Exploration of User Satisfaction with Retail Self-Service Technologies

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Abstract

This study examines how various features of a self-service kiosk (SSK) affected consumer satisfaction with the kiosk. Data gathered via an online survey of 84 adults provided insight into what features of retail SSK affected consumer's satisfaction with the kiosk. The Stimulus-Organism-Response (S-O-R) model (Meherabian and Russell, 1974) was used as a framework to analyze the data. Multiple regression was performed to determine the predictive value of the kiosk features effect on consumer's emotional state (pleasure, arousal, dominance) and consumer's satisfaction with the kiosk. Navigation, the kiosk enclosure, ease of use, and usability was shown to have an effect on satisfaction. Pleasure was tested via the Sobel test to determine its mediating value between usability and satisfaction, and was shown to be a positive mediating variable. Implications of this study suggest retailers should focus their efforts on ease of use and software navigation of SSKs.

Keywords: S-O-R, Self-service technology, retail, kiosk

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Chapter 1: Introduction

This thesis focuses on consumers' satisfaction with self-service kiosks (SSKs) that are located within a retail environment and allow a customer to browse and purchase merchandise electronically. This research fills a gap within the literature regarding retail SSKs. This chapter introduces the research topic and includes four sections: (1) the purpose of this study; (2) background information on the current state of retail industry in the United States and self-service technologies (SSTs) used within retail environments; (3) the research problem; and (4) summary of the study's significance and potential for future research. Chapter 2 presents a review of the literature, Chapter 3 presents the research methods, Chapter 4 presents the findings, and Chapter 5 discusses the research findings and potential implications.

Purpose of the Study

The major research goal of this study was to gather insights into consumers' satisfaction with SSKs. To achieve this objective, an exploratory study was conducted to understand (1) consumers' reactions to various kiosk features, (2) their emotional states (pleasure, arousal, and dominance [PAD]) in regards to the kiosk, and (3) their level of satisfaction with the kiosk. The research was guided by the aforementioned three topics; Meherabian and Russell's (1974) stimulus-organism-response (SOR) framework, and the review of literature.

The goals from this study have implications for both the retail industry and academy. This research can be used as a starting point for further retail

technology and retail merchandising research on this type of SSK (one that allow customers to browse and purchase merchandise from within a retail environment). In addition, manufacturers and designers can benefit from knowing what effects consumers' satisfaction with SSKs.

Background: Retail Industry and Self-Service Technologies

Consumers spend $4.1 trillion a year in the retail sector across all retail channels (U.S. Census Bureau, 2013a). A retail *channel* refers to the methods of shopping, such as online, in-store, catalog, automated retailing (vending), TV/home shopping, direct selling (e.g. May Kay), or mobile device. Although brick-and-mortar (a physical, built environment) retailers still make up the majority of retail sales, online sales have continued to grow (U.S. Census Bureau, 2013b). The online channel made $193 billion in annual sales in 2011, 4.7% of all retail sales in the United States, a number that has grown since its inception in the 1990s (U.S. Census Bureau, 2013b).

Retailers have been on the defensive against online-only retailers. Typically online retailers are able to sell merchandise at lower costs. This is due to the operation costs associated with store operation and in-store inventory supply. As a way to address this cost difference, stores are using SSKs as a way to extend the product offering to in-store customers while maintaining the same square footage (Demery, 2004). Office Depot and Staples were two of the first retailers to implement kiosks into their stores in the early 2000s (Demery, 2004). The addition of a kiosk to a brick-and-mortar stores have allowed some retailers such as Staples to downsize their square footage and open smaller stores that

are more customers focused (Luna, 2013). Staples president Demos Parneros stated in an interview "[w]e can get away with a smaller store because we have the capacity to offer one hundred thousand products online and offer pick-up in store or delivery overnight" (Luna, 2013).

Self-service kiosks can bring additional revenue to retailers. Kohl's, a store with SSKs in all of its 1,146 US stores since 2010, makes approximately 10% of its e-commerce (electronic) sales from in-store kiosks (Davis, 2013), which equals approximately $140 million in sales a year. A global market research company, the IHL group, found SSKs that allow for transaction/payments (IHL includes: self checkout, food order/payment, postal kiosk, ticketing, and other retail kiosks within the SSK umbrella) resulted in transactions totaling $822 billion in 2012 (Berthiaume, 2013). IHL expects SSK transactions to surpass $1 trillion in 2014 (Berthiaume, 2013).

Additional motives that lead retailers to implement SSTs and SSKs include reducing labor costs (Walker, Craig-Lees, Hecker, & Francis, 2002), reducing consumer wait times (Meuter, Ostrom, Bitner, & Roundtree, 2003), providing better customer service (Dawes, & Rowley, 1998), and giving consumers more control over their experience (Kokkinou & Cranage, 2012; Meuter et al., 2003). In addition, many retailers provide SSKs within a retail environment in order to enhance "perceived service quality and satisfaction with the purchase decision making process" (Koller & Konigsecker, 2012, p. 674). To take an example from the hoteling industry, when checking into a hotel, adding a SSK can reduce wait times for consumers and enhance the service levels consumers perceive. It also

can save the hotel the cost of additional staff needed to check in guests. However, should the technology fail, satisfaction rates can be reduced and service time can be lengthened for consumers (Kokkinou, & Cranage, 2012; Weijters, Randarajan, Falk, & Schillewaert, 2007).

According to Cisco, a company that sells SSKs and computer technology, the return on investment for a SSK within the UK retailer Tesco is 12 months (Curtis, 2013). Many companies, such as Tesco (Curtis, 2013), Kohl's, Herberger's, and REI, are testing or rolling out SSKs that allow consumers to view and purchase an extended inventory at all or select retail locations.

Research Problem

The use of SSKs within retail environments is increasing due to the additional revenue they can bring to retailers. However, little research has been published regarding user satisfaction rates with SSKs. Also, there is a lack of empirical evidence addressing what benefit SSKs provide a consumer within a retail environment or the benefit of the SSK to the retailers. By understanding the effects of various SSK features, retailers can focus their efforts on the most impactful features that increase consumer satisfaction with the SSK and in turn increase their revenue.

Significance of the Study

There is a gap in the research regarding how consumers perceive SSKs within retail environments, their satisfaction, and their emotional reaction to various kiosk features. This study addresses that gap by studying consumers' assessments of kiosk features and their emotional responses and satisfaction

with the kiosk. We know that satisfaction with a retailer is correlated to greater levels of spending at the store (Babin, & Darden, 1996) and willingness to pay more for products (Homburg, Koschate, & Hoyer, 2005). Satisfaction with SSTs influences users continued use of the SST (Chen, Chen, & Chen, 2009). Therefore, it is also important to understand which kiosk features affect consumers' satisfaction. Positive emotions have also been found to increase consumer's time spent in the store (Donovan and Rossiter, 1982). Therefore, retailers need to understand the consumer's response to a kiosk, because if the kiosk is not being used, the retailer is not getting a positive return on its investment (i.e. the SSK). Additionally, SSK manufacturers and designers can benefit from understanding consumers' levels of satisfaction relative to various features and then implementing those that have a greater, positive impact on consumers.

Chapter 2: Literature Review

The following review of the literature relevant to this study focuses on (1) retailers; (2) retail environments, (3) Self-service technologies (SSTs) and particularly self-service kiosks (SSKs); (4) consumer behavior: technology anxiety and technology readiness (TR); (5) consumers' technology requests in retail environments; and (6) theoretical framework, Stimulus-Organism-Response (S-O-R) model. The end of the chapter presents this study's hypotheses and summary. The focus here is on literature published after 2000, in addition to earlier seminal research published in refereed journals and books.

Retailers

A retailer is a company that sells merchandise or services directly to consumers, typically the end user. The retail industry is made up of various types retailers, from automotive dealers to health and beauty stores. The U.S. government includes the following in the retail industry: automotive dealers, gasoline service stations, home furniture, food stores, restaurants, health and personal care, building supply, garden supply, hardware stores, mobile home sales, general merchandise stores, department stores, sporting goods, apparel, and accessory retailers (U.S., Census Bureau, 2013c). Retailers are grouped in many ways. Two such ways are by ownership and merchandise assortment.

Ownership. The method of ownership varies from retailer to retailer and includes independent, chain, franchise, manufacture, and cooperative (Berman, & Evans, 2010). An independent retailer is independently owned and has only one location, such as a family-run store. A chain retailer has multiple locations and can be privately or publicly owned. Examples include Target, Herberger's,

and Kohl's. A franchise retailer is independently owned, but the business is conducted under an established name that is owned by a second party. Examples include McDonald, ACE, and GNC. A cooperative is owned by its members. Examples are REI and local cooperative grocery stores. A manufacture store is owned by the retailer and sells the merchandise that it manufactures or their own brand. The GAP and H & M are two examples of manufacture stores.

Merchandise assortment. Nonfood and non car retailers consist mainly of five merchandise store types: specialty store, department store, discount department store, off-price chain store, and membership club (Berman, & Evans, 2010). A specialty store sells one main product types, such as books, women's clothing, or cosmetics. A department store sells an extensive variety of merchandise; examples include Kohl's, Herberger's, and JC Penny. A discount department store also sells a wide assortment of goods, like the department stores, but it has less specialized staff and sells lower-cost goods. An off-price chain offers discounted goods, many from past seasons and overstocked from manufacturers; examples include T.J.Maxx and Marshalls. Lastly, the membership retailer requires consumers to be members in order to shop at the stores; examples include Sam's Club and Costco.

Retail Environments

A retail environment is the location at which retailers sell their merchandise or service. This can be a physical brick-and-mortar store or an online store environment.

Brick-and-mortar. A retail environment contains all the components of the interior environment of a retail store; this includes permanently built items, fixtures, and merchandise. Retail environments are comprised of many attributes, typically referred to as *atmospherics* in the literature. Turley and Milliman (2000) compiled the following list of atmospherics:

1. External variables (exterior signs, entrances, exterior display windows, height of building, size of building, color of building, surrounding stores, lawns and gardens, address and location, architecture style, surrounding style, surrounding area, parking availability, congestion and traffic, and exterior walls);
2. General interior variables (floor and carpeting, color schemes, lighting, music, P.A. [public address] usage, scents, tobacco smoke, width of aisles, wall compositions, paint and wall paper, ceiling composition, merchandise, temperature, and cleanliness);
3. Layout and design variables (space design and allocation, placement of merchandise, grouping of merchandise, work station placement, placement of equipment, placement of cash register, waiting areas, waiting rooms, department locations, traffic flow, racks and cases, waiting [queue], furniture and dead areas);
4. Point-of-purchase and decoration variables (point-of-purchase displays, signs and cards, wall decoration, degrees and certificates, pictures, artwork, product displays, usage instructions, price displays, and teletext); and
5. Human variables (employee characteristics, employee uniforms, crowding, customer characteristics, and privacy). (p. 195)

A retail environment's atmospherics are determined by multiple staff positions, including both internal retail employees and external groups or companies. The store design is part of the overall image and brand of a retailer and is typically

driven by the marketing division of a retailer. Indeed, the retail environment is the area that the retailer will spend a great deal of its marketing dollars (compared to advertisements). The design of the store and overall built environment, fixtures, and store layouts are typically designed and planned by interior designers, architects, and/or store planners. A merchandise planner or store planner typically determines merchandise placement in the store. Visual merchandisers determine the design and placement of visual displays, key promotions, and window displays.

The retailer's objective is to sell merchandise, and the purpose of the retail environment is to provide a space to display and sell merchandise. To that end, the store design and the various atmospherics can influence a customer in a variety of ways, such as enticing a customer to enter the store, effecting browsing time, leading customers to featured merchandise, following an intended circulation path, effecting satisfaction with the retailer, and giving various cues to the customers as to the type and price point of merchandise.

Turley and Milliman's (2000) review of multiple research studies concluded that "[b]ased upon the accumulated evidence it appears that the retail environment can exert a strong infl-uence on sales and consumer purchasing behavior" (p. 206). Numerous research has indicated that atmospherics affect consumer behavior. Store atmospherics have been shown, for example, to have an effect on the consumer's emotional states (Donovan, Rossiter, Marcoolyn, & Nesdale, 1994; Walsh, Shiu, Hassan, Michaelidou, & Beatty, 2011). Emotional states have been shown to affect satisfaction (Walsh et al., 2011), and

satisfaction has been shown to positively affect store loyalty (Donavan et al., 1994; Walsh et al., 2011).

Many individual atmospherics related to the work of interior designers have also been studied. Examples include color (Barlı, Aktan, Bilgili, & Dane, 2012; Bellizi & Hite, 1992), lighting (Barlı et al., 2012; Bellizi Summers & Hebert, 2001), and product display (Kerfoot, Davies, & Ward, 2003). Color has been studied in multiple ways. The color red on walls has been shown to negatively influence time spent in the store, whereas green has been shown to increase time and product purchase behavior (Barlı et al., 2012). Experiments conducted by Bellizi and Hite (1992) have shown that the color blue, used as an overall ambient color, increases the intention to shop, browse, and purchase.

Researchers have also studied the effects of lighting on consumers. Ambient soft lighting, for example, has been shown to increase time spent in a store (Barlı et al., 2012). Spot lighting on an accessory product display has been shown to increase consumer interaction with products (Summers & Hebert, 2001).

Product displays in terms of both merchandise colors and presentation styles increase purchase intention (Kerfoot et al., 2003). Koo and Kim (2013) found that single-brand retailers with overall store designs that are attractive to the consumer can positively influence consumers' feelings of "love" toward the store, which in turn positively affects consumer loyalty.

Online. The development of electronic or Internet retailing has added to the retail environment discussion. The retailer's website is seen as a part of the

retail environment and, as with brick-and-mortar stores, has been the focus of research. It is important to note many retailers that include SSKs utilize their current or altered website for their in-store SSK.

Similar to the list of brick-and-mortar atmospherics, McKinney (2004) proposed a list of atmospheric variables solely for Internet environments:

1. External variables: links included on an internet shopping sites' homepage, ability to subscribe to email promotions/mailing list, access to partners/alliances, availability of security and privacy information, store locator/finder, if company has stores, site map, customer service, departments/brand listings, information on return policy, special offers/coupons;
2. Internal variables: links designed to access product departments, ability to shop by merchandise departments and/or brands within the internet shopping site, shop by brand name, shop by special sizes (e.g. petite, big and tall), detailed description of product, size charts/fit guides, listing of product best-sellers, listing of upcoming products;
3. Layout and design variables: overall appearance of the internet shopping site, [color] scheme, graphics/photos/images, text, allocation of space, placement of information, including text and images;
4. Point-of-purchase: options that are available at the time of purchase, price(s) of merchandise or before exiting the shopping transaction, total cost of purchase, option to delete a previously selected item, suggestions/recommendations for additional purchases;
5. Customer services: links that provide information and/or offer, help service/toll-free number for customer service specific services to the consumer, option to ship to (friend, family) another address, wish list or save option for later purchases, express checkout for frequent shoppers, gift wrap/decorative box options, order confirmation via email, ability to request a catalogue, if available, multiple shipping options (e.g. ground, priority, express), ability to store personal information (e.g. address, credit card), gift suggestions and/or gift registry, ability to pay with gift card/certificate. (p. 270)

Note that these atmospherics for websites and those stated earlier for brick-and-mortar retailers are extensive but not all-encompassing; researchers have also used additional terminology and other variables.

Many of the atmospherics classified by McKinnon (2004) mirror those in brick-and-mortar retail environments; however, the online environment lacks a few main atmospherics, including the human variables. Others, such as external and internal variables, are replaced with variables that are applicable specifically to websites. For example, a website has no exterior or storefront but does have a home page and site map.

Studies of online retail environments pertinent to this study include those on satisfaction (Eroglu, Machleit, & Davis, 2003), and studies on website variables relevant to SSK use include those on site aesthetics (Porat & Tractinsky, 2012), website design (Liang & Lai, 2002), online style (Van der Heijden & Verhagen, 2004), product offerings (Szymanski & Hise, 2000), usability (Porat & Tractinsky, 2012), product description (McKinney, 2004), usefulness and ease of use of websites (Van der Heijden & Verhagen, 2004), and site navigation (Szymanski & Hise, 2000).

Website design and aesthetics have been studied in various ways. Porat & Tractinsky, (2012) looked at classic (clean, balanced) aesthetics and expressive (creative, innovative) aesthetics; they found a positive effect on pleasure and arousal, but not dominance. They also found that arousal has a small positive effect on the user's feelings toward the store and that pleasure had a large positive effect on feelings toward the store. Liang & Lai (2000) found that

“consumers are more likely to return [to the online store] for future purchases if the [online] store is better designed” (p. 441). The results of a telephone survey of random adults (Harris & Goode, 2010) revealed a link between the website's aesthetic appeal and a customer’s trust. Various other visual features, such as graphics, colors, links, and menus (Koo & Ju, 2010), have also been studied.

Product assortment, product information, and site navigation have also been studied. Szymanski and Hise (2000) found product information and quantity of products offered did not have a significant effect on consumer satisfaction. Alternatively, McKinney (2004) found product descriptions had a positive impact on consumer satisfaction with online retailers. The ability to functionally navigate a website was found to be important to consumers. In a qualitative study, a user noted ease of navigation through a website creates a more satisfying experience (Szymanski & Hise, 2000). Layout and functionality of the website has also been found to positively affect a consumer’s trust of a website (Harris & Goode, 2010).

Usability, including subcategories of ease of use, usefulness, and convenience, has been studied in multiple forms. In their study of online stores, Van der Heijden & Verhagen (2004) studied a number of variables including, usefulness, ease of use, and online style. They found that usefulness was a factor for purchasing online, whereas ease of use and online style were not. Usability was found to have a moderate effect on dominance (Porat, & Tractinsky, 2012). Szymanski and Hise (2000) found that the main factors of online store satisfaction are convenience, website design, and financial security.

Each research team used many independent and dependent variables, each differing from each other.

Self-Service Technologies and Self-Service Kiosks

Retailers are one of many markets that use SSTs and SSKs in their operations; banks, hotels, and governments are examples of other entities that use SSTs. Within the literature, researchers have focused primarily on self-checkout technologies within retail environments and informational kiosks located in various industries. Due to the paucity of literature on retail SSKs, other SSTs as well as SSKs used in other industries are included in this literature review.

Self-service technologies. Self-service technologies are a way for customers to locate desired information or complete various processes electronically without the assistance of staff (Meuter, Ostrom, Roundtree, & Bitner, 2000). Self-service technologies vary by purpose and interface. Table 1 presents an overview of the various types of SSTs (Meuter, et al., 2000). Meuter, et al. (2000) divides the purpose of SSTs into three categories: customer service, transaction, and self-help. Customer-service SSTs allow customers to perform processes that would typi-cally be done by an employee, such as banking via telephone, accessing user accounts, and using ATMs. Transaction SSTs allow users to conduct transactions, such as prescription refills, online shopping, hotel checkout, and automatic parking systems. Lastly, self-help SSTs permit users to locate information on their own that an employee typically would locate for a customer; examples include internet search engines, price scanners, and tax

preparation software. Per Meuter, et al. (2000), the type of interface the SST uses includes telephone, online, physical, and video/CD/software.

Table 1
Categories and Examples of SSTs

Purpose of the SST	Type of Interface			
	Telephone	Online/Internet	Physical	Video/CD/ Software
Customer Service	• Telephone banking • Flight information • Order status	• Package tracking • Account information	• ATM • Hotel checkout • Loyalty kiosk • Gift registry	
Transaction	• Telephone banking • Prescription refills	• Online shopping • Financial transactions • Online banking	• Pay at the pump • Hotel checkout • Car rental Automatic parking ticket and payment	
Self-Help	• Information telephone lines	• Internet information search • Distance learning	• Blood pressure machine • Tourist information • Price check scanner • Inventory locator kiosk	• Tax preparation software • Television CD-based training

Note. Adapted from "Self-Service Technologies: Understanding Customer Satisfaction With Technology-Based Service Encounters." by M. L. Meuter, A. L. Ostrom, R.I. Roundtree, and M. J. Bitner, 2000, *Journal of Marketing, 64*, p. 52. Copyright 2000 by the American Marketing Association.

Self-service kiosks. The common and broad definition of a SSK is a computer encased in a plastic or wood housing, branded with the store logo and

accessible to shoppers within a store (Rowley & Slack, 2003). Various retailers and companies within other industries (e.g., hotel, government) use kiosks for different purposes depending on their indented use and business needs. These purposes include informational, transactional, and relative (Rowley & Slack, 2003; Rowley & Slack, 2007; see Table 2). Information SSKs primarily offer information and do not allow consumers to conduct extensive processes; examples include mall maps, and wedding/baby registry access. Transaction SSKs allow for users to carry out purchases; this may be an instant purchase or an e-purchase that allows for merchandise to be shipped to a consumer. Examples of transaction SSKs include those via a vending machine type of SSK (e.g., Redbox), a movie ticket SSK, and Kohl's SSK that allows purchases much like online purchases, which are mailed to a consumer after the purchase. The last types of SSKs, referred to as relate SSKs, allow the retailer to communicate and build a relationship with consumers, typically with loyalty programs. Examples of relate kiosks are those that print coupons or allow consumers to sign up for loyalty programs such as savings cards (e.g., Ikea Family, grocery loyalty card). Self-service kiosks can have multiple function that cross the various types. They may have additional features for consumers to perform tasks, such as a printer, card reader, or scanner. A printer may provide a receipt, loyalty card, coupons, or gift registry list to the user. A card reader may allow credit card payment or loyalty card swipe. The scanner may allow the user to scan the price tag (UPC) to access product information.

Table 2

Types of Self-Service Kiosks (SSKs).

Type of SSK	Characteristics	Examples of types	Examples
Information	• Provides information about products and services	• Informational • Registry access • Price check	• Wedding registry access: Macy's, Target, Kohl's • Map
Transact	• Supports purchase transactions	• Vending machine • Movie tickets • Printing airline tickets, hotel	• Redbox • Kohl's Kiosk AMC movie purchase • Printing airline tickets, hotel
Relate	• Offers relationship and communication functions	• Loyalty/marketing • Coupon printing • Employment application	• Grocery store loyalty card sign up • Ikea Family Kiosk • Target employment kiosk

Note. Adapted from "Kiosks In Retailing: The Quiet Revolution" by J. Rowley, & F. Slack, 2003, *International Journal of Retail & Distribution Management*, *31*, p. 331. Copyright 2003 by the Emerald Group Publishing Limited. and "Information Kiosks: A Taxonomy." by J. Rowley, and F. Slack, 2007, *Journal of Documentation*, *63*, p. 890. Copyright 2007 by the Emerald Group Publishing Limited.

Self-service kiosks examined in this study. For the purpose of this study, a kiosk is defined as a computer encased in a plastic or wood housing, branded with the store logo accessible to shoppers within a store. The computer presents an electronic catalog of merchandise (extended inventory offering). These kiosks allow consumers to make purchases and have them shipped to a location of their choice (e.g., home or office). Three retailers were examined for the present study: Herberger's, Kohl's, and REI; each with different kiosk with

various capabilities and features. See Table 3 for a summary of each kiosk's features.

The retailers include two department stores (Kohl's and Herberger's) and one specialty retailer (REI) (see Table 3 for retailer information). Kohl's currently has 1,146 stores in the United States and targets middle income consumers. In 2012, Kohl's had annual sales of $19.28 billion; $1.4 million (7%) of that income came from e-commerce (Kohl's, 2013). The parent of Herberger's, Bon-Ton stores (which include Bon-Ton, Bergner's, Boston Store, Carson's, Elder-Beerman, Herberger's, and Younkers), has 275 department stores nationwide and in 2010 had annual sales of $2.92 billion (Bon-Ton, 2013). Bon-Ton/Herberger's targets "women between the ages of 25 and 60 with [an] average annual household income of $55,000 to $125,000" (Bon-Ton, 2013, p. 8). REI has 122 stores nationwide and is a member-owned cooperative rather than a publicly traded company. This specialty retailer sells mid- to high-end recreation equipment and apparel. REI is a smaller retailer than Kohl's and Herberger's, with annual net sales of $1.93 billion in 2012 (REI, 2013).

Table 3
Study's Kiosk Features

Retailer	Type of retailer	Annual revenue	Number of locations	Features
Herberger's	Department store, corporate owned	$2.92 billion	275	• Product search • Product scan • Purchase • Printing • Free shipping for purchases over $50
Kohl's	Department store, corporate owned	$19.28 billion	1,146	• Product search • Advanced search • Product scan • Inventory at other store location • Purchase • Gift registry access • Printing • Free shipping
REI	Cooperative, Specialty	$1.93 billion	122	• Product search • Purchase • Gift registry access • Printing • Free shipping for purchases over $50

Figure 1. Herberger's kiosk

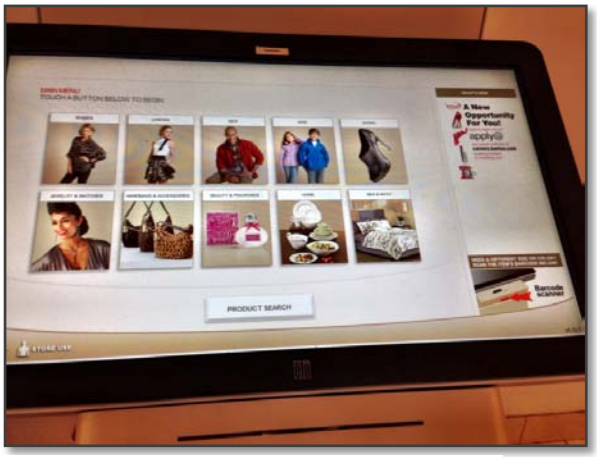

Figure 2. Herberger's kiosk screen

The Herberger's kiosk has a large touch screen monitor, a scanner, a printer, a credit card reader, and a sign above the touch screen monitor describing what the kiosk ncan do for a user (see Figures 1 and 2). It allows users to search for an extended inventory of products. Users can scan a product UPC to find further information about a product or whether additional sizes are offered. Customers can complete a purchase, swipe their credit card for payment, and print a receipt from the kiosk. The kiosk also allows for free shipping for orders over $50.

Figure 3. Kohl's' kiosk

The Kohl's kiosk has the most features of the three in this study. The kiosk enclosure goes to the ceiling, with graphics affixed on the two sides of the base and signage at the ceiling on all four sides, as seen in Figure 3. Kohl's kiosks have had varied signage messages and colors since their installation in 2010 (from informal observation). The stores typically have more than one kiosk at each store. The kiosk consists of a large touch screen monitor, scanner, printer, credit card

reader, and a help button (see Figures 4 and 5). The kiosk allows users to access their registry, another's registry, or wish lists (i.e. birthdays). It also allows for printing of these lists. Customers can also scan products' UPC tags to get additional product information or additional product sizes or color options. Users can search for extended inventory of products by various attributes such as size, color, and brand. They can complete a purchase and pay via the credit card swipe. Orders are shipped free of charge, regardless of the purchase amount. A non studied characteristic of the kiosk is the height off the floor; it is quite high, and the top reaching approximately 6 feet, a height that some users (e.g., wheel chair bound, or petite persons) cannot reach that height.

REI has had multiple styles of kiosks within their stores. The Bloomington, MN, location has a basic kiosk. It features a monitor, keyboard, mouse, and printer on a desk, with a signage banner above (see Figure 6). The kiosk does not allow for a credit card swipe; users must manually input their credit card information into the computer. The kiosk interface is a slight alteration of the store's website. Users can search for products, locate a registry, and print their lists. Purchases over the amount of $50 have free shipping. The kiosk does not feature a touch screen; users must use the keyboard and mouse for inputs.

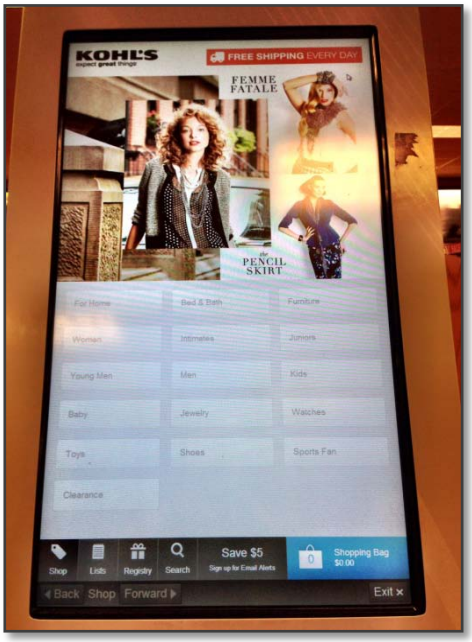

Figure 4. Kohl's kiosk screen

Figure 5. Kohl's kiosk features

Figure 6. REI kiosk

Figure 7. REI kiosk screen

Consumer Behavior

Technology anxiety. Technology anxiety is the fear that people have when they contemplate using or actually use technology (Meuter, et.al., 2003). This fear can lead to limited use or avoidance of computers and technology (Doronina, 1995). The cause of this anxiety is not entirely known. Oyedele and Simpson (2007) note "the anxiety arises from the inability or lack of self-confidence in effectively managing or controlling the technology" (p. 292). It appears anxiety is typically present with new technologies, as was the case in Doronina's (1995) study, a time when computers were more costly and not as common as they are currently. Self-service technologies and SSK are newer technologies, and some consumers may not have used them or have used them only sporadically. The lack of use can create an anxiety over misusing the technology. Technology anxiety is also likely connected to control, as Oyedele and Simpson (2007) considered. Meuter et al. (2003) found technology anxiety was the "most influential predictor of SST usage" (p.904). In a later study, Meuter, Bitner, Ostrom, & Brown (2005) again found technology anxiety was a significant predictor of a user's trial of a SST. Oyedele and Simpson (2007) similarly found that technology anxiety predicted non-SST usage. Their study also indicated those who do not use the SST have some level of technology anxiety.

Technology readiness. Chen, Chen, & Chen (2009) note technology readiness (TR) "measures an individual's readiness to use new technology in general by four personality traits: optimism, innovativeness, discomfort, and

insecurity" (p. 1249). This is important as a kiosk is a new technology to many users. Parasuraman (2000) created the Technology Readiness Index (TRI), a questionnaire with 36 items rated on a five-point Likert scale. By using the TRI, Parasuraman (2000) believes companies can understand their consumers' and/or clients' readiness to adopt and use the new technology and accordingly can apply this information to a technology implementation strategy.

The results of recent studies have varied about the effect of TR on SST usage. Gelderman, Ghijsen, Paul, and van Diemen (2011) found no significant difference in TR between users and non-users of airline check-in SSKs. The results on TR were also not found to be significant on whether consumers used a SST. Conversely, Elliott, Meng, and Hall (2012), who studied consumers' use of SST to complete retail transactions, found consumers who embrace new technologies are more likely to perceive the SST as being reliable and fun to use. Lee, Catellanous and Choi (2012) found similar results in their study of airport check in SSKs, where TR had an influence on a consumer's intention to use a kiosk; TR was also found to have a significant influence on consumer's attitudes toward using the kiosk. These differing results point out the need to further examine TR as a contributing factor to consumers' SSK behaviors. Also, much of the research on SST has focused on self-check outs at supermarkets and self-check in kiosks at airports. Those SST types may have differing results than with a SSK that allows for transactions.

Consumers' Technology Requests in Retail Environments

Two studies were found that studied a consumer's wants and requests in a retail environment. Items in these studies that relate to SSKs are reviewed here. In a recent qualitative study, Koller and Königsecker (2012) found that consumers did not want a SSK to replace all staff, but they expected a SSK to be an efficient way to search for merchandise information without staff assistance. Additionally, consumers wanted the ability to order out-of-stock items and have them shipped to their homes or another store (Koller, & Königsecker, 2012). A focus group also noted that having additional staff present when a SSK is first installed is helpful as a consumer is unfamiliar with the functions of the SSK (Koller, & Königsecker, 2012). These results are similar to the findings from Burke's (2002) survey of web users on what technology they wanted in retail environments, both online and in brick-and-mortar stores. The majority (76%) of surveyed consumers thought a store should or must have a kiosk that allows them to order out-of-stock items that are out of stock (Burke, 2002). Most consumers (77%) wanted out-of-stock items shipped to their homes. Burke (2002) concluded that the way a technology is used (what they add to the shopping experience, the ability to scan a product or use a mobile application [app] to find additional info on their own) is what creates the value, not the technology itself. Therefore, determining ways to create a more user-friendly kiosk could add a value to the retailer and retail environment in the consumer's mind. It appears no one has replicated Burke's 2002 study looking at technology wants of consumers.

Theoretical Framework: Stimulus-Organism-Response

The Stimulus-Organism-Response (S-O-R) model was created by Robert Woodworth (1918), a psychology researcher who was looking to expand the Stimulus-Response (S-R) model that researchers at the time were using. He felt the S-R model did not take into account what the organism (i.e., the person's personality, emotions) provided, namely, the motivation/drive component of behavior; the responses differed based on the state of the organism. It appears environmental psychologists did not begin to use the S-O-R model until 1974 when Mehrabian and Russell (1974) presented it in their book, *An Approach to Environmental Psychology* (see Figure 8). It is unclear if Mehrabian and Russell used Woodworth's model or what the connection between the two models is.

The model contains three parts: stimulus, organism, and response (Mehrabian, & Russell, 1974). The stimulus can be any stimuli the researcher chooses such as lighting, color, staff, or price (see the discussion of atmospherics above for a more complete listing). The organism is the emotional state of the person (pleasure, arousal, dominance [PAD]; explained further later) that results from the stimuli and mediates the relationship between the stimulus and response (see Figure 8). The response is the behavior of the consumer: whether to avoid (negative) or approach (positive) the stimuli (Mehrabian, & Russell, 1974). Researchers have used as their response various negative/positive behaviors, such as satisfaction (Im & Ha, 2011), loyalty (Koo, & Kim, 2013), money spent in the store (Sherman, et at,, 1997), and purchase behavior (Donovan & Rossiter, 1982; Sherman, et al., 1997).

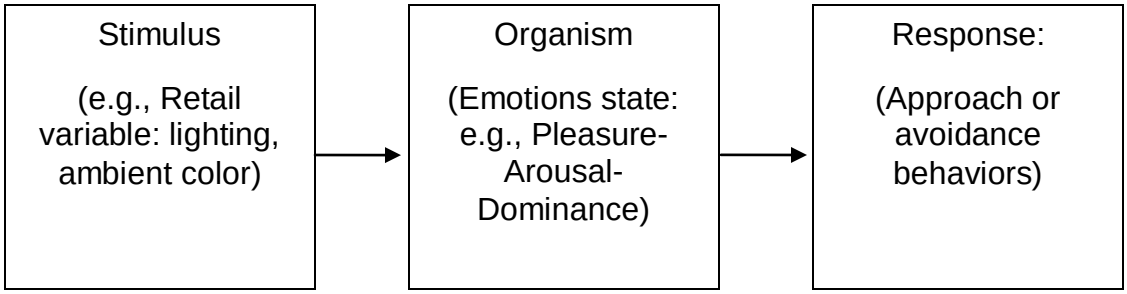

Figure 8. S-O-R model (Mehrabian & Russell, 1974)

The PAD model has been widely used and is considered an appropriate model to objectively gather consumer's emotions that one cannot otherwise view or ascertain. These three variables are:

- Pleasure: "the degree to which the person feels good, joyful, happy, or satisfied in the situation" (Donovan & Rossiter, 1982, p. 38).
- Arousal: "the degree to which a person feels excited, stimulated, alert, or active in the situation" (Donovan & Rossiter, 1982, p. 38).
- Dominance: "[a]n individual's feelings of dominance in a situation is based on the extent to which he feels unrestricted or free to act in a variety of ways" (Mehrabian, & Russell, 1974, p. 19).

Some researchers have focused on emotional states other than PAD, such as various types of pleasure, including sensory, affective and cognitive pleasure (Fiore, Yah, & Yoh, 2000), or emotional attachment to the store (i.e., store love; Koo & Kim, 2013). However, PAD (Bellizi & Hite, 1992) or the PA, without the D from PAD, is used extensively (Sherman et al., 1997).

Examples of dominance feelings, the third of the emotional states, include: privacy, control, and flexibility. It has been taken out of most retail research post-

1982 as a result of arguments put forth by Donovan and Rossiter (1982) in their research that showed the dominance factor to be a weak and with a low reliability coefficient. They also found the correlation between the approach-avoidance behaviors to be not significant. However, some researchers consider the level of control (dominance) consumers have over their shopping to be an important factor (Hui & Bateson, 1991; Im & Ha, 2011; Porat & Tractinsky 2012; Van Rompay, Galetzka, Pruyn, & Moreno-Garcia, 2008; Ward & Barnes, 2001; Yani-de-Soriano & Foxall, 2006). A review of the literature indicates that dominance may play a role in why consumers utilize a kiosk and how that use might affect their levels of satisfaction.

Application of S-O-R Model in the Current Study. As stated earlier, the three research goals are to understand:

1. Consumers' reactions to various kiosk features;
2. Consumers' emotional states (PAD) in regards to the kiosk; and
3. Consumers' level of satisfaction with the kiosk.

The S-O-R is an appropriate model to study the kiosk stimuli within the retail environments based on the emotional states that are present while shopping, and that in turn affect the user's satisfaction with the kiosk (Donovan & Rossiter, 1982). The framework of this model allows retail designers and retailers to understand what factors may affect a consumer's response behavior. Typically, this relationship is explored through a survey that includes images or a survey incorporates a past experience.

In the present study, the stimulus is the features of the kiosk used by the subject. The organism is the emotion states (PAD) of the consumer that resulted from the interaction with the kiosk. The response is the effect of the kiosk (stimulus) on the emotional state (organism) of the consumer that causes his or her level of satisfaction (response) with the kiosk (see Figure 9).

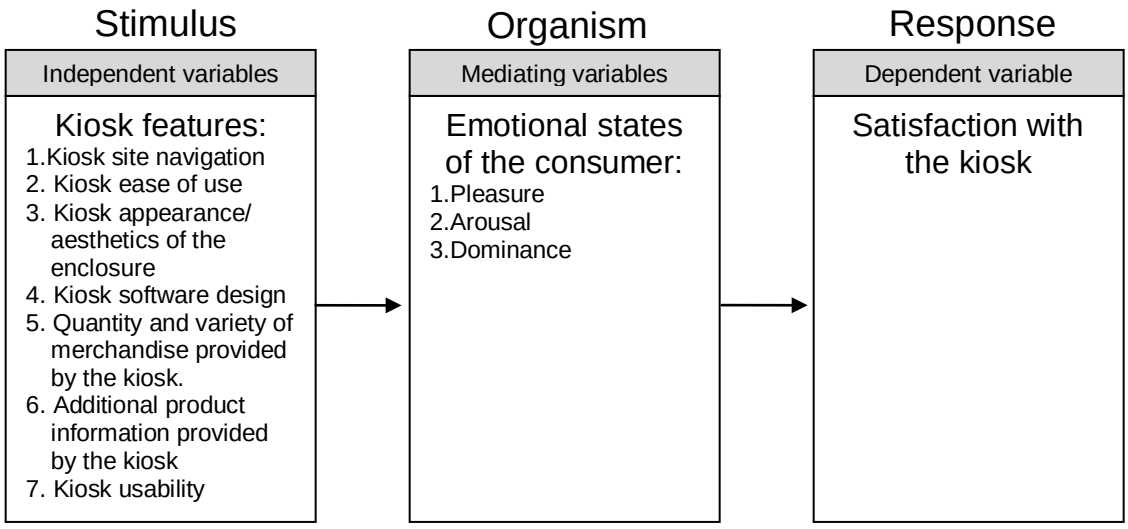

Figure 9. Application of study variables to the S-O-R model.

Limitations of the model. This model attempts to isolate a variable, whether by an isolated experiment or within an actual retailer. However, attempting to isolate an experience within a retail environment to a few stimuli is somewhat unrealistic. A retail environment is full of many stimuli, and one does not encounter each variable in isolation. Nonetheless, the retail community, marketing, design, and retail merchandising researchers use this model extensively.

Research Questions

An exploration of the S-O-R framework shows this framework to be an appropriate model for the present study. The following three research questions

were developed based on a review of the literature and to address the gaps in the research:

1: How do various kiosk features influence the consumer's emotional states (PAD)?

2: How do the consumer's emotional states influence his or her satisfaction with the kiosk?

3: Do the consumer's emotional states influence his or her satisfaction with the kiosk?

Hypotheses

The following hypotheses are proposed (see Figure 10) based on the three research questions and application of the S-O-R model:

H_1: The kiosk's features have a positive effect on the consumer's emotional state.

H_{1a}: The kiosk's navigation will have a positive effect on the consumer's emotional state.

H_{1b}: The kiosk's ease of use will have a positive effect on the consumer's emotional state.

H_{1c}: The kiosk's enclosure aesthetics will have a positive effect on the consumer's emotional state.

H_{1d}: The kiosk's software design will have a positive effect on the consumer's emotional state.

H_{1e}: The kiosk's product assortment will have a positive effect on the consumer's emotional state.

H_{1f}: The additional information provided by the kiosk will have a positive effect on the consumer's emotional state.

H_{1g}: The kiosk's usability will have a positive effect on the consumer's emotional state.

$H_{2:}$ The consumer's emotional state will positively affect his or her satisfaction with the self-service kiosk.

H_{2a}: The consumer's sense of pleasure will positively affect his or her satisfaction with the kiosk.

H_{2b}: The consumer's sense of arousal will positively affect his or her satisfaction with the kiosk.

H_{2c}: The consumer's sense of dominance will positively affect their satisfaction with the kiosk.

H_3: The kiosk's features will affect the consumer's level of satisfaction with the kiosk.

H_{3a}: The kiosk navigation will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3b}: The kiosk's ease of use will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3c}: The kiosk's enclosure aesthetics will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3d}: The kiosk's software design will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3e}: The kiosk's product assortment will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3f}: The additional information provided by the kiosk will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_{3g}: The kiosk's usability will have a positive effect on the consumer's level of satisfaction with the kiosk.

H_4: The consumer's emotional state will mediate the relationship between the kiosk features and the satisfaction with the kiosk.

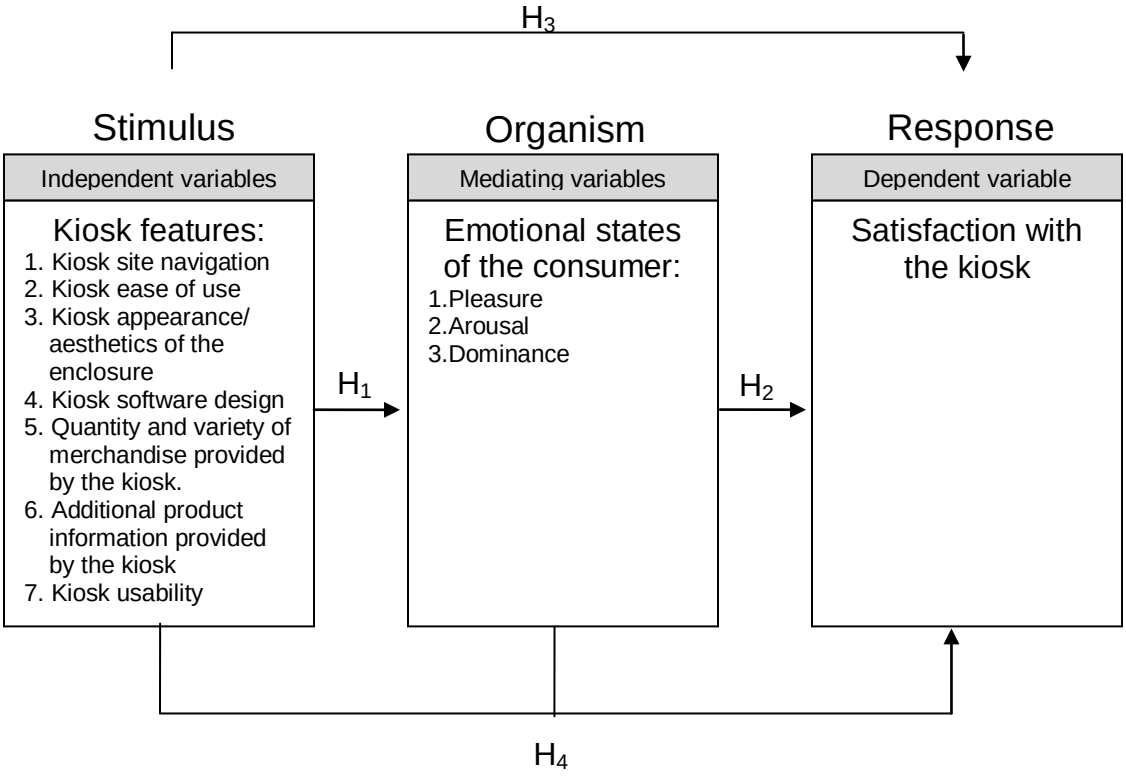

Figure 10. Relationship between the variables as hypothesized.

Summary

The literature review presented here illustrates some of the issues that relate to a consumer's use of a kiosk: the retail environment, both online and brick-and-mortar; SST research; technology anxiety; TR; and the S-O-R model. The review of literature and the knowledge gained from past research led to the research hypotheses. The hypotheses and the S-O-R model determined the research methods that are presented in Chapter 3.

Chapter 3: Methodology

The methods used for this study were based on the research goals, derived from the literature review, and application of the S-O-R model. This chapter discusses the methods used for data collection, which include the population sample, instrument design, and survey administration. Additionally, the data analysis plan are presented.

This study is an exploratory inquiry, intended primarily as a quantitative study with a minimal qualitative portion. The quantitative method of data collection was implemented via an online Google™ surveying instrument. Prior to gathering data, University of Minnesota's Institutional Review Board approval was sought and the study was determined to be exempt. The qualitative portion was an open-ended question asking subjects for additional comments regarding their experience using the kiosk. First a description of the pilot study will be presented, and then the actual study will be discussed.

Pilot Study

Sample. The sample for the pilot study was gathered via a convenience sample of 24 undergraduate interior design students at the University of Minnesota. This sample was chosen due to the proximity of the sample and convenience of surveying this population. Demographic information was not gathered via the survey; however, there were 23 females and 1 male student. The majority of the students appeared to be of traditional college age students (18–24).

Instrument testing. The pilot study questionnaire was administered via a paper copy of the survey to a sophomore interior design class after the course

period on May 1, 2013. Prior to the pilot survey distribution, the principal researcher read a recruitment script to the students requesting participation (see Appendix A). Students took no more than 15 minutes to review the instrument. The subjects piloted the survey instrument (see Appendix B): subjects were asked to make comments on the survey as they read each question and answer choice. Adjustments were made to the instrument due to subjects' experiences using the survey instrument.

Sampling Plan

The sample population for the main study was gathered from a convenience sample of members of the Junior League of Minneapolis (JLM) and University of Minnesota College of Design students. Subject sampling came from three rounds of data collection. Women make up the majority of the JLM and University of Minnesota College of Design students. This population sample was chosen because women are the majority customer at department stores in the United States. Women also shop most often for women's clothing at department stores (38.2%), with discount stores being a close second (30.3%), followed by specialty stores (17.9%) and the Internet (1%) (NRF, 2013a). The same survey found shoppers aged 18–24 shopped for women's clothing at discount stores (24.7%) more often than at department stores (18.4%), and specialty retail stores (21.1%) (see Table 4). As most college-age women are between 18 and 24, selecting students from the College of Design was deemed appropriate. Additionally, the College of Design students solicited consisted primarily of Retail Merchandise students, who tend to be frequent shoppers. This fact increased the

chances that the recruited population had already used a kiosk. Kohl's is one of the top shopped store by women as a whole and by adults age 18–24, and thus adults 18–24 years of age were solicited for the study.

Table 4
Store Type Shopped Most Often for Women's Clothing

Store Type	Age: 18-24 *n* = 721	Women *n* = 2701
Department Store	18.4%	38.2%
Discount Store	24.7%	30.3%
Specialty – Apparel	21.1%	17.9%
Catalog	0.0%	2.0%
Internet	0.6%	1.0%
Membership Warehouse	0.0%	0.0%
Other	8.0%	5.6%
No Preference	27.2%	5.0%

Source. NRF. (2013b). Store type shopped most often for women's clothing's (Sept, 2013). Consumer Insights. Retrieved from http://research.nrffoundation.com

Table 5
Store Shopped Most Often: Women's Clothing

Store	Age: 18–24 *n* = 721	Women *n* = 270
Walmart	11.70%	14.50%
Kohl's	6.80%	15.30%
Macy's	4.40%	8.50%
JC Penney	5.50%	7.80%
Target	3.10%	3.40%
Ross	4.60%	3.10%
Sears	0.40%	1.60%
Kmart	0.60%	1.70%
Marshalls	1.40%	1.80%
T.J.Maxx	1.50%	1.70%
Old Navy	1.20%	1.40%
Goodwill	1.00%	1.70%
Forever 21	4.30%	1.20%
Belk	0.40%	1.10%
Thrift stores	0.30%	1.30%
Bealls	0.00%	0.90%
Dillards	0.00%	0.80%

Table 5 continued

Store	Age: 18–24 n = 721	Women n = 270

Dillards	0.00%	0.80%
Lane Bryant	0.30%	1.00%
Nordstrom	0.60%	0.80%
Woman Within	0.00%	1.20%
Burlington Coat Factory	0.70%	0.80%
Gap	0.60%	0.70%
Victoria's Secret	1.00%	0.40%
Catos	0.30%	0.80%
American Eagle	1.40%	0.70%
Dressbarn	0.30%	0.60%
Maurices	1.00%	0.70%
Amazon	0.40%	0.30%
Other	19.30%	19.30%
No Preference	27.20%	5.00%

Source: NRF. (2013a). Store shopped most often: women's clothing's (Sept-2013). Consumer Insights. Retrieved from http://research.nrffoundation.com

Sample. Data collection for the main study was completed in three rounds due to limited participation in the initial rounds data collection. The first round was composed of JLM members, for which only 1 person completed the survey. The second round included survey instructional changes and was composed of JLM members; six subjects completed the survey. The third round included University of Minnesota students, first Retail Merchandising students and then later Interior Design students. Seventy subjects participated in the third round. A description of each data collection round and the changes in survey is discussed within the survey administration section. A description of each sample group follows.

The Junior League of Minneapolis (JLM) is a nonprofit volunteer and training organization composed of more than 850 female members (Junior League of Minneapolis, 2012). Approximately 800 JLM members receive their weekly membership e-mail newsletter. Solicitation for participation in the survey was posted in the newsletter. Additionally, a solicitation was posted to the JLM Facebook page, which has 650 followers. The JLM was selected due to its

makeup of young professional women with a moderate to high income. It was assumed the group was a frequent shopper group and aligned with the target market of Herberger's and REI.

-The student population was of composed of 289 Retail Merchandising students and 108 Interior Design students. The total population size of these two groups was 397. This second population consisting primarily of college-age women were used as the sample population due to their current and future purchasing power as well as interest in fashion. Convenience and the principal researcher's membership in the JLM and proximity to the student population were main factors in population sample selection.

Instrument

This section reviews the research instrument as well as the variables and their measurement. The data collection instrument was an online Google™ survey consisting of 49 questions (see Appendix F). Answering all questions was required to progress to the subsequent pages of the survey and to submit the survey. The survey included three prequalification questions: I am 18 years of age or older, I consent to participation in the study, and I have used a self-service kiosk within the last 6 months. The survey took approximately 10 minutes to complete. The desired number of useable surveys is 140, as each 20 observations per independent variables is optimal (Hair, Anderson, Tatham, & Black, 1995). This was also a goal due to the higher level of significance and reliability given to a sample size of that quantity; a minimum required is 35 (5 per

independent variable) for analysis (Hair, Anderson, Tatham, & Black, 1995). A total of 84 surveys were completed during data collection.

The variables and their measurement will be presented next. To increase validity multiple questions were included for each variable (kiosk features, pleasure, arousal, dominance, satisfaction with kiosk).

Variable Measurement

Independent variables and their measurement. The seven kiosk features are the independent variables in this study: site navigation, ease of use, aesthetics of the kiosk enclosure, software design, product assortment, additional information via the kiosk, and usability. These categories are based on the variables found in the literature review (see Chapter 2). The variables, except usability, were typically measured by four questions: the [variable] is responsive or approachable, the [variable] is useful, the [variable] is engaging, and the [variable] is intuitive (see Table 6 for complete listing). Usability was measured by three questions: it was easy to use the kiosk, one can find information easily with the kiosk, and it was convenient using the kiosk (Porat, & Tractinsky, 2012). Each question was measured based on a 7-point Likert scale, from 1 = strongly disagree to 7 = strongly agree.

Mediating variables and their measurement. The mediating variables are the level of pleasure, arousal, and dominance (control; PAD) that the kiosk provides. The PAD questions originated from Mehrabian & Russell's (1974) book *Approach to Environmental Psychology* and later adapted by Im and Ha (2011) and Porat and Tractinsky (2012); these were used as a basis for this study.

Pleasure was measured based on a 7-point scale for following items: unhappy/happy, disappointed/satisfied, and annoyed/pleased. The arousal variable was measured based on a 7-point scale for the following items: calm/excited, settled/restless, unaroused/aroused, and relaxed/stimulated. Dominance was measured on a 7-point scale for the following: helpless/in-control, submissive/dominant, passive/active, and guided/autonomous.

Dependent variables and their measurement*:* The dependent variable is the consumers' satisfaction with the kiosk. This was measured by five questions: I enjoyed using the kiosk, I was satisfied with my kiosk experience, I would recommend the kiosk to others, the kiosk exceeded my expectations, and given a choice I would NOT use the kiosk again (reverse coded; Eroglu, Machleit, & Davis, 2003). Each question was measured based on a 7-point Likert scale from 1 = strongly disagree to 7 = strongly disagree. See Tables 6 and 7 for a listing of questions in their corresponding category. The complete questionnaire is located in Appendix F.

In addition, subjects were asked to write any additional comment they had on their experience using the kiosk. It was hoped that responses to this question may uncover further issues consumers had with their kiosk use and help explain the final results.

Table 6

Feature Constructs and Factoring Plan

Variable/Construct	Factor	Survey Question
NAV: Kiosk site navigation		
	NAV1	The kiosk site navigation is responsive to my inputs
	NAV2	The kiosk site navigation is useful
	NAV3	The kiosk site navigation is engaging
	NAV4	The kiosk site navigation is user-friendly
USE: Kiosk ease of use of the kiosk		
	USE1	The kiosk is responsive
	USE2	The kiosk is useful
	USE3	The kiosk is engaging
	USE4	The kiosk is intuitive
EXT: Kiosk appearance/aesthetics of the enclosure		
	EXT1	The kiosk design is approachable
	EXT2	The kiosk design is useful
	EXT3	The kiosk design is engaging
	EXT4	The kiosk design is understandable
DES: Kiosk software design		
	DES1	The kiosk software design is approachable
	DES2	The kiosk software design is useful
	DES3	The kiosk software design is engaging
	DES4	The kiosk software design is intuitive
QUAN: Quantity and variety of merchandise provided by the kiosk		
	QUAN1	The merchandise available via the kiosk is useful
	QUAN2	The kiosk product assortment is what I expected
PINFO: The kiosk provided additional product information		
	PINFO1	Additional product information provided by the kiosk is useful
	PINFO2	Additional product information provided by the kiosk is engaging
	PINFO3	Additional product information provided by the kiosk is intuitive
USAB: Kiosk usability		
	USAB1	It was easy to use the kiosk
	USAB2	One can find information easily with the kiosk
	USAB3	It was convenient using the kiosk

Table 7

Dependent Variable Constructs and the Factoring Plan

Variable/Construct	Factor	Survey Question
P: Pleasure		
	P1	Unhappy-Happy
	P2	Annoyed-Pleased
	P3	Disappointed –Satisfied
A: Arousal		
	A1	Relaxed-Stimulated
	A2	Calm-Excited
	A3	Settled-Restless
	A4	Unaroused-Aroused
D: Dominance		
	D1	Passive-Active
	D2	Guided-Autonomous
	D3	Submissive-Dominant
	D4	Helpless-In control
SAT: Satisfaction		
	SAT1	I was satisfied with my kiosk experience
	SAT2	I enjoyed using the kiosk
	SAT3	I would recommend the kiosk to others
	SAT4	The kiosk exceeded my expectations
	SAT5	Given a choice I would NOT use the kiosk again (reverse coded)

Demographics. Demographic data was gathered via four questions: gender (male, female, prefer not to answer), age (18–28; 29–39; 40–50; 51–60; 61+; prefer not to answer), personal annual income (less than 20,000; 20,000–39,999; 40,000–59,999; 60,000–79,999; 80,000–99,9999; 100,000+; prefer not to answer), and ethnicity (please select all that apply: American Indian/Alaskan; Black/African American/African; Latino/Hispanic; Native American/Hawaiian/Other Pacific Islander; Asian; White/Caucasian, Prefer not to answer; other with space to write in).

Shopping behavior. Shopping behavior data was gathered from four questions: on average, per season the amount of money I spend on clothing for

myself ($0–$49; $50–$99; $100–$149; $150–$249; $250–$499; $500+; prefer not to answer); where do you typically shop for clothing, check all they apply (In-store big box; in-store department store; in-store specialty; catalog/phone; online); on average, how many times do you shop for clothing per season in a physical store (0–4; 5–8; 9–12; 13+); and on average many times do you shop for clothing per season online (0–4; 5–8; 9–12; 13+).

Survey Administration

This section provides information on the data collection procedure and process: the main study recruitment process, instructions to the subjects, and the incentives. The main study was conducted in three rounds; each is discussed below.

Round 1. For round 1, potential subjects were recruited via two methods: a short entry in the JLM e-mail newsletter on May 6, 2013, and May 13, 2013, and a posting to the JLM Facebook page on May 7, 2013, and May 13, 2013 (see Appendix C). Data collection was gathered via an online Google™ survey. The survey was available from May 7, 2013, until May 28, 2013. Subjects were instructed to go to their local Kohl's, REI, or Herberger's store and explore the self-service kiosk. They were also asked to scan an item and discover what the kiosk can do for them. The subjects were then asked to fill out the survey within 24 hours of their trip to Kohl's, REI, or Herberger's. Two dollars was donated to the Junior League of Minneapolis for each completed survey. An additional incentive of a drawing for a $50 gift card was held for those who participated.

Fifty dollars was chosen as it would help gain participation and was also not a high quantity as to bias respondents.

The requirement of survey completion within 24 hours of kiosk use was implemented for better recall. However, due to the lack of participation, changes in the instruction were made. Asking subjects to make a specific trip to test a kiosk was too much to ask for, as the incentive was too small.

Round 2. The second round of data collection was conducted in the same manner as round one, via a Google survey™. The change in this round regarded the instructions to the subjects. Subjects were no longer asked to specifically make a trip to a store to test a kiosk; rather, they were asked to recall a recent use (within 6 months) of a retail kiosk. Recruitment for this round was conducted via a Facebook posting on the JLM page on May 30, 2013, and a listing within the JLM e-mail newsletter sent on June 3, 2013. The survey was available from May 28, 2013, until June 15, 2013.

Round 3. The third round of data collection used the same data collection tool as the first and second rounds. The instructions to the subjects were the same as round 2. The recruited participants in this round of data collection were University of Minnesota College of Design students. First, Retail Merchandising majors were solicited via an email (see Appendix D) from their instructor on September 9, 2013. Two course instructors offered extra credit for the completion of the survey to their students as incentive. Interior design students were later solicited via an email (see Appendix D) from their instructor the week of September 23, 2013. The survey was available from September 9 until October

9, 2013. A poster was also created (see Appendix E) and posted in classrooms and the halls on the fourth floor of McNeal Hall on the University of Minnesota campus.

Data Analysis

The data was first factored (mean of scale) into the corresponding categories: site navigation, ease of use, kiosk appearance/aesthetics of enclosure, software design, quantity and variety of merchandise provided by kiosk, additional information via the kiosk, and usability; pleasure, arousal, dominance (PAD); and overall kiosk satisfaction. Demographics and shopping behavior was also examined to identify correlations between them.

Prior to analysis of the data, factor reliability tests were run for all of the factors to ensure the factoring was reliable, a goal of $\alpha = .7$ was set (George & Paul, 1999). Questions could be removed from a factor if the internal reliability is improved.

The data was then analyzed in three ways. Descriptive statistics of the raw data was used to describe the subjects and their shopping habits. Second, multiple regression analysis was used to test Hypotheses 1, 2, and 3. The multiple regression tests determined the predictive values of the independent variables on each dependent variable in each hypothesis. A significance level of .05 or greater was applied. Third, the Sobel mediation test was performed to determine the mediating factor between the kiosk features and consumer satisfaction with the kiosk (Hypothesis 4; Sobel, 1986).

Chapter 4: Results

This chapter reviews the results of the study and includes (1) description of the sample, (2) description of the data, (3) internal reliability of the factors, (4) analyses of the four hypotheses, (5) a review of the qualitative data, and a (6) summary.

Description of the Sample

Eighty-four respondents participated in the study. All questions were answered by the subjects; any lower *n* was the result of a subject selecting the "I prefer not to respond" box within the survey. All 84 responses were usable for data analysis.

Table 8 shows the demographic characteristics of the sample. All characteristics received 84 responses, with the exception of annual income (*n* = 68) and ethnicity (*n* = 77). The majority of the subjects are female at 91.7%, with men making up 8.3%.The majority (89.3%) of participants are from the 18–28 age group; 7.1% are from the 29–38 age group, and 3.6% are from the 40-–50 age group. The preponderance, 83.8%, of the respondents reported an annual income of less than $20,000 per year. The reported income for the remainder of the respondents breaks down as follows: $20,000-$39,999, 7.3%; $40,000-$59,999, 1.5%; $60,000-$79,999, 1.5%; $80,000-$79,999, 1.5%; $80,000-$99,999, 1.5%; and $100,000-plus, 4.4%. Ethnicity of subjects was primarily Caucasian at 75.3%; Asian subjects make up 13%, 2.6% are African American, 1.3% are Hispanic, and 7.8% are of multiple ethnicities.

Table 8

Study Sample Characteristics

Characteristic	Frequency	Percentage
Gender	*n* = 84	
Female	77	91.7%
Male	7	8.3%
Age	*n* =84	
18-28	75	89.3%
29-39	6	7.1%
40-50	3	3.6%
Status	*n* = 84	
JLM	7	10.8%
ID	4	4.8%
RM	73	86.9%
Annual income	*n* = 68	
<$20,000	57	83.8%
$20,000-–$39,999	5	7.3%
$40,000–$59,999	1	1.5%
$60,000–$79,999	1	1.5%
$80,000–$99,999	1	1.5%
$100,000+	3	4.4%
Ethnicity	*n* = 77	
White/Caucasian	58	75.3%
Asian	10	13%
Black/ African American	2	2.6%
Latino/Hispanic	1	1.3%
Multiple ethnicities	6	7.8%

Note. ID = interior design student; RM = retail merchandising student; JLM = Junior League of Minneapolis.

Descriptive Data

This section reviews the shopping behavior data of the subjects, including shopping trips per season, money spent on clothes per season, and where they shop. The shopping behavior questions inquired about the subjects' shopping behavior for the typical season; the seasons were defined as fall, winter, spring, and summer.

Of the three stores visited, Kohl’s visits made up the majority, with 61 visits (72.6%); 17 subjects visited Herberger’s (20.2%), and 6 subjected visited REI (7.1%). It is not surprising that the majority went to Kohl’s as Kohl's has

many more stores in the United States compared with the other retailers in the study.

The shopping information gathered from the subjects showed most subjects responded with moderate spending on apparel per season (see Table 9). From least to most spent, results were as follows: 3.66% spent under $49, 15.85% spent between $50 and $99, 8.54% spent between $100 and $149, 26.83% spent between $150 and $249, 31.74% spent between $250 and $499, and 13.41% spent more than $500.

Table 9
Subjects Dollars Spent per Season

Money spent per season	Frequency	Percentage
$0—49	3	3.66%
$50–99	13	15.85%
$100–149	7	8.54%
$150–249	22	26.83%
$250–499	26	31.71%
$500+	11	13.41%

Note. *n* = 82.

Subjects were asked how many times they shopped online and at brick-and-mortar stores per season. Online shopping trip results were as follows (see Table 10): 56% shopped online 0 to 4 times a season, 25% shopped 4 to 8 times a season, 6% shopped 9 to 12 times per season, and13% shopped 13 times a season or more. Brick-and-mortar shopping responses were slightly higher in comparison (see Table 11): 88.15% shopped 0 to 4 times, 38.1% shopped 4 to 8 times, 15.5% shopped 9 to 12 times, and 8.3% shopped more than 13 times a season.

Table 10

Online Shopping Trips per Season

Shopping trips	Frequency	Percentage
0-4	47	56%
4-8	21	25%
9-12	5	6%
13+	11	13%

Note. *n* = 84.

Table 11

Subjects Shopping Trips to Brick-and-Mortar Stores per Season

Shopping trips	Frequency	Percentage
0-4	32	88.1%
4-8	32	38.1%
9-12	13	15.5%
13+	7	8.3%

Note. *n* = 84.

The subjects were asked where they typically shop for apparel and could select all options that applied (see Table 12). The majority (70.24%) shop at department stores (e.g., Herberger's, Kohl's, JC Penny), 47.61% typically shop at big box stores such as Target or Wal-Mart, 48.81% shop at specialty shops such as REI or Footlocker, 2.38% shop via catalog or phone order, and 55.96% shop online. Three subjects selected the "other" category, which included write-ins: one indicated phone application (ap) and two indicated second-hand/thrift store.

Table 12

Type of Store where the Subjects Typically Shop for Apparel

Store type	Frequency	Percentage of subjects
In-store big box	40	47.61%
In-store department store	59	70.24%
In-store specialty	41	48.81%
Catalog	2	2.38%
Online	47	55.96%
Other	3	3.57%

Note. *n* = 84. Subjects could choose more than one store type.

Internal Reliability of Factors

The first step in the analysis was to check the validity of each construct (see Table 13). Cronbach alpha of 0.7 was considered acceptable, but >0.8 was desired as it is rated as “good” (George & Paul, 1999). Three constructs were altered: satisfaction, arousal, and dominance. One satisfaction construct factor and an arousal factor were removed in order to raise the Cronbach alpha for the variables. The satisfaction factor (SAT5) was removed to improve the Cronbach alpha from 0.802 to 0.901, making the constructs factoring excellent ($\alpha > 0.9$) as opposed to good ($\alpha > 0.8$; George & Paul, 1999). The arousal factor (A3) that was removed improved the Cronbach alpha from 0.616 to 0.652. It was decided to delete a factor, even with the minor improvement, as $\alpha > 0.6$ is a questionable factoring. Caution was taken when reviewing the data for the arousal variable. The dominance factor was extremely low at $\alpha = 0.121$, and all but one factor was kept (D3), thus removing the factoring data. The remaining constructs were all above the acceptable rating of $\alpha > 0.7$ (George & Paul, 1999). Variables at the excellent rating of $\alpha > 0.9$ include satisfaction, software design, and usability. The navigation, ease of use, kiosk shell design, and product information constructs were good at a rating of $\alpha > 0.8$. The remaining constructs were a $\alpha > 0.7$, except for arousal. The correlation of means was also conducted to determine variability of the factors (see Table 13).

Table 13

Measurement and Reliability of Constructs.

Construct	Correlation of means	α
NAV: Navigation		**0.868**
NAV1	0.830	
NAV2	0.890	
NAV3	0.799	
NAV4	0.876	
USE: Ease of use		**0.884**
USE1	0.863	
USE2	0.843	
USE3	0.904	
USE4	0.854	
EXT: Design of the kiosk shell		**0.874**
EXT1	0.861	
EXT2	0.892	
EXT3	0.828	
EXT4	0.830	
DES: Software design		**0.907**
DES1	0.998	
DES2	0.848	
DES3	0.898	
DES4	0.893	
QUAN: Quantity of information		**0.706**
QUAN1	0.865	
QUAN2	0.894	
PINFO: Product information		**0.878**
PINFO1	0.896	
PINFO2	0.906	
PINFO3	0.892	

Table 13 continued

Construct	Correlation of means	α
USAB: Usability		.924

USAB1	0.936	
USAB2	0.919	
USAB3	0.943	
P: Pleasure		0.775
P1	0.814	
P2	0.854	
P3	0.824	
A: Arousal		0.652
A1	0.776	
A2	0.823	
A3	Omitted	
A4	0.706	
D: Dominance		n/a
D1	Omitted	
D2	Omitted	
D3	n/a	
D4	Omitted	
SAT: Satisfaction		.901
SAT1	0.879	
SAT2	0.907	
SAT3	0.918	
SAT4	0.81	
SAT5	Omitted	

Note. α =Cronbach's alpha.
Significance at $p < 0.001$.

Correlations between the variables were reviewed prior to hypothesis testing. All correlations were below 0.9, indicating there are no multicollinearity issues with the model (Kline, 2000). See Table 14 for correlations, means of the variables, standard deviation (SD) of each variable, and Cronbach's alpha.

Table 14

Descriptive Statistics, Reliability, and Correlation Summary of Constructs

Variables	Mean	SD	α	NAV	USE	EXT	DES	QUAN	PINFO	USAB	P	A	D
NAV	5.261	0.96	0.868										
USE	5.14	0.992	0.884	0.814**									
EXT	5.363	0.949	0.874	0.777**	0.786**								
DES	5.119	0.985	0.907	0.767**	0.823**	0.814**							
QUAN	5.393	0.976	0.706	0.646**	0.608**	0.636**							
PINFO	4.948	1.137	0.878	0.655**	0.706**	0.759**	0.741**	0.656**					
USAB	5.281	1.184	0.924	0.789**	0.702**	0.669**	0.667**	0.671**	0.656**				
P	4.861	1.044	0.775	0.412**	0.376**	0.251*	0.345**	0.224*	0.353**	0.488**			
A	3.667	0.944	0.652	-0.171	-0.076	-0.065	-0.065	-0.183	-0.064	-0.206	-0.208		
D	5.429	1.144	n/a	0.363**	0.207	0.171	0.270*	0.187	0.153	0.275*	0.612**	-0.353**	
SAT	4.869	1.128	0.901	0.784**	0.774**	0.649**	0.709**	0.570**	0.651**	0.774**	0.638**	-0.178	0.413**

Note. NAV = Navigation, USE = Ease of use, EXT = Kiosk exterior design, DES = Software design, QUAN = Quantity and variety of merchandise, PINFO = Product information, USAB = Usability, P = Pleasure, A = Arousal, D = Dominance, SAT = Satisfaction, α = Cronbach's alpha.

* $p < 0.01$, ** $p < 0.05$

Analysis of Hypotheses

This section presents the analysis for each hypothesis, describing the results of multiple regression analysis for hypothesis 1 to 3 and of a Sobel test for hypothesis 4.

Hypothesis 1. Hypothesis 1 predicts a relationship between the seven kiosk features and the emotional states of the subject: pleasure, arousal, and dominance. Multiple regression was run three times with the seven independent variables of kiosks features as the constant independet variables and the dependent variable of either pleasure, arousal, or dominace. The kiosks' features' effect on pleasure was partially supported; 31% of the variability with the feelings of pleasure is explained by the seven kiosk features ($F = 4.874$, $R^2 = 0.310$, $p < 0.000$; see Table 15). Only three variables were found to have effects on the emotions. The kiosk enclosure design was shown to have a slight positive impact on pleasure (B = 0.117, $p = 0.05$). Usability was shown to have a positive effect on pleasure (β = 0.474, $p = 0.006$). Navigation was shown to have a positive effect on dominance (β = 0.607, $p = 0.008$). All of the arousal results were insignificant ($F = 0.942$, $R^2 = 0.084$, $p = 0.493$; see Table 16). The features' effect on dominance was partially supported ($F = 2.587$, $R^2 = 0.192$, $p = 0.019$; see Table 17).

Hypothesis 2. Hypothesis 2 predicts that the three emotional states, pleasure, arousal, and dominance will have a positive effect on satisfaction. Multiple regression was run once with the three independent variables of pleasure, arousal and dominance and one dependent variable of satisfaction.

The hypothesis was partially accepted (F=18.486, R^2 =.409, p < 0.000). Pleasure was shown to have an effect on satisfaction (β=.617, p=.000; see Table 18).

Table 15

Features' Effect on Dependent Variable Pleasure

Independent variable	B	β	*p*- value	Supported?
NAV	3.148	0.198	0.338	No
USE	0.215	0.111	0.578	No
EXT	0.117	-0.390	0.050	Yes
DES	-0.428	0.064	0.746	No
QUAL	0.068	-0.234	0.103	No
PINFO	-0.216	0.235	0.162	No
USAB	0.418	0.474	0.006	Yes

Note. NAV = Navigation, USE = Ease of use, EXT = Kiosk exterior design, DES = Software design, QUAN = Quantity and variety of merchandise, PINFO = Product information, USAB = Usability,
B = Unstandardized coefficient, β = standardized coefficient, n = 84, F = 0.874, R^2 = 0.310, p < 0.000

Table 16

Features' Effect on Dependent Variable Arousal

Independent variable	B	β	*p*- value	Supported?
NAV	-0.201	-0.205	0.391	No
USE	0.128	0.134	0.561	No
EXT	0.121	0.121	0.592	No
DES	0.044	0.045	0.843	No
QUAL	-0.152	-0.157	0.342	No
PINFO	0.070	0.084	0.665	No
USAB	-0.159	-0.200	0.309	No

Note. NAV = Navigation, USE = Ease of use, EXT = Kiosk exterior design, DES = Software design, QUAN = Quantity and variety of merchandise, PINFO = Product information, USAB = Usability
B = Unstandardized coeffic--ient, β = standardized coefficient, n = 84, F = 0.924, R^2 = 0.078, p = 0.493

Table 17

Features' Effect on Dependent Variable Dominance

Independent variable	B	β	*p*- value	Supported?
NAV	0.723	0.607	0.008	Yes
USE	-0.319	-0.277	0.203	No
EXT	-0.365	-0.303	0.155	No
DES	0.358	0.308	0.155	No
QUAL	0.001	0.001	0.995	No
PINFO	-0.068	-0.068	0.707	No
USAB	0.030	0.031	0.865	No

Note. NAV = Navigation, USE = Ease of use, EXT = Kiosk exterior design, DES = Software design, QUAN = Quantity and variety of merchandise, PINFO = Product information, USAB = Usability,
B = Unstandardized coefficient, β = standardized coefficient, $F = 2.587$, $R^2 = 0.192$, $p = 0.019$

Table 18

Effect of PAD on Dependent Variable Satisfaction

Independent variable	B	β	*p*- value	Supported?
Pleasure	0.667	0.617	0.000	Yes
Arousal	-0.051	-0.043	0.642	No
Dominance	0.020	0.020	0.860	No

Note. P, Pleasure, A = Arousal, D = Dominance. .
B = Unstandardized coefficient, β = standardized coefficient, $F=18.486$, $R^2 =.409$, $p < 0.000$

Hypothesis 3. Hypothesis 3 predicts that the kiosk features will affect the consumer's level of satisfaction with the kiosk. Multiple regression was run once with the seven kioks features as the independent variable, and one dependent variable, satisfaction. The hypothesis was supported with three features: navigation (β = 0.273, $p = 0.038$), ease of use (β = 0.320, $p = 0.012$), and usability (β = 0.352, $p = 0.001$): $F = 29.173$, $R^2 = 0.729$, $p < 0.000$. Thus, the hypothesis was partially supported (see Table 19).

Table 19
Features' Effect on Dependent Variable Satisfaction

Independent variable	B	β	*p*- value	Supported?
NAV	0.321	0.273	0.037	Yes
USE	0.364	0.320	0.012	Yes
EXT	-0.214	-0.180	0.146	No
DES	0.103	0.090	0.470	No
QUAL	-0.064	-0.055	0.538	No
PINFO	0.121	0.122	0.247	No
USAB	0.335	0.352	0.001	Yes

Note. NAV = Navigation, USE = Ease of use, EXT = Kiosk exterior design, DES = Software design, QUAN = Quantity and variety of merchandise, PINFO = Product information, USAB = Usability,
B = Un standardized coefficient, β = standardized coefficient, $F = 29.173$, $R^2 = .729$, $p < .000$

Hypothesis 4. Hypothesis 4 states that the consumer's emotional state will mediate the relationship between the kiosk features and satisfaction with the kiosk. Due to the results from the first three hypotheses, only one Sobel test was run. The validation steps state that each variable must be significant in the earlier multiple regression tests; each are exihibited in Table 20. The Sobel test looked at the mediating factor of pleasure on usability's effect on satisfaction. Results indicate that pleasure does mediate the relationship between usability and satisfaction ($T = 2.517$, $p = 0.011$), meaning that hypothesis 4 was partially supported.

Table 20
Results of the Casual Steps and Sobel's Test

	Independent variable	Dependent variable	B	β	*p*-value
Step 1 Usability → Pleasure	Usability	Pleasure	0.418	0.474	0.006
Step 2 Pleasure → Satisfaction	Pleasure	Satisfaction	0.667	0.617	0.000
Step 3 Usability → Satisfaction	Usability	Satisfaction	0.335	0.352	0.001
Sobel's tests for mediation $T = 2.517$, $p = 0.011$					

Note. B: Unstandardized coefficient, β: standardized coefficient.

Qualitative Data

Subjects had the opportunity to write any additional comments regarding their experience with the kiosk, positive and negative. Seventy-two subjects did so. The majority mentioned some type of a positive experience. Results were coded with common themes. Twenty-four subjects mentioned a positive experience. Nine noted the kiosk was easy to use or mentioned the convenience of using the kiosk. Two subjects liked the ability to locate information without the assistance of staff. Nine subjects mentioned that they could find merchandise that was out of stock or find additional colors or sizes. Two noted that they liked the free shipping offered by the kiosk.

Responses included negative factors as well. Five subjects had issues with the functionality of the kiosk, such as the kiosk not scanning the UPC properly. Four subjects complained that the kiosk loaded information slowly. Four mentioned the kiosk was not engaging, and one went further to state they could not easily find the kiosk. Three reached out to staff assistance for help with using the kiosk. Twelve subjects mentioned that they prefer to not use a kiosk or

other technology while they shop but rather shop in the store or have an employee assist them with queries. In total, five subjects noted the kiosks needed tweaks or alteration to create a better experience.

Summary

Findings from the data showed that each of the study's hypotheses was partially supported. The next chapter discusses the results in depth. The comments provided by the subjects were brief, and many subjects reiterated what was in the survey questions.

Chapter 5: Summary and Conclusion

The purpose of this research study was to gather insights into consumers' satisfaction with self-service kiosks (SSKs). To achieve this objective, an exploratory study was conducted to understand (1) consumers' reactions to various kiosk features, (2) their emotional states (pleasure, arousal, and dominance) in regards to the kiosk, and (3) their level of satisfaction with the kiosk. This chapter discusses the results and implications in relation to the literature; the limitations of the study; and suggestions for future research.

Discussion of Findings

The current study identified seven features that were thought to affect consumer satisfaction with the kiosk: software design, kiosk enclosure design, product information, quantity of merchandise, usability, navigation, and ease of use. The usability variable that is typically studied incorporates ease of use and navigation of the software. The objective for including the additional subcategories was to zero in on what more specifically may affect satisfaction, pleasure, arousal, and dominance. The results listed in the hypotheses set out in chapter 2 are discussed in this section.

Prior to the present study, and based on past results, this researcher assumed that usability and its two sub variables—navigation and ease of use—would be a predictor of user pleasure and satisfaction and that dominance would play a role in the results, as a self-service technology (SST) requires users to control the situation. Some of the results were as the main researcher expected. If a larger sample is used in future studies, more variables may be found statistically significant.

Hypothesis 1 predicted the features would have an effect on a consumer's emotions. Pleasure, arousal, and dominance were tested. Pleasure and dominance were positively affected by various features. Although it was thought that arousal would be effected by the software design and kiosk enclosure design, that was not the case. The arousal variable in general is likely not well understood by participants, and the wording in the survey may need to be adjusted in future research. It was surprising that pleasure was not affected by more of the kiosk features. The kiosk features accounted for 31% of variability of user pleasure. The kiosk enclosure design had a small positive effect on pleasure (B = 0.117). Usability was shown to have a positive effect on pleasure (β = 0.474). This study's results confirmed Porat & Tractinsky's (2012) results on usability and pleasure.

This researcher also thought that navigation would have an effect on dominance, as it was in Porat & Tractinsky's (2012) study and because user control is affected by the user's ability to move throughout the software. The test results confirm this hypothesis and also confirm Porat and Tractinsky's results (β = 0.607, R^2=.192). However, only 19.2% of the variability of dominance was caused by the seven kiosk features. Navigation in other studies was categorized under ease of use (Van der Heijden & Verhagen, 2004) or usability (Porat & Tractinsky, 2012). Perhaps the users felt they had no control over ease of the kiosk use and the convenience of the kiosk as they could not control the software's capabilities.

Hypothesis 2 predicted the consumers' emotions (pleasure-arousal-dominance, PAD) would affect their satisfaction. This hypothesis was partially accepted, with pleasure positively affecting satisfaction. Prior studies in computer/online shopping did not include the same variables as this study, so no past computer studies support these results. However, studies with brick-and-mortar store environmental cues such as music and aroma show pleasure positively affecting satisfaction (Walsh et al., 2011).

Hypothesis 3 predicted the features would have an effect on users' satisfaction with the kiosk. The hypothesis was partially supported with the following features: usability, navigation, and ease of use. All of the seven kiosk features make up 72.9% of the variability with user satisfaction. As stated earlier, usability typically includes navigation and ease of use. The study results verify the results Szymanski & Hise (2000) gathered in their qualitative study with the navigation variable. The results on the ease of use effect on satisfaction confirm the Szymanski and Hise (2000) results with their study variable of convenience.

Hypothesis 4 states the consumer's emotional state will mediate the relationship between the kiosk features and the satisfaction with the kiosk. This hypothesis was partially supported with pleasure being a moderator of usability to satisfaction. These results support the Stimulus-Organism-Response (S-O-R) framework.

Implications

Theoretical implications. This study has implications for retail merchandising, technology, and consumer behavior researchers. This research appears to be a first of its kind on retail SSKs and contributes to the growing body of literature on retail technology. The results support the S-O-R model (Mehrabian & Russell, 1974), showing a connection with various kiosk features (stimulus) and a consumers emotional state and with their satisfaction (response). The mediation value of the consumer emotional state was also supported with this research, with the pleasure variable.

Practical implications. Overall, the implications of this study indicate that usability is a main factor in consumer satisfaction both indirectly and directly. This confirms the commonly accepted human-computer interaction perspective that considers usability to be the most important aspect of interactive technologies (Porat & Tractinsky, 2012). Navigation and ease of use fall under the usability category as well. These results indicate that moneys should be spent on creating software that is easy to use and convenient for the user. Users noted that they did not like the fact that the pages loaded slowly; a slower process creates a less convenient use. Having appropriately sized computer hardware and sufficient internet connection is necessary if stores want their customers to continue to use the kiosk, leading to additional revenue.

The kiosk enclosure design should be engaging and should create a kiosk that can be easily found. Some subjects noted an inability to locate the kiosk easily and others noted, in general, the lack of engagement of the kiosk. The Kohl's kiosk, in particular, is very large, goes to the ceiling, and currently has red

signage; for a user to note, as they did, that they could not find the kiosk is telling. Color and size cannot guarantee location of a kiosk. Understanding the surrounding surroundings and its potential chaotic environment is crucial. The kiosk must stand out so it can be found easily, as it is a self-service device; staff should not have help customers locate it. Herberger's kiosks are in many locations, but as seen in Figure 1, the kiosks are isolated and easily seen. This location is much easier for customers to find compared with the Kohl's kiosk.

Due to the limitations of the study, the results cannot be generalized to the entire population of customers, and thus, there cannot be substantial practical implications other than for future research. Some ideas for future research are discussed below.

Limitations. The main limitations of this study were the recall of kiosk use by the participants and the use of a new data collection instrument. Participants' ability to recall their use of a kiosk in the past six months may not be great, which puts a limitation on the study. A more recent kiosk use would reduce the recall limitation. The second limitation was that the study was conducted with a new survey instrument. Although it was based on past research, the questions were altered, and the reliability of past studies instruments cannot completely be applied to this research due to the alterations to the new instrument. Further testing of the instrument needs to be completed in order to gain reliability of the factors; a factor analysis should be completed with a large sample.

An additional limitation of this study is the small sample population. The sample size in this study was 84; the desired is more than 100. Due to the small

sample, the results cannot be generalizable as the results are less reliable. Future studies with a larger sample can overcome this issue.

Future research. The following suggestions for future research suggestions derive primarily from the current study's limitations and include instrument validation and larger sample, a qualitative investigation, and an observational study.

For an instrument validation study, the instrument should be altered and tested multiple times at each revision. In addition, the emotions should be tested to ensure the current population comes to an agreement as to what each word means. For example, the concept of arousal may be confusing in regards to the kiosk. Therefore, arousal questions could be tested to include a scenario, as opposed to a scale between two emotions. This may improve reliability of the emotional data. The questions for each feature would be varied and would drill down to multiple issues within each variable. Kiosk navigation questions, for example, may include the following: I was able to find what I wanted, I was able to find what I wanted easily, and each variable would include a question asking for explanation for each answer.

A future study may also be divided. Usability of software (navigation, ease of use, software design, variety of merchandise and product information) and the kiosk enclosure design could be separated into two studies, each focusing on different parts of the kiosk. The enclosure design would include more on engagement of the kiosks enclosure and location of the kiosk within the store. These studies would include a large sample (≥500) to test the final instrument

validity. Once the instrument is tested, a large sample (≥500) consisting of multiple kiosks would be run.

A second study would consist of interviewing kiosk users (20+) to better understand users' needs and issues with their use or nonuse of SSKs. Research questions could include the following: What do consumers expect from a kiosk? What are the features of kiosks currently used in the market? How do various shopper types vary with kiosk use and perceptions of kiosks?

A third study could consist of observing customers using a kiosk. User navigations and inputs could be tracked and analyzed. Movements would include events such as purchases, time at the kiosk, input failures, items viewed, items scanned, and staff interaction. A pilot study should first be conducted to determine the main study’s variables.

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Appendix A

Recruitment script for pilot

Hello I am Karen James and I am a current graduate student at the University of Minnesota, in the College of Design.

You are invited to participate in a pilot study I am conducting as part of my graduate degree. The purpose of this study is to understand how customers use a self-service kiosk.

If you agree to be in this study, please answer questions regarding your use of a self-service kiosk, your shopping behavior, and your demographics (optional). Additionally, please make comments on the survey and note, on the survey, any confusing questions or phrases. Completion of the survey should take 5-10 minutes.

Participation in this study is voluntary. You are not required to take part in this survey.

If you would like to participate please stay in the class room and I will pass out the consent form and discuss it with you.

Thank you.

Apendix B

Pilot Survey

Thank you for participating in this research!

Consent Form:
Consumer's Shopping Behavior and Kiosk Use.

You are invited to be a part of a research study regarding retail self-service kiosks.

Background Information:

The purpose of this study is to understand how customers use a self-service kiosk.

Procedures:

If you agree to be in this study, we would ask you to do the following things: Answer questions regarding your use of a self-service kiosk, your shopping , and your demographics (optional). Completion of the survey should take 5-10 minutes.

Risks and Benefits of being in the Study:

The study has no known risks. The study has no direct benefit.

Compensation:

None.

Confidentiality:

The records of this study will be kept private and no identification information about you will be shared by the researcher. In any sort of report we might publish, we will not include any information that will make it possible to identify any subjects. In all cases, research records will be stored securely and only the researchers will have access to the records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is graduate student Karen James. You may ask any questions you have now. If you have questions later, you are encouraged to contact by emailing Karen James at james453@umn.edu. You may also contact her faculty advisor Dr. Caren Martin at (612) 624-5318 or email her at cmartin@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

I am 18 years of age or older.

- ☐ Yes
- ☐ No

Instructions

This is a pilot study. Your feedback about the experience of taking the survey is important and will inform the final study survey.

As you go through the survey, please circle any questions that confuse you.

Also, please write any additional comments about the survey here as well as anywhere on the survey about any questions that are confusing or unclear.

Continue to next page

Kiosk use

Please indicate how much you agree or disagree with the following statements:

Kiosk site navigation

For example: search feature, navigating the site, finding what you need

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
1.	The kiosk site navigation is responsive	○	○	○	○	○	○	○
2.	The kiosk site navigation is useful	○	○	○	○	○	○	○
3.	The kiosk site navigation is engaging	○	○	○	○	○	○	○
4.	The kiosk site navigation is intuitive	○	○	○	○	○	○	○

Kiosk service quality

For example: ease of use, convenience

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
5.	The kiosk service quality is responsive	○	○	○	○	○	○	○
6.	The kiosk service quality is useful	○	○	○	○	○	○	○
7.	The kiosk service quality is engaging	○	○	○	○	○	○	○
8.	The kiosk service quality is intuitive	○	○	○	○	○	○	○

Kiosk appearance/aesthetics of the enclosure

Kiosk enclosure, exterior of kiosk

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
9.	The kiosk design is approachable	○	○	○	○	○	○	○
10.	The kiosk design is useful	○	○	○	○	○	○	○
11.	The kiosk design is engaging	○	○	○	○	○	○	○
12.	The kiosk design is understandable	○	○	○	○	○	○	○

Continue to next page

Kiosk software design

Kiosk computer interface, the kiosk computer, browser, software design, organization of information

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
13.	The kiosk design is approachable	○	○	○	○	○	○	○
14.	The kiosk design is useful	○	○	○	○	○	○	○
15.	The kiosk design is engaging	○	○	○	○	○	○	○
16.	The kiosk design is intuitive	○	○	○	○	○	○	○

Kiosk product assortment

Extended inventory, merchandise selection

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
17.	The kiosk product assortment is responsive	○	○	○	○	○	○	○
18.	The kiosk product assortment is useful	○	○	○	○	○	○	○
19.	The kiosk product assortment is engaging	○	○	○	○	○	○	○
20.	The kiosk product assortment is what I expected	○	○	○	○	○	○	○

Additional information provided by the kiosk

For example: customer reviews, additional product information

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
21.	Additional information provided by the kiosk is responsive	○	○	○	○	○	○	○
22.	Additional information provided by the kiosk is useful	○	○	○	○	○	○	○
23.	Additional information provided by the kiosk is engaging	○	○	○	○	○	○	○
24.	Additional information provided by the kiosk is intuitive	○	○	○	○	○	○	○

Kiosk usability

Your overall experience using the kiosk.

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
25.	It was easy to use the kiosk	○	○	○	○	○	○	○
26.	One can find information easily with the kiosk	○	○	○	○	○	○	○
27.	It was convenient using the kiosk	○	○	○	○	○	○	○

Please mark the one circle (out of 7) which best represents your feeling while using the kiosk.

(For example: in the first line, if you felt more unhappy than happy, mark the square that is closer to the word ‘‘unhappy’’, according to the extent that you felt unhappy. If you felt unhappy and happy to the same extent, mark the middle square).

28.	Happy	○	○	○	○	○	○	○	Unhappy
29.	Dominate	○	○	○	○	○	○	○	Submissive
30.	Disappointed	○	○	○	○	○	○	○	Satisfied
31.	Relaxed	○	○	○	○	○	○	○	Stimulated
32.	Active	○	○	○	○	○	○	○	Passive
33.	Pleased	○	○	○	○	○	○	○	Annoyed
34.	Calm	○	○	○	○	○	○	○	Excited
35.	Restless	○	○	○	○	○	○	○	Settled
36.	Aroused	○	○	○	○	○	○	○	Unaroused
37.	Helpless	○	○	○	○	○	○	○	In-control
38.	Autonomous	○	○	○	○	○	○	○	Guided

Continue to next page

Please indicate the extent to which you agree or disagree with each of the following descriptions (1 = strongly disagree; 7 = strongly agree):

		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
39.	I was satisfied with my kiosk experience.	○	○	○	○	○	○	○
40.	I enjoyed using the kiosk	○	○	○	○	○	○	○
41.	I would recommend the kiosk to others	○	○	○	○	○	○	○
42.	The kiosk exceeded my expectations.	○	○	○	○	○	○	○
43.	Given a choice I would NOT use the kiosk again	○	○	○	○	○	○	○

44. Please write any additional comments you have on your experience using the self-service kiosk below.

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Shopping Behavior

45. **Where do you typically shop for clothes? Check all that apply** *

- ○ In-store big box (such as: Target, Wal-Mart)
- ○ In- store department (such as: Macy's Heberger's)
- ○ In-store- specialty (such as: Lane Bryant, Foot Locker, REI)
- ○ Catalog/phone
- ○ Online
- ○ Other _____

46. **On average, <u>per season</u> the amount of money I spend on clothing for myself is**: (Season: Spring, Summer, Winter, Fall.)

- ○ $0-$49
- ○ $50+-$99
- ○ $100-$149
- ○ $150-$249
- ○ $250-$499
- ○ $500 +
- ○ I prefer not to answer

47. **On average, how often do you shop for clothing <u>per season</u> in a physical store?**

- ○ 0-4
- ○ 5-8
- ○ 9-12
- ○ 13 +

48. **On average, how often do you shop for clothing <u>per season</u> online**?

- ○ 0-4
- ○ 5-8
- ○ 9-12
- ○ 13 +

Continue to next page

Demographics

If you prefer not to answer any questions, please check the box that states: "I prefer not to answer" and proceed to the next page.

49. **Gender**

- ○ Female
- ○ Male
- ○ I prefer not to answer

50. **Age**

- ○ 18-28
- ○ 29-39
- ○ 40-50
- ○ 51-60
- ○ 60 +
- ○ I prefer not to answer

51. **Personal annual income**

- ○ Less than 20,000
- ○ 20,000-39,999
- ○ 40,000-59,999
- ○ 60,000-79,999
- ○ 80,000-99,999
- ○ 100,000+
- ○ Prefer not to answer

52. **Ethnicity, please check all that apply**

- ○ American Indian/Alaskan
- ○ Asian
- ○ Black /African American/ African
- ○ Latino/Hispanic
- ○ Native American/Hawaiian/other Pacific Islander
- ○ White/ Caucasian
- ○ Other (please specify)_____
- ○ Prefer not to answer

53. **Please write any additional comments you have on your experience taking this survey.**
(any negative, positive, or confusing aspects of this survey)

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End of Survey
Thank you for your participation!

Apendix C

Solicitation: Junior League of Minneapolis

Round one

Become a Part of a Research Study

Completion of the survey should take 5-10 minutes. The survey will be open for two weeks starting May 7. For each completed survey, $2.00 will be donated to the Junior League of Minneapolis.

Additionally, a name from the group of participants will be drawn at random and be given a $50.00 gift card to the local retailer of their choice.

Please see the Google document for full study information. The Google document also has the link to the survey.

Thank you in advance for your participation!
- Karen James, University of Minnesota Graduate Student and JLM member.

Solicitation roudn two : League Link - Active Member Edition

JLM Member, Karen James Conducting graduate study research
This is an updated survey that requires less time. If you have ever used a retail a self-service kiosk to research merchandise or make purchases (Kohl's, REI, Herberger's), please participate.

The study aims to understand how shoppers use a self-service kiosk at a local store.

Completion of the survey should take 5-10 minutes.

The survey will be open from May 28 until June 15, 2013. For each completed survey $2.00 will be donated to the Junior League of Minneapolis.

Additionally a name from the group of participants will be drawn at random and be given a $50.00 retail gift card of their choice.

Please see the Google document for full study information.

The Google document also has the link to the survey.

https://docs.google.com/document/d/1rzsWFBREpK6y3vMNdmbWitdep9fEfFzigJNAmzi8ZLg/edit?usp=sharing

Thank you in advance for your participation!

Appendix D

Solicitation to students

Recruitment email and/or course Moodle posting

Invitation to be a part of a research study: The study aims to understand how shoppers use a self-service kiosk in a local retailer (Kohl's, Herberger's, REI).

The survey will ask you about your past (within the last 6 months) experience using a retail self-service kiosk.

Completion of the survey should take 5-10 minutes.

The survey will be open from September 9 to October 9, 2013. Extra credit may be awarded for certain undergraduate courses, see your instructor for information.

Please see the Google document for full study information.

https://docs.google.com/document/d/1rzsWFBREpK6y3vMNdmbWitdep9fEfFzigJNAmzi8ZLg/edit?usp=sharing

The Google document also has the link to the survey.

Thank you in advance for your participation!

- Karen James, University of Minnesota Graduate Student

Apendix E

Recruitment poster

Appendix F

Main Study Survey

Thank you for participating in this research!

Consent Form:

Consumer's Shopping Behavior and Kiosk Use.

You are invited to be a part of a research study regarding retail self-service kiosks.

Background Information:

The purpose of this study is to understand how customers use a self-service kiosk.

Procedures:

If you agree to be in this study, we would ask you to answer the questions in the online survey based on your past experience (last 6 months) using a retail self-service kiosk at one of the following stores: Kohl's, Herberger's or REI.

You will be asked questions regarding your use of the self-service kiosk, your shopping behavior, and your demographics (optional). Completion of the survey should take 5-10 minutes.

The survey will be available from September 9 until October 9, 2013. **Risks and Benefits of Being in the Study:**

The study has no known risks. The study has no direct benefit.

Compensation:

Extra credit may be awarded for certain undergraduate courses, see your instructor for information.

Confidentiality:

The records of this study will be kept private and no identification information about you will be sared by the researcher. In any sort of report we might publish, we will not include any information that will make it possible to identify any

subjects. In all cases, research records will be stored securely and only the researchers will have access to the records.

Voluntary Nature of the Study:

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:

The researcher conducting this study is graduate student Karen James. You may ask any questions you have now. If you have questions later, you are encouraged to contact by emailing Karen James at james453@umn.edu. You may also contact her faculty advisor Dr. Caren Martin at (612) 624-5318 or email her at cmartin@umn.edu.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

Please print a copy of this information to keep for your records.

I have read the above information. If I have asked questions, I have received answers.
I consent to participate in the study.

- ☐ I agree
- ☐ I disagree (ends survey)

I am 18 years of age or older.

- ☐ Yes
- ☐ No (ends survey)

Which retailer did you visit, check one?

- ☐ Herberger's
- ☐ Kohl's
- ☐ REI

Have you used a kiosk within the last 6 months?

- ☐ Yes
- ☐ No (ends survey)

Kiosk Use

Please indicate how much you agree or disagree with the following statements:

1. Kiosk site navigation

Kiosk site navigation examples: search feature/ search box, navigating the site, finding what you need

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
The kiosk site navigation is responsive	○	○	○	○	○	○	○
The kiosk site navigation is useful	○	○	○	○	○	○	○
The kiosk site navigation is engaging	○	○	○	○	○	○	○
The kiosk site navigation is user-friendly	○	○	○	○	○	○	○

2.Kiosk ease of use

Kiosk ease of use includes: quality of service, convenience

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
The kiosk is responsive	○	○	○	○	○	○	○
The kiosk is useful	○	○	○	○	○	○	○
The kiosk is engaging	○	○	○	○	○	○	○
The kiosk is intuitive	○	○	○	○	○	○	○

3.Kiosk appearance/aesthetics of the enclosure

Kiosk appearance/aesthetics of the enclosures include: kiosk enclosure, enclosure, exterior of kiosk

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
The kiosk design is approachable	○	○	○	○	○	○	○
The kiosk design is useful	○	○	○	○	○	○	○
The kiosk design is engaging	○	○	○	○	○	○	○
The kiosk design is understandable	○	○	○	○	○	○	○

4.Kiosk software design

Kiosk software design included: kiosk computer interface, the kiosk computer, browser, software design, organization of information

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
The kiosk software design is approachable	○	○	○	○	○	○	○
The kiosk software design is useful	○	○	○	○	○	○	○
The kiosk software design is engaging	○	○	○	○	○	○	○
The kiosk software design is intuitive	○	○	○	○	○	○	○

5.Quantity and variety of merchandise available provided by the kiosk.

Merchandise provided by the kiosk include: extended inventory, merchandise selection

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
The merchandise available via the kiosk is useful	○	○	○	○	○	○	○
The merchandise available via the kiosk is what I expected	○	○	○	○	○	○	○

6.The kiosk provided additional product information

Additional information provided by the kiosk include: customer reviews, complementary merchandise, complete outfit pairing

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
Additional product information provided by the kiosk is useful	○	○	○	○	○	○	○
Additional product information provided by the kiosk is engaging	○	○	○	○	○	○	○
Additional product information provided by the kiosk is intuitive	○	○	○	○	○	○	○

7. Kiosk usability

Kiosk usability included your overall experience using the kiosk.

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
It was easy to use the kiosk	○	○	○	○	○	○	○
One can find information easily with the kiosk	○	○	○	○	○	○	○
It was convenient using the kiosk	○	○	○	○	○	○	○

Please mark the one circle (out of 7) which best represents your feeling while using the kiosk.

(For example: in the first line, if you felt more unhappy than happy, mark the square that is closer to the word ‘‘unhappy’’, according to the extent that you felt unhappy. If you felt unhappy and happy to the same extent, mark the middle square).

8.	Happy	○	○	○	○	○	○	○	Unhappy
9.	Dominate	○	○	○	○	○	○	○	Submissive
10.	Disappointed	○	○	○	○	○	○	○	Satisfied
11.	Relaxed	○	○	○	○	○	○	○	Stimulated
12.	Active	○	○	○	○	○	○	○	Passive
13.	Pleased	○	○	○	○	○	○	○	Annoyed
14.	Calm	○	○	○	○	○	○	○	Excited
15.	Restless	○	○	○	○	○	○	○	Settled
16.	Aroused	○	○	○	○	○	○	○	Unaroused
17.	In-control	○	○	○	○	○	○	○	Helpless
18.	Autonomous	○	○	○	○	○	○	○	Guided

19.Please indicate the extent to which you agree or disagree with each of the following descriptions:

	Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
I was satisfied with my kiosk experience.	○	○	○	○	○	○	○
I enjoyed using the kiosk	○	○	○	○	○	○	○
I would recommend the kiosk to others	○	○	○	○	○	○	○
The kiosk exceeded my expectations.	○	○	○	○	○	○	○
Given a choice I would NOT use the kiosk again	○	○	○	○	○	○	○

20. Please write any additional comments you have on your experience using the self-service kiosk below.

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Shopping Behavior

21. Where do you typically shop for clothes? Check all that apply *

- ○ In-store big box (such as: Target, Wal-Mart)
- ○ In- store department (such as: Macy's, Heberger's)
- ○ In-store- specialty (such as: Lane Bryant, Foot Locker, REI)
- ○ Catalog/phone
- ○ Online
- ○ Other _____

22. On average, per SEASON the amount of money I spend on clothing for myself is:
(4 Season: Spring, Summer, Winter, Fall.)

- ○ $0-$49
- ○ $50+-$99
- ○ $100-$149
- ○ $150-$249
- ○ $250-$499
- ○ $500 +
- ○ I prefer not to answer

23. On average, how often do you shop for clothing per SEASON in a physical store?
(4 Season: Spring, Summer, Winter, Fall.)

- ○ 0-4
- ○ 5-8
- ○ 9-12
- ○ 13 +

24. On average, how many times do you shop for clothing per SEASON online?
(4 Season: Spring, Summer, Winter, Fall.)

- ○ 0-4
- ○ 5-8
- ○ 9-12
- ○ 13 +

Continue to next page

Demographics

If you prefer not to answer any questions, please check the box that states: "I prefer not to answer" and proceed to the next page.

25. Gender
- ○ Female
- ○ Male
- ○ I prefer not to answer

26. Age
- ○ 18-28
- ○ 29-39
- ○ 40-50
- ○ 51-60
- ○ 60 +
- ○ I prefer not to answer

27. Personal annual income
- ○ Less than 20,000
- ○ 20,000-39,999
- ○ 40,000-59,999
- ○ 60,000-79,999
- ○ 80,000-99,999
- ○ 100,000+
- ○ Prefer not to answer

28. Ethnicity, please check all that apply
- ○ American Indian/Alaskan
- ○ Asian
- ○ Black /African American/ African
- ○ Latino/Hispanic
- ○ Native American/Hawaiian/other Pacific Islander
- ○ White/ Caucasian
- ○ Other (please specify)_____
- ○ Prefer not to answer

29. If your instructor provides extra credit for participation please write your name and course number below.

Name:_____
____

Course and
Instructor:_____

Confirmation Page

Thank you for your participation; your response has been recorded.

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