>
<td>.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.89</td>
<td>1.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3.64</td>
<td>1.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>3.80***</td>
<td>251</td>
<td>.000***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>28.88</td>
<td>9.26</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>24.39</td>
<td>9.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td>-1.10</td>
<td>276</td>
<td>.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>15.56</td>
<td>10.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>14.23</td>
<td>9.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td>-3.30***</td>
<td>271.76a</td>
<td>.001***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.99</td>
<td>1.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>4.48</td>
<td>1.41</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td></td>
<td>-3.11**</td>
<td>275</td>
<td>.002**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.56</td>
<td>.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3.28</td>
<td>.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk</td>
<td></td>
<td>1.42</td>
<td>273</td>
<td>.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.67</td>
<td>1.12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3.86</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*aThe t and df were adjusted because variances were not equal.

*p < .05; **p < .01; ***p < .001
**Need for information regarding the latest fashion trends.** Respondents who needed information regarding the latest fashion trends were not different from those who did not need information regarding the latest fashion trends with regard to purchase intention, attitude, subjective norm, perceived behavioral control, desire for uniqueness and perceived risk ($p > .05$).

**Table 5.9: Effect of the Need for Latest Fashion Trends on Research Variables**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Need for Latest Fashion Trends</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>$df$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td></td>
<td>-.02</td>
<td>289</td>
<td>.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>3.72</td>
<td>1.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3.71</td>
<td>1.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>-.32</td>
<td>253</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>26.74</td>
<td>9.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>26.25</td>
<td>9.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td>-.33</td>
<td>278</td>
<td>.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>15.07</td>
<td>9.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>14.57</td>
<td>10.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td>-1.26</td>
<td>286</td>
<td>.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>4.64</td>
<td>1.38</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>4.90</td>
<td>1.23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td></td>
<td>-1.80</td>
<td>280</td>
<td>.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>3.56</td>
<td>.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3.36</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk</td>
<td></td>
<td>0.73</td>
<td>277</td>
<td>.94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>3.80</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3.80</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$
Experience with mass customizing website

Table 5.10 indicates that respondents who had experience with mass customizing website were different from those who did not have experience with mass customizing website with regard to purchase intention ($p = .02$), attitude ($p = .003$), perceived behavioral control ($p = .000$), and desire for uniqueness ($p = .004$). When examining the two group means, the average purchase intention value for respondents who had experience with mass customizing website ($M = 3.88$) was higher than the value ($M = 3.40$) for those who did not have experience with mass customizing website. The average attitude value for respondents who needed actual fabric samples ($M = 27.57$) is significantly higher than the value ($M = 23.78$) for those who did not have experience with mass customizing website. Further, the average perceived behavioral control value for respondents who had experience with mass customizing website ($M = 4.88$) was higher than the value ($M = 4.27$) for those who did not have experience with mass customizing website. Finally, the average desire for uniqueness value for respondents who had experience with mass customizing website ($M = 3.48$) was higher than the value ($M = 3.20$) for those who did not have experience with mass customizing website. However, respondents who had experience with mass customizing website did not differ from those who did not have experience with mass customizing website with regard to subjective norm ($p > .05$) and perceived risk ($p > .05$).
Table 5.10: Effect of the Experience with Mass Customizing Website on Research Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Experience with Mass Customizing Website</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention</td>
<td></td>
<td>-2.32*</td>
<td>288</td>
<td>.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.88</td>
<td>1.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.40</td>
<td>1.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>-2.98**</td>
<td>253</td>
<td>.003**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>27.57</td>
<td>9.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>23.78</td>
<td>9.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subjective norm</td>
<td></td>
<td>-1.39</td>
<td>277</td>
<td>.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>15.17</td>
<td>9.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>13.40</td>
<td>10.58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td></td>
<td>3.59***</td>
<td>286</td>
<td>.000***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>4.88</td>
<td>1.27</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>4.27</td>
<td>1.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire for uniqueness</td>
<td></td>
<td>-2.92**</td>
<td>278</td>
<td>.004**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.48</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.20</td>
<td>.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived risk</td>
<td></td>
<td>1.75</td>
<td>276</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>3.72</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>3.97</td>
<td>1.09</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001
Gender Difference

Experience with Mass Customizing Website

In order to examine whether males and females differ with regard to experience with mass customizing website, a chi-square test was used. Table 5.11 shows that males and females are not significantly different with regard to whether or not they have experience with mass customizing website, $\chi^2 (1, 292) = 2.90, p > .05$. Phi was -.10, which indicated the strength of the association between gender and experience with mass customizing website, and like the chi-square, it is not statistically significant. The effect size is considered to be small according to Cohen (1988).

Table 5.11: Chi-square Analysis of Experience with Mass Customizing Website among Males and Females

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Males</th>
<th>Females</th>
<th>$\chi^2$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience with mass customizing website</td>
<td>2.90</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>200</td>
<td>93</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>92</td>
<td>33</td>
<td>59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>292</td>
<td>126</td>
<td>166</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001

Need for Customized Service

In order to examine whether males and females differ with regard to the need for customized service, a chi-square test was used. Table 5.12 shows that males and females were not significantly different with regard to whether or not they wanted a consultant’s help, $\chi^2 (1, 291) = 2.83, p > .05$ and requested information regarding the latest fashion trends, $\chi^2 (1, 293) = 1.10, p > .05)$. Phi was .10 and .61 respectively, which indicated the strength of the association between gender and the need for a consultant’s help and the association between gender and the need for information regarding the latest fashion trends. Alike in terms of the
chi-square, they were not statistically significant ($p > .05$). The effect sizes were considered to be small according to Cohen (1988).

In contrast to this, males and females were different with regard to whether or not they wanted actual fabric samples. Females were more likely to request fabric samples than males. Forty-nine percent (81 out of 165) of female respondents wanted to receive actual fabric samples while 29 percent of male respondents (36 out of 124) wanted fabric samples. The result was statistically significant, $\chi^2(1, 289) = 11.82, p = .001$. Phi was .20; like the chi-square, it was also statistically significant ($p = .001$). The effect size was considered to be small according to Cohen (1988).

**Table 5.12:** Chi-square Analysis of the Need for Customized Service among Males and Females

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Males</th>
<th>Females</th>
<th>$\chi^2$</th>
<th>$p$</th>
<th>phi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for a Consultant’s Help</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>65</td>
<td>22</td>
<td>43</td>
<td>2.83</td>
<td>.09</td>
<td>.10</td>
</tr>
<tr>
<td>No</td>
<td>226</td>
<td>103</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>291</td>
<td>125</td>
<td>166</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for Actual Fabric Samples</td>
<td></td>
<td></td>
<td></td>
<td>11.82</td>
<td>.001**</td>
<td>.20</td>
</tr>
<tr>
<td>Yes</td>
<td>117</td>
<td>36</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>172</td>
<td>88</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>289</td>
<td>124</td>
<td>165</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Need for Information regarding the latest fashion trends</td>
<td></td>
<td></td>
<td></td>
<td>1.10</td>
<td>.30</td>
<td>.06</td>
</tr>
<tr>
<td>Yes</td>
<td>55</td>
<td>20</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>238</td>
<td>105</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals</td>
<td>293</td>
<td>125</td>
<td>168</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* $p < .05$; ** $p < .01$; *** $p < .001$
CHAPTER VI
SUMMARY AND CONCLUSIONS

This chapter offers a summary of the research and conclusions. The implications for the apparel business, limitations, and suggestions for future research are also discussed.

Summary of Research

The purpose of this study was to investigate whether consumers’ 1) attitudes toward customized apparel, 2) subjective norm, 3) perceived behavioral control, 4) desire for uniqueness, and 5) perceived risk for customized apparel via online are related to consumers’ purchase intentions toward co-designed products on a mass customized apparel Internet shopping site. The Theory of Planned Behavior (Ajzen, 1991, 2002) was used as the theoretical framework to predict consumers’ purchase intentions. This study examined a modified T.P.B. model with the addition of desire for uniqueness and perceived risk.

Data analysis consisted of six parts: 1) descriptions of sample, 2) summary of research variables, 3) research model hypothesis testing, 4) attributes influencing attitude, 5) effect of other factors on research variables testing, and 6) exploration of gender difference. Preliminary analysis included descriptive analysis, assumption test, and reliability tested with Cronbach’s alpha. Multiple regression was used to test hypotheses. Independent samples t-test was used to examine whether other factors (gender, need for customized service, and experience with mass customizing website) affect purchase intentions and five predictors. Chi-square was used to investigate gender difference in regard to need for customized service and experience with mass customizing website.

Description of Sample

Data from 296 respondents were collected from a convenience sample of college students for the purpose of statistical analysis. Respondents were 56.8% female and 42.6% male. The largest age group was 17-20 years old (59.3%), and the most common hometown was Gainesville, FL (18.9%). Most of the respondents were White/Caucasian (63%), were pursuing undergraduate degrees (81%), and had experience with mass customizing website (68.6%). The most common frequency of online shopping was “once every three months or
..." (42.6%). The most common range of percentages of clothing that respondents had bought themselves in the previous 12 months were 80-100% (47.6%).

Summary of Research Variables

The strongest positive correlation among research variables was between attitude and perceived behavioral control, followed by a correlation between desire for uniqueness and perceived behavioral control. It was indicated that the more positive the respondent’s attitude was toward customized apparel, the higher perceived behavioral control was; the higher the desire for uniqueness was, the higher perceived behavioral control was. On the other hand, the weakest negative correlations were the correlation between subjective norm and perceived risk and the correlation between purchase intention and perceived risk.

Hypothesis Testing

The findings of this study indicated that attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk significantly combined together to predict purchase intention. Thus, the addition of desire for uniqueness and perceived risk to the T.P.B. model improves the prediction of consumers’ purchase intentions.

This study has shown that attitude, subjective norm, and desire for uniqueness, among five predictors, have significant relationships with purchase intention toward customized products on a mass customized apparel Internet shopping site. In this study subjective norm is found to be the most important predictor in predicting purchase intention toward customized products on a mass customized apparel Internet shopping site. Attitude is proven to be the second most important antecedent of purchase intention toward customized products on a mass customized apparel Internet shopping site. The more favorable the attitude, the more likely the consumer was to purchase the products. Desire for uniqueness is accepted as the third most important predictor that influences purchase intention toward customized products on a mass customized apparel Internet shopping site. This result indicates that consumers who have high desire for uniqueness are willing to purchase customized products on a mass customized apparel Internet shopping site.
Attributes Influencing Attitude

Interactive functions was the most important attribute influencing consumers’ positive attitude toward customized products on a mass customized apparel Internet shopping site. A quick and convenient process was the second most important attribute influencing attitude, followed by a better fitting garment. Thus, interactive functions of website and a quick and convenient co-design process positively influenced consumers’ favorable attitudes toward customized apparel on a mass customized apparel Internet shopping site. On the other hand, a variety of unique style choices was the most important attribute influencing consumers’ evaluations for customized products on a mass customized apparel Internet shopping site. A variety of color and fabric choices was the second most important attribute for evaluations, followed by a quick and convenient process. Therefore, the attributes of a variety of unique style choices and a variety of color and fabric choices significantly affect consumers’ evaluation for customized apparel on a mass customized apparel Internet shopping site.

Effect of Other Factors on Research Variables

The modified T.P.B. with addition of other factors (gender, the need for customized service, experience with mass customizing website, and frequency of online experience) did not yield significant improvement on the modified T.P.B. model. In other words, other factors were not more important determinants of purchase intention than attitude, subjective norm, and desire for uniqueness.

This study showed that gender, the need for customized service, experience for online customization, and frequency of online experience had an effect on some research variables. Males were different from females with regard to perceived risk. The average perceived risk for males was lower than the average perceived risk for females. In addition, respondents who needed a consultant’s help had higher desire for uniqueness, attitude, and perceived behavioral control than those who did not need a consultant’s help. Further, respondents who needed actual fabric samples had higher attitude, perceived behavioral control, and desire for uniqueness than those who did not need actual fabric samples. Finally, respondents who had experience with mass customizing website had higher perceived behavioral control, attitude, desire for uniqueness, and purchase intention than those who did not have experience with mass customizing website.
Gender Difference

In regard to perceived risk and the need for actual fabric samples, gender difference was detected. Females were more likely to need actual fabric samples of the garments they co-designed by mail before the delivery of the finished products. Further, females were more likely to have a higher perceived risk for purchasing the customized garment on the mass customized apparel Internet shopping site than males. This study shows that there was no statistically significant gender difference on most research variables: purchase intention, attitude, subjective norm, perceived behavioral control, and desire for uniqueness, the need for a consultant’s help, the need for information regarding fashion trends, and experience with mass customizing website.

Conclusions

The main objective of this study was to examine if the five predictors (attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk) influence consumers’ purchase intentions toward customized apparel products on a mass customized apparel Internet shopping site. The findings of this study indicated that attitude, subjective norm, perceived behavioral control, desire for uniqueness, and perceived risk significantly combined together to predict purchase intention. Together with the three existing variables of the T.P.B., desire for uniqueness enhanced the predictive utility of the T.P.B. for the purchase intention toward customized products on a mass customized apparel Internet shopping site. The result of this study demonstrated that in general, T.P.B. was supported and can be applied to the measurement of purchase intention toward customized products on a mass customized apparel Internet shopping site. This study offered empirical support for the adequacy of Ajzen’s T.P.B. model in apparel mass customization and suggested another important variable influencing purchase intention: desire for uniqueness.

The findings of this study identified that when all five predictors were included, attitude, subjective norm, desire for uniqueness were the important predictors of purchase intention toward customized products on mass customized apparel Internet shopping site among the five predictors. This research makes a contribution to the literature by verifying that the T.P.B. can successfully serve as a tool in predicting purchase intention.
Subjective norm had the most influence on purchase intention toward customized apparel. This finding was consistent with the T.P.B. This study indicated that consumers’ motivation to comply with their close friends and other important people around them had a significant effect on their purchase intentions. In other words, consumers’ close friends and other important people around them influenced their decision to customize garments online and to have purchase intention. Consumers’ normative beliefs, (i.e., whether their close friends and important people around them think that it would be good for them to customize garments online) had a significant effect on their purchase intentions. As a result, the stronger the subjective norm was in favor of mass customizing product, the more likely respondents would have purchase intentions.

Based on the finding of this study that purchase intentions were influenced to a greater extent by the recommendation, opinion, or references given their close friends and the important people around them than by other factors, word-of-mouth marketing should be considered for online apparel mass customization. Word-of-mouth marketing is defined as “giving people a reason to talk about the products and services, and making it easier for that conversation to take place” (Word of Mouth Marketing Association, 2006). A special group, their peers, yields a significant influence on what they believe and how they behave (Arens, 2008). As Gordon (2006) notes, “Most everyone agrees that there is no better advertising than word of mouth. After all, a customer who calls you following a personal recommendation from a friend or colleague is more likely to buy” (p. 97). According to Arora (2007), information that is shared from one consumer to another can influence consumers’ decisions of whether or not to make a purchase. This consumer-to-consumer influence may be positive or negative, resulting in either increased revenue for a company or, conversely, in the case of negative feedback, a considerable decline in sales. In addition, young consumers, who are the largest trend-setting population, have huge networks of friends, talk frequently, and generate important buzz (Meskauskas, 2003). As a result, apparel companies should develop positive word-of-mouth strategies, such as working with social networks or influential communities and creating tools or blogs to make it easier for customers to communicate with close friends and share information (WOMMA, 2006).

Attitude toward customized apparel was the second most significant factor influencing purchase intention. The more favorable a respondent’s attitude, the more likely they were to purchase. This suggests that retail strategy should put an emphasis on
developing salient beliefs about the positive consequences of mass customized apparel. This strategy can be carried out by emphasizing the attributes of consumers’ attitudes toward online mass customized apparel: interactive functions of website, a quick and convenient co-design process, a better fitting garment, availability of a consultant, a variety of unique style choice, enjoyment of the co-design process, experience of virtual reality, perceived usefulness of the co-design process, and a variety of color and fabric choices.

Among these nine attributes, interactive functions of website and a quick and convenient co-design process were the most important attributes influencing consumers’ favorable attitudes toward customized apparel on a mass customized apparel Internet shopping site. This result is consistent with the previous studies (Lee et al., 2002; Jonies et al., 2003; Page & Lepkoska-Whire, 2002). On the other hand, a variety of unique style choices and a variety of color and fabric choices had a significant influence on consumers’ evaluation for customized apparel on a mass customized apparel Internet shopping site. This result is also consistent with the previous studies (Anderson-Connell et al., 2002; Kamali & Loker, 2002; Ulrich et al., 2003). As a result, apparel marketers should enhance the quality of mass customized apparel Internet shopping sites by facilitating a high level of interactivity; quick and easy transactions; a variety of unique style choices; and a variety of color and fabric choices. This will increase their profit and success in apparel mass customization. Thus, the results of this study offer critical managerial implications with regard to apparel mass customization.

This study also showed that desire for uniqueness was the third significant predictor of purchase intention when all five predictors were included. This study hypothesized that consumers with high desire for uniqueness would be more likely to purchase customized products, and this proved to be the case. The findings indicated that consumers who are very attracted to rare products tend to be fashion leaders, and enjoy having or shopping for unusual and new products that others do not have were likely to have more purchase intentions toward online customized products. It suggested that mass customized apparel products should be targeted toward consumers who have high desire for uniqueness. Thus, apparel retailers offering mass customized apparel should provide diverse style, color and fabric choices, focusing on desire for uniqueness in the co-design process.
Although extant literature indicated that the perceived control and perceived risk were significant predictors of purchase intention, this study found that these two predictors did not fully influence purchase intention toward online mass customized apparel when considered with the three important predictors (attitude, subjective norm, and desire for uniqueness). However, when perceived behavioral control was considered alone as a predictor of purchase intention, perceived behavioral control did positively influence purchase intention. In addition, when perceived risk was considered alone as a determinant of purchase intention, perceived risk negatively predicted purchase intention. Thus, the results of this study did not fully support the two hypotheses that perceived control and perceived risk will influence purchase intention. The homogeneous nature of the sample may have caused a lack of importance of perceived risk and perceived behavioral control. The college student age group is very familiar with the use of computers (PROMO Xtra, 2003). As Seock and Norton (2007b) notes, “Internet use is pervasive in this group and a powerful means by which they find product and make purchase” (p. 540). This group is “the most technologically media savvy, educated, and wired population ever” (Meskaukas, 2003). Due to their familiarity with, knowledge of, and involvement with Internet shopping, college students’ perceived risk did not fully influence their purchase intentions toward online customized apparel. In addition, they perceived very little difficulty in customizing apparel on a mass customized apparel Internet shopping site because of their ability and skill to use the Internet.

The modified T.P.B. with the addition of desire for uniqueness yielded a significant improvement on the basic T.P.B. structure. Desire for uniqueness can be considered as a theoretical contribution of this study. On the other hand, the modified T.P.B. with the addition of both desire for uniqueness and perceived risk did not yield a significant improvement on the basic T.P.B. structure.

This study also detected other important findings. Both gender and the need for customized service had an influence on some research variables. The average perceived risk of females was higher than that of males. Further, although the need for both a consultant’s help and actual fabric samples had no significant effect on purchase intention, respondents who needed both a consultant’s help and actual fabric samples had higher desire for uniqueness, attitude, and perceived behavioral control than those who did not.
In addition, this study found that experience with mass customizing website had a significant effect on purchase intention toward customized apparel and attitude, as well as perceived behavioral control and desire for uniqueness. In the online shopping context, past online shopping experiences were positively associated with purchase intentions via the Internet (Shim & Drake, 1990b; Weber & Roehl, 1999). Similarly, previous online shopping experience for apparel had a significant influence on favorable attitudes toward online apparel shopping (Xu & Paulins, 2005). Thus, the result of this research and several other studies strongly support that consumers’ past experiences are the significant factors influencing purchase intention and attitude. This past behavior of consumers needs to be deeply examined as a predictor of purchase intention and attitude.

Finally, this study indicated that there was no statistically significant gender difference with regard to most of the research variables: purchase intention, attitude, subjective norm, perceived behavioral control, desire for uniqueness, the customized service, and experience of online customization. However, for both perceived risk and the need for actual fabric sample, females were more likely to need actual fabric samples and to have higher perceived risk for purchasing the customized garment on the website than males. These results imply that due to females’ high perceived risk for purchasing the customized garment on the mass customized apparel website, females have a tendency to request an actual fabric sample for the garments they co-design by mail to be delivered prior to the completion of the finished products. Apparel marketers for women’s wear should develop various customized services as well as service to provide actual fabric samples for the co-designed garments in order to help reduce female consumers’ perceived risk.

**Implications**

This study has examined consumers’ purchase intentions toward customized apparel on a mass customized apparel Internet shopping site. The implications and insight provided by this study could be used by apparel retailers and marketers as a foundation to devise strategies for the implementation of online apparel mass customization.

First, although the Theory of Planned Behavior has been extensively applied in a number of areas, applications for mass customized apparel via the Internet are rare in order to predict consumers’ purchase intention and actual behavior. Findings from this study supported the T.P.B. as a tool in predicting purchase intentions toward mass customized
apparel via the Internet. Further, the inclusion of desire for uniqueness as an additional variable improved the extended T.P.B. model. As a result, this study demonstrates improved T.P.B. with the addition of desire for uniqueness in regard to purchase intention toward mass customized apparel via the Internet.

Second, positive word-of-mouth marketing should be actively conducted. This study indicated that suggestions and recommendations made by consumers’ close friends or other important people around them, as well as consumers’ own normative beliefs (i.e., whether their close friends or important people around them think that it would be good for them to customize garments via the Internet), had a significant effect on their purchase intentions. This study recommends positive word-of-mouth marketing that includes the following strategies: having consumers participate openly on online blogs and discussions, creating forums, using feedback tools, and creating user groups in order to share information and make telling their close friends easier, and identifying people who can affect the target consumers (Word of Mouth Marketing Association, 2006).

Third, diverse advertising or promotion of apparel mass customization should be actively conducted in order to widely diffuse the concept of online apparel mass customization. This study indicated that the more experience consumers had with mass customizing website; the more purchase intention was present. However, only 68.6% of respondents had experience with mass customizing website. Thus, apparel mass customization is still not well-known among some shoppers. In order to create awareness of and knowledge about online apparel customization and allow consumers to visit websites that offer customized apparel products, marketers should develop effective promotion and advertising. For example, through various advertisements on the Internet, in fashion magazines, and other media, marketers should encourage consumers to become familiar with purchasing customized apparel. In order to create awareness of and knowledge about online apparel customization and allow consumers to visit websites that offer customized apparel products, marketers should develop effective promotion and advertising.

Forth, adoption and application of technology (e.g., Made-to-Measure program, Computer-Aided Design etc.) need to be utilized in order to provide a variety of style, fabric, and color choices. This study indicated that a variety of style, color, and fabric choices was the most important attribute affecting consumers’ evaluations regarding online customized
apparel. Apparel companies need to incorporate technology into their work structures for apparel mass customization to fulfill consumers’ individualized design choices. For example, through the use of Made-to-Measure (M.T.M) program, the apparel company Brooks Brothers has allowed consumers to choose from more than 1,500 hand-selected fabrics and to order various items customized for personalized fit and style (David, 2007). Thus, apparel manufacturers need to enhance a variety of style, fabric, and color choices through technology applications.

Fifth, a mass customized apparel Internet shopping site focusing on interactive function and a quick and convenient co-design process should be developed for the successful implementation of apparel mass customization. This study indicated that interactive functions and a quick and convenient co-design process were the most important attributes influencing respondents’ attitude. The result of this study reinforces the importance of interactivity and convenient process. Apparel retailers should develop web services that make shopping on the Web quick and easy. Further, they should enhance image interactivity, which provides desired sensory information and entertainment (Fiore & Jin, 2003).

Sixth, marketing strategies focusing on fulfillment of consumers’ desire for unique products are needed. Style, color, fabric choice, service, website design, and advertising or promotions should fulfill consumers’ increased tendency to seek out uniqueness. Thus, the target market of apparel mass customization should be based on the consumers who seek uniqueness.

Finally, apparel retailers need to formulate business plans that focus on the quality service that improves consumer satisfaction, which in turn may lead to an increase in consumers’ purchase intentions. This study found that respondents who had higher desire for uniqueness, attitude, and perceived behavioral control requested service customized with a consultant’s help and actual fabric samples. Further, females were more likely to need actual fabric samples than males, so apparel companies for women’s mass customized wear should enhance customized service strategies by providing actual fabric samples. The service providing actual fabric samples can compensate for the lack of touch and sight as the biggest drawback for consumers considering online apparel shopping. The service providing a consultant’s help can allow consumers to reduce their own perceived risk for online mass customized apparel products (i.e., uncertainty regarding co-designed garments). From the
apparel retailer’s point of view, apparel firms may train and educate special consultants and may increase their budgets in delivering fabric samples. Although apparel firms may have to take on a financial burden in order to achieve diverse customized services, combining products and service-strategies offers the biggest potential for success in mass customization (Piller, 2001). Thus, apparel retailers should seek ways to differentiate customized services from the competition while increasing their profitability in apparel mass customization.

**Limitations**

This research attempted to examine the relationship between five independent variables and purchase intention toward a co-designed product on a mass customized apparel Internet shopping site. The results of this study should be evaluated in consideration of certain limitations.

First, generalization of the findings is limited due to the use of a convenience sample of college students. Since college students have a higher rate of Internet use than other population groups (Kim & LaRose, 2004), in accordance with other consumers’ age, occupation, and income, the results may be different. In addition, generalization of the results is limited due to the use of samples in one geographical location. There may be different opinions and evaluations between consumers who live in urban centers versus those who live in rural areas. Thus, this study did not use random selection of participants; this lack of randomness in the sample may lessen external validity of the results in terms of a more varied population than the convenience sample provided. The use of a nonprobability sampling design may not yield a representative sample of consumers. Therefore, future research using a representative sample of consumers with varying demographic and psychographic factors is highly recommended.

Second, a research website used as a stimulus might have affected respondents’ attitudes (evaluations and beliefs) and purchase intentions toward mass-customized apparel. This research website provided male and female respondents with an opportunity to co-design business wear with limited co-design options and virtual reality for the empirical test. This study’s questionnaire was based on respondents’ evaluations and opinions for general customized apparel products, not just customized business wear. This research website provided highly interactive functions compared to other research website. This website, however, offered limited style, color, and fabric choices compared to other commercial
apparel shopping sites. In addition, findings can generate different results according to the apparel category of a stimulus (e.g., active sportswear, casual wear, special occasion wear, etc.). Thus, the research website that this study offered might yield carryover effects. Future research remedying this limitation would provide more valid insights into apparel mass customization via the Internet.

Suggestions for Future Research

Based on the present research, several suggestions for future research are made. First, the results of this study indicated that respondents’ past experiences with mass customization influenced purchase intention toward mass customized apparel via the Internet, perceived behavioral control, attitude, and desire for uniqueness. Future research should deeply examine how a consumer’s past experience affects purchase intention and whether past experience as a significant predictor can be added to the T.P.B. or T.R.A. (Theory of Reasoned Action model).

Second, price as an attribute for consumers’ attitudes toward online co-designed products was not examined in this study. In the consumer’s point of view, price is generally an important concern in purchasing most products (Norum, 2003). From the marketing point of view, a suitable pricing strategy for target markets and the effect of price competition are also important considerations (Norum, 2003). Therefore, as future research, it would be fruitful to examine how consumers’ price consciousness influences their attitudes and purchase intentions toward mass-customized apparel.

Third, consumer attitude toward 3D body-scanning options for apparel mass customization is suggested for future research. This study found that a better fitting garment was a significant attribute for respondents’ evaluations for apparel mass-customization via the Internet. Improving the custom fit of a garment using body scanning is an important factor in the success of apparel mass customization (Anderson et al., 1997; Loker et al., 2004). Availability of body scanning with co-design options may allow consumers to increase purchase intentions and acceptance of mass customization.

Finally, it would be valuable to explore which factors affect consumer hesitation in purchasing mass customized apparel products via the Internet. Future research could address why consumers hesitate and avoid purchasing mass customized apparel products. In addition,
strategies that make up for the weak points or barriers to online mass customized apparel shopping could be examined to increase acceptance and diffusion of apparel mass customization.
APPENDIX A. Research Website
Part II. Consent form (Page 3)

Informed Consent to Participate in Research

Dear Participants,

The purpose of this survey is to collect data for a thesis research study conducted by researchers at the Florida State University. The purpose of this study is to predict consumers’ purchase intentions toward co-designed products at a mass customization apparel Internet shopping site.

It will take you approximately 15 minutes to complete the entire process including the co-design process and questionnaire. This research module will allow you to co-design men’s or women’s business wear. You cannot purchase the garments you co-design. The information you provide will not be released to anyone. Collected data from this survey will be used for research purposes only. Your responses to this questionnaire will be very valuable to this study.

You have the right to withdraw consent for participation at any time. There are no known risks or immediate benefits to the participants of this study. I appreciate your participation.

Part II. Men’s Jacket (Page 4)
Part II. Men’s Shirt (Page 5)

Part II. Men’s Pants (Page 6)
Part II. Women’s Shirts (Page 9)

Part II. Women’s Skirt (Page 10)
Part II. Women’s Pant (Page 11)

Part II. Customized Service and Women’s Measurement (Page 12)
APPENDIX B. Questionnaire
Part II: SURVEY QUESTIONNAIRE

This survey is designed to examine your purchase intention toward co-designed products on a mass customized Internet shopping site. Your responses to the following questions or statements should reflect your experience in mass customization, such as the co-design process and co-designed / customized garments. Please respond to the following questions.

What was the approximate time you have spent on this website to complete your mass customized apparel Internet shopping experience?
- Less than 5 minutes
- 5 to 10 minutes
- More than 10 minutes

Do you need a consultant’s help in the process of co-designing your garments?
- Yes
- No

Do you want to receive actual fabric samples of the garments you co-designed by mail before the delivery of the finished products?
- Yes
- No

Do you want to receive the information of latest fashion trends for business wear by e-mail?
- Yes
- No

Rate the following statements according to your own intention or opinion:

I will try to purchase customized apparel (e.g., t-shirts, jeans, dress, etc.) in the near future.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

I plan to purchase customized apparel (e.g., t-shirts, jeans, dress, etc.) in the near future.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

Co-design provides a variety of unique style choices.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

Co-design provides a variety of fabric and color choices.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

Mass customization provides perceived usefulness.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

Mass customization provides enjoyment.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

The availability of a consultant in a mass customized apparel website is helpful.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

A mass customized apparel website has interactive functions.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree

Mass customization provides a quick and convenient co-design process.
- 1 strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7 strongly agree
I tend to be a fashion leader rather than a fashion follower.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I am more likely to buy a product if it is scarce.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I would prefer to have products custom-made rather than ready-made.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I enjoy having things that others do not.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I rarely pass up the opportunity to order custom features on the products I buy.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I like to try new products and services before others do.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

I enjoy shopping at stores that carry merchandise that is different and unusual.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

My close friends are likely to think that it would be good for me to co-design/customize garments on a mass customized apparel website.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

A mass customized apparel website provides experience of virtual reality.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree

In general, purchasing the customized garment on the mass customized apparel website is risky.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

In general, purchasing any product through a mass customized apparel website is risky.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

The customized garment will end up NOT being as good as what I expected.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

Purchasing the customized garment on the mass customized apparel website will end up wasting my time.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

The customized garment on the mass customized apparel website will NOT fit properly.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

The customized garment on the mass customized apparel website will NOT accurately express my self-image.
- I strongly agree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly disagree

I am very attracted to rare objects.
- I strongly disagree
- 2
- 3
- 4
- 5
- 6
- 7
- Strongly agree
My other important people around me are likely to think that it would be good for me to co-design/customize garments on a mass customized apparel website.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

I am confident that if I wanted to, I could co-design apparel products.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

I believe that I have a lot of control over the process of co-designing/customizing products, because of my ability to use the Internet.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

The apparel co-design process is easy for me.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

A variety of style choices is important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

The usefulness of the co-design process is important.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Enjoyment of the co-design process is important.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

A variety of fabric and color choices is important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Availability of a better fitting garment is an important benefit of a mass customized product.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Virtual reality features are important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Speed and convenience are important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Interactive functions are important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

Availability of a consultant is important in the co-design process.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

My close friends influence my decision to co-design.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree

My other important people around me influence my decision to co-design.

1. Strongly disagree 2. 3. 4. 5. 6. 7. Strongly agree
DEMOGRAPHICS

Please answer the following questions by filling in the blank or checking one option.

What is your gender?
- Male
- Female

What is your age?

Where is your hometown?
City, State:

What is your major?

What level of education are you currently pursuing?
- Undergraduate
- Graduate

What is your ethnicity?
- American Indian / Alaska Native
- Asian
- Black / African-American
- Hawaiian / Other Pacific Islander
- Hispanic / Latino
- White / Caucasian
- Other

How often do you purchase any products via the Internet?
- Never
- Once a year or less
- Once every 3 months or less
- Once a month or less
- Once a week or less
- More than once a week

Have you ever visited a website that offered customized products?
- Yes
- No

Approximately what percentage of your clothes did you buy yourself in the past 12 months?
- 0% - 100%
- 60% - 80%
- 40% - 60%
- 20% - 40%
- 1% - 20%

Please write down your course title and number (e.g., ADV3000).
Course:

Your name will only be collected in order to receive the extra credit and not be used in any other ways whatsoever. What is your last name and first name?
Last name, First name:

Please click "Submit" button below to finish this survey.
Submit
SURVEY QUESTIONNAIRE*

This survey is designed to examine your purchase intention toward co-designed products on a mass customized Internet shopping site. Your responses to the following questions or statements should reflect your experience in mass customization, such as the co-design process and co-designed / customized garments.

Please respond to the following questions:

What was the approximate time you have spent on this website to complete your mass customized apparel Internet shopping experience?

- less than 5 minutes
- 5 to 10 minutes
- More than 10 minutes

Do you need a consultant’s help in the process of co-designing your garments?

- Yes
- No

Do you want to receive actual fabric samples of the garments you co-designed by mail before the delivery of the finished products?

- Yes
- No

Do you want to receive the information of latest fashion trends for business wear by email?

- Yes
- No

*This questionnaire is the same as one posted on the research website
**Rate the following statements according to your own opinion:**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I will try to purchase customized apparel (e.g., t-shirts, jeans, dresses, etc) in the near future.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>I plan to purchase customized apparel (e.g., t-shirts, jeans, dresses, etc) in the near future.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Co-design provides a variety of unique style choices.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Co-design provides a variety of fabric and color choices.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Mass customization provides perceived usefulness.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Co-design provides enjoyment.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Mass customization provides a better fit.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>The availability of a consultant in a mass customized apparel website is helpful.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>A mass customized apparel website has interactive functions.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Mass customization provides a quick and convenient co-design process.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>A mass customized apparel website provides an experience of virtual reality.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>In general, purchasing the customized garment on the mass customized apparel website is risky.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>In general, purchasing any product through a mass-customized apparel website is risky.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>The customized garment will end up not being as good as what I expected.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>Purchasing the customized garment on the mass customized apparel website will end up wasting my time.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>The customized garment on the mass customized apparel website will not fit properly.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>The customized garment on the mass customized apparel website will not accurately express my self-image.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>I am very attracted to rare objects.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I tend to be a fashion leader rather than a fashion follower.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I am more likely to buy a product if it is scarce.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I would prefer to have products custom-made rather than ready-made.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I enjoy having things that others do not.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I rarely pass up the opportunity to order custom features on the products I buy.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I like to try new products and services before others do.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>I enjoy shopping at stores that carry merchandise that is different and unusual.</strong></td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td><strong>My close friends are likely to think that it would be good for me to co-design / customize garments on a mass customized apparel website.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>Other important people around me are likely to think that it would be good for me to co-design / customize garments on a mass customized apparel website.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>I am confident that if I wanted to, I could co-design apparel products.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>I believe that I have a lot of control over the process of co-designing / customizing products, because of my ability to use the Internet.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>The apparel co-design process is easy for me.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>A variety of style choices is important in the co-design process.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>The usefulness of the co-design process is important.</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td><strong>Enjoyment of the co-design process is important</strong></td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
A variety of fabric and color choices is important in the co-design process.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Availability of a better-fitting garment is an important benefit of a mass-customized product.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Virtual reality features are important in the co-design process.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Speed and convenience are important in the co-design process.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Interactive functions are important in the co-design process.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Availability of a consultant is important in the co-design process.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

My close friends influence my decision to co-design.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Other important people around me influence my decision to co-design.  

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |

### DEMOGRAPHICS

Please answer the following questions by filling in the blank or checking one option.

What is your gender?  
- Male  
- Female  

What is your age? _______ years  
Where is your hometown? City: _________________  State: ______________

What is your major? ______________________  

What level of education are you currently pursuing?  
- Undergraduate  
- Graduate  

What is your ethnicity?  
- American Indian / Alaska Native  
- Asian  
- Black / African-American
Hawaiian / Other Pacific Islander
Hispanic / Latino
White / Caucasian
Other

How often do you purchase any products via the Internet?
   Never
   Once a year or less
   Once every 3 months or less
   Once a month or less
   Once a week or less
   More than once a week

Have you ever visited a website that offered customized products?
   Yes
   No

Approximately what percentage of your clothes did you buy yourself in the past 12 months?
   80% - 100%
   60% - 80%
   40% - 60%
   20% - 40%
   0% - 20%

Please click “Submit” button below to finish this survey.
APPENDIX C. Human Subject Approval Memo
Human Subject Approval Memo

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 3/17/2008

To: Ju Young Kang

Address: 1833 Halstead Blvd. APT #703
Dept.: TEXTILES AND CONSUMER SCIENCES

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
Predicting consumers' purchase intentions to purchase co-designed apparel products on a mass customized apparel Internet shopping site

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 3/16/2009 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to...
your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Eundeok Kim, Advisor
HSC No. 2008.1113
APPENDIX D. Consent Form
Informed Consent to Participate in Research

Dear Participants,

The purpose of this survey is to collect data for a thesis research study, conducted by researchers at the Florida State University. The purpose of this study is to predict consumers’ purchase intentions toward co-designed products on a mass customized apparel Internet shopping site.

It will take you approximately 15 minutes to complete the entire process including the co-design process and questionnaire. This research website will allow you to co-design men’s or women’s business wear. You cannot purchase the garments you co-design. The information you provide will not be released to anyone. Collected data from this survey will be used for research purposes only. Your responses to this questionnaire will be very valuable to this study.

You have the right to withdraw consent for participation at any time. There are no known risks or immediate benefits to the participants of this study. I appreciate your participation!

If you have any questions about this study, please feel free to contact any researcher listed below. Questions or concerns about your rights as a research participant may be directed to the FSU Human Subjects Committee, Tallahassee, FL 32306-2742, (850) 644-8673.

Thank you very much for your participation.

Sincerely,

Ju Young Kang
Master’s Student
Dept. of Textiles and Consumer Sciences
Florida State University
Tallahassee, FL 32306
jk07@fsu.edu
352-281-2648

Eundeok Kim Ph.D.
Associate Professor
326 Sandels Building
Dept. of Textiles and Consumer Sciences
Florida State University
Tallahassee, FL 32306
ekim@mailer.fsu.edu
850-644-2789
References


Campbell, J. R., & Kim, E. (1999, November 11-13). Concept in digital textile printing that affect the approach to textile design. *International Textile and Apparel Association annual meeting*, Santa Fe, NM.


Corcoran, C. T. (2006, July). Get your clicks: Shopping online is becoming easier, thanks to Innovations in technology and consumer comfort levels. WWD, 192(4), 12B.


BIOGRAPHICAL SKETCH

Ju Young Kang

Education

Jan. 2007- June 2008   Graduated Florida State University in U.S.
  Received Master of Apparel Product Development
Aug. 2006- Dec. 2006   Attended University of Florida in U.S.
  Master of Bilingual/ESOL Education
  Received Bachelor of Clothing
  Fashion Coordination
July 1993- Aug. 1993   Attended Kolon Fashion Institute in S. Korea
  Fashion CAD
  Fashion Illustration

Professional Experiences

- Worked as an apparel designer and a Visual M.D.
- Designed women’s wear targeting fashion-forward women in their 20s and 30s
- Directed fashion show and catalog work

Mar. 1999- Feb. 2000   HA RA FASHION CO. Une brand, S. Korea
- Worked as an apparel designer
- Designed women’s wear targeting fashion-forward women in their 20s and 30s
- Designed accessories (shoes, jewelry)

- Worked as an apparel designer
- Designed women’s casual wear targeting women in their 20s
- Directed fashion show and catalog work
- Designed accessories (bag, belt )

- Worked as a haute couture and costume designer
- Designed women’s and men’s haute couture
- Designed costumes for several movies and musicals
- Designed evening wear and wedding gown