Is More Information Always Good? Investigating the Impact of Website Interface Features on E-Retailer's Sales Performance

Abdul R. Ashraf, BBA (Hons)

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ABSTRACT

A number of frameworks have been suggested for online retailing, but still there exists little consensus among researchers and practitioners regarding the appropriate amount of information critical and essential to the improvement of customers' satisfaction and their purchase intention. Against this backdrop, this study contributes to the current practical and theoretical discussions and conversations about how information search and perceived risk theories can be applied to the management of online retailer website features. This paper examines the moderating role of website personalization in studying the relationship between information content provided on the top US retailers' websites, and customer satisfaction and purchase intention. The study also explores the role played by customer satisfaction and purchase intention in studying the relationship between information that is personalized to the needs of individual customers and online retailers' sales performance. Results indicate that the extent of information content features presented to online customers alone is not enough for companies looking to satisfy and motivate customers to purchase. However, information that is targeted to an individual customer influences customer satisfaction and purchase intention, and customer satisfaction in turn serves as a driver to the retailer's online sales performance.

Keywords: Information Content; Website Personalization; Customer Satisfaction; Purchase Intention; Online Sales

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1. INTRODUCTION

Today, distance and time constraints are no longer an impediment to carrying out business worldwide. This is a direct result of the development of the Internet and the increasing use of network-intensive technologies by businesses. *The Internet Retailer* (2009) reports that in the United States, the 2007 total online retail sales reached US $165.9 billion, an increase of 21.8% from US $136.2 billion the previous year. Similarly, in 2007, the total number of transactions for the top 500 websites rose by 8.8% to US $456 million from US $419 million in 2006. The figures indicate that customers have readily adopted the Internet for various purposes, including information searching and online shopping. Properly utilized, the Internet is a powerful tool for selling products and services. The Internet provides customers with a variety of benefits over traditional retailing, such as the ability to order products and services conveniently, check the availability of products and services immediately, compare competitive prices, and access free information to help make informed purchasing decisions.

The advantages of using the Internet as a medium for retailing are clear. The Internet has created opportunities for virtually all companies, from small start-ups to well-established entities. Businesses are utilizing websites to fulfill different business objectives, such as attracting customers, delivering services, facilitating transactions, and distributing products. Although commerce may be conducted on the Internet in a number of ways, one commonly used method for promoting commerce involves selling goods and services through a company's website. The growth of the Internet in both business-to-business and business-to-consumer domains has been extensively discussed in both the academic and commercial (trade) literature (Chakraborty et al. 2002; Patterson 1997; Ranganathan and Ganapathy 2002; Lohse et al. 2000).

The Web, by virtue of its capabilities (i.e. providing information, price and product comparisons, multimedia, customer services, interactivity, aesthetics, personalization, and customization), provides opportunities for firms to offer unique and satisfying experiences to website visitors. Prior research has investigated the website as a medium for interactive communication (Duncan and Moriarty 1998; Hoffman and Novak 1996), e-shopping (Wolfinbarger and Gilly 2003), business-to-business or business-to-consumer transactions (Varadarajan and Yadav 2002; Ranganathan and Ganapathy 2002), and as a tool for customer relationship management (Payne and Frow 2005).

However, developing a website is not without risk. Businesses today face numerous challenges in their efforts to develop a web presence that is not only convincing for the visitor, but also able to fulfill customers' needs (Agarwal and Venkatesh 2002). This is especially true when firms and customers have different expectations from websites. Firms expect their websites to attract and satisfy customers (Liu and Arnett 2000), convert visitors into buyers, and encourage repeat purchases (Moe and Fader 2004). Customers visiting a website expect it to be informative and attractive (Zhang and Dran 2001); user-friendly and interactive (Koivumaki 2001); and service-oriented (Wolfinbarger and Gilly 2001). Converting visitors into buyers and satisfying online browser's needs are among the most important results that businesses want from their websites. Satisfied customers are more likely to spend a longer time at a website, are more likely to revisit the website, and may recommend the website to others (Zhang and Dran 2000).

In this study, the term browser collectively refers to the people who perform a wide range of online activities including purchase(s). We consider browser satisfaction as a proxy of customer satisfaction that has been defined by Oliver (1997, p. 13) as "a pleasurable level of

consumption-related fulfillment." In addition, converting visitors into buyers, whether they have positive purchase intentions or actually purchase the products, generates more sales and profit (Luo and Homburg 2007). Pavlou (2003) defines purchase intention as the situation which arises when a customer willingly involves himself in online transactions. To increase customer purchases and ensure customer satisfaction, it is essential for online retailers to understand exactly what makes online customers perceive a website as user-friendly and convincing.

In the past, researchers have identified a number of features which lead to a successful website (Liu and Arnett 2000; Palmer 2002). According to Liu and Arnett (2000, p. 24), a successful website in the context of electronic commerce is one "that attracts customers, makes them feel the site is trustworthy, dependable, reliable, and generates customer satisfaction." Flavian et al. (2008) recommend certain design features (aesthetic appearance, navigation, organized and managed content display, shopping process, and, security/privacy concerns) that lead to a successful website. Similarly, Palmer (2002) develops metrics in order to identify appropriate website usability, design, and performance constructs that are used in studying customer-oriented websites. Palmer's study identifies website download delay, navigation, content, interactivity, and responsiveness as key website features that lead to a successful website. Furthermore, Palmer suggests that website success can be measured using the frequency of use, the likelihood of return, and user satisfaction.

Over time, firms have come to use the Internet to carry out ecommerce (i.e., buying and selling of goods or services over electronic system) and customers have adopted it in order to satisfy their unmet needs and desires. It is a general belief that the behaviour of customers shopping online is fundamentally different to that of customers in a conventional retail environment (Peterson et al. 1997).

Compared to conventional retailing, online retailing can be considered to be still in its infancy. Since the Internet is a new medium for the purchase of products and services, its novelty may result in some problems. Prior research has shown that customers perceive this new method of shopping as risky (Bhatnagar et al. 2000) due to the lack of direct, face-to-face interaction with the firm and the intangible nature of the products. Customers cannot touch, taste, listen to, or directly observe the goods as they do in a traditional retail environment. Perceived risk is defined as "the potential for loss in pursuing a desired outcome from online shopping" (Ko et al. 2004, p. 20). Hence, compared to traditional retailing, carrying out business online is perceived to be more risky (Tan 1999). For example, customers while shopping online may perceive product risk (i.e., the probability of the item failing to meet the performance requirements originally intended) (Peter and Tarpey 1975), delivery risk (i.e., the possibility that the customer will not receive the product on time and in good shape) (Paraschiv and Spiekermann 2002), or privacy risk (i.e., the anticipation that online firms collect data about customers and use them inappropriately) (Jarvenpaa and Todd 1996).

Due to these risk factors, customers may delay their purchases or may not be comfortable buying online (Heijden et al. 2003). Therefore, online customers rely on the information available online to judge the product's quality, performance, and functionality, and by doing this, they tend to reduce their perception of risk. Information gathering is one of the methods customers use to reduce their risk perception (Dowling and Staelin 1994), and moreover, acquiring information encourages customer to actually make a purchase. According to Mitra et al. (1999), the greater the intensity of perceived risk is, the greater the need for information searches. Therefore, identifying and providing tools that can facilitate accurate and timely

information searches can be extremely helpful in reducing the customer's perception of risk and in improving sales.

Reviewing the literature, studies to-date have conflicting results regarding the amount of information that a website should provide in order to reduce customers' risk perception and enable customers to make informed purchase decisions. According to Patton (1981), customers like to have more information because it makes them feel more confident and satisfied with their choices. Customers perceive that the availability of more information allows them to make better purchase decisions. Li, Russell, and Kuo (1999) state that the quantity of information plays a vital role in allowing online customers to articulate their consideration set of alternative product brands. A study conducted by Trocchia and Janda (2003), shows that in order to attract and retain online customers, firms have to consider factors such as added quantity and credibility of information in addition to low price and quick delivery of products. Similarly, Lightner's (2003) online survey of 488 individuals in the United States demonstrates that customers rank online security, information quantity and quality to be the most important factors leading to a satisfactory online shopping experience.

Contrary to these findings, several studies have shown that large amounts of information on a website can lead to problems such as information overload (Lee and Lee 2004). Ranganathan and Ganapathy (2002) propose that websites should provide just enough information for customers to arrive at a purchase decision. Providing too much information discourages online customers because they find it too difficult to locate the desired information. These findings are further supported by White-Lepkowska and Eifler (2008), as their study shows that added value for online customers is not achieved through large quantities of data. In fact, they argue it is gained through easier access to the desired information at the right time and

in an appropriate form. Furthermore, when customers are exposed to an excess of information, it negatively affects their decision quality and increases confusion regarding the decision (Speier et al. 1999; Lee and Lee 2004).

Although researchers in the past have stressed the importance of finding the threshold where the information load actually makes decisions worse (Jacoby et al. 1974; Lee and Lee 2004), researchers so far have not been able to identify it or achieve a consensus regarding the operationalization (i.e., optimal amount of information) of information load. This lack of agreement is due to the differing information processing ability of every individual customer (Henry 1980). Hence, for each customer the threshold of information load varies (Chen et al. 2009). Customers go online or visit retailing websites in order to search information and make purchases. Still, according to information search and risk perception theories, firms should provide online customers with a convenient and comfortable environment by offering more information that is easy to access, process, explore, and is relevant to customers. This will not only help customers reduce their online risk perception, but also allow them to make informed and potentially more satisfying purchase decisions.

Online retailers, in their efforts to attract customers, are trying to provide ever-increasing amounts of information via the web. In other words, the Internet is an information-rich medium which can easily lead to information overload for customers (Lee and Lee 2004). For example, www.circuitcity.com, a retailer site, offers 46 different models of digital camera, each with at least 21 product attributes. Due to the excess of the information available online, it is often difficult for customers to process and obtain useful and relevant information when it is needed. Therefore, in addition to providing information, web retailers must make the information user friendly for customers by offering website dimensions such as website personalization. A

personalized website allows customers to easily process, prioritize, explore, and obtain desired information. Eirinaki et al. (2003, p. 2) define website personalization as "any action that adapts the information or services provided by a website to the needs of a particular user or a set of users, taking advantage of the knowledge gained from the users' navigational behaviour and individual interests, in combination with the content and the structure of the Web site."

Most existing research on sales is focused on brick and mortar retailers. Due to the advancement of the World Wide Web in recent years, researchers have increasingly focused their attention on online retailing. However, many areas in this domain require further exploration. More specifically, this research focuses on the following research issues: First, in reviewing the literature it is still not clear whether the usability of the information on a firm's website is sufficient to influence online customers' decisions or if the value added by different tools such as website personalization leverages or instigates the importance of online information in terms of customer satisfaction and purchase intention. Second, a number of frameworks have been proposed for online retailing, but there is little research that addresses why customers perceive some business-to-consumer websites to be more effective, efficient, and user-friendly. Third, since shopping online is perceived to be more risky than traditional retailing due to the obscurity of the medium and the inability to observe the other party (Dollin et al. 2005), it is important to understand which website aspects can help reduce customer risk perception and how they contribute towards reducing the online risk perception. We believe that it is important to address these issues because the reliance on web technology is increasing day by day, which makes an effective and efficient website a necessity and no longer a luxury (Watson, Zinkhan, and Pitt 2000; Ranganathan and Ganapathy 2002). Moreover, answers to these questions will help e-

retailers in designing a website that not only attracts customers, but also satisfies and motivates them to purchase.

In this paper, we review theories pertinent to electronic commerce, build a research model, and examine the role of different theories. The first theory is risk perception theory, which focuses on uncertainty and adverse consequences that might result from a product purchased online. The second theory is information search, which argues that information searching is a critical aspect of most decision-making tasks and customers before making purchase search information in order to reduce perceived risk and to make informed purchase decisions. These theories are integrated to build a research model and the effect of information content and information filtering tools on customer satisfaction and purchase intention will be examined.

In the following sections, we first provide a review of the literature and discuss the key variables identified in our study. Second, we discuss the theoretical background and key theories used in our study. Third, we propose our hypothesis and explain the relationships between our independent and dependent variables. This is followed by our methodology and conclusions.

2. LITERATURE REVIEW

The Internet has become a key driver of businesses during the past ten years, and having a website positively impacts the image of a business, makes e-commerce sales possible (Geyskens et al. 2002), and increases net profits (Levenburg 2005). A website can be seen as a platform that provides customers access to information in order to help them and influence their perception of a firm's effectiveness (Ranganathan and Ganapathy 2002). Various assessing and measuring instruments for analyzing the performance or success of commercial websites have been proposed from different perspectives (e.g., Liu and Arnett 2000; Raol et al. 2003). Proposed frameworks include end-user satisfaction (Muylle and Moenaert 2004), customer loyalty (Tarafdar and Zhang 2008), repeat visitors (Klein 1998), customer retention and purchase intentions (Madu and Madu 2002), likelihood of return (Palmer 2002), and a combination of several factors (Iyer et al. 2005).

Prior research has acknowledged the importance of various website success dimensions, among which customer satisfaction (Palmer 2002; Liu and Arnett 2000) and purchase intention (Bhattacherjee 2002; Madu and Madu 2002) have been vigorously explored. Published studies in academic literature have also attempted to determine the effect of different website dimensions on customer satisfaction (Szymanski and Henard 2001; Szymanski and Hise 2000) and purchase intentions (Ranganathan and Ganapathy 2002; Hausman and Siekpe 2009). In particular, certain website features such as information content (Ranganathan and Ganapathy 2002; Page and White-Lepkowska 2002), interactivity (Fiore et al. 2005; Bauer et al. 2002; Teo et al. 2003), personalization and customization (Ball et al. 2006; Arora et al. 2008; Lee and Park 2009; Papathanassiou 2004; Cho and Fiorito 2009), customer service (Griffith and Krampf 1998; Page and White-Lepkowska 2002), navigation (Montoya-Weiss et al. 2003; Jayawardhena 2004), and

privacy/security (Liu et al. 2005; Ranganathan and Ganapathy 2002) have been shown to have a positive impact on customers' satisfaction and purchase intention.

In the online context, research on customer satisfaction and purchase intention has focused predominantly on two areas 1) factors influencing customer satisfaction and purchase intention and 2) the influence of customer satisfaction and purchase intention on other dimensions of website performance or success.

2.1. Customer Satisfaction

Customer satisfaction has drawn the attention of several researchers during the last two decades (Szymanski and Henard 2001; Koivumaki 2001; Luo and Homburg 2007). Customer satisfaction is defined as the customer's overall evaluation of the performance based on the total purchase and consumption experience (Gustafsson et al. 2005; Luo and Bhattacharya 2006). Alternatively, Alba et al. (1997) define satisfaction as more than merely the consumption experience. They argue that a customer's belief that all alternative options have been exhaustively searched and no opportunities have been missed has an impact on customer satisfaction. This belief assures customers that they have made the best possible purchasing decision.

2.1.1. Antecedents of Customer Satisfaction

A great deal of research has focused on the factors that enhance customer satisfaction while shopping online. First, however, we briefly review the existing research on the drivers of customer satisfaction. Koivumaki (2001) finds that the following interface-related variables have a positive effect on customer satisfaction: the clarity of the interface, interactivity, ease of navigation, product presentation, and ease of use. Liu et al. (2008) identify factors (information quality, website design, merchandise attributes, transaction capability, security/privacy, payment,

delivery, and customer service) that influence online shopping satisfaction, in the context of the total online shopping experience. Montoya-Weiss et al. (2003) study how navigation, information content, graphic style, and security risk affect customers' overall satisfaction in online financial services. Similarly, Szymanski and Henard (2001) document five factors (expectation, disconfirmation of expectation, performance, affect, and equity) and find equity and disconfirmation to be most strongly related to customer satisfaction.

Several recent studies have proposed different frameworks and identified key website features concerning customer satisfaction in online shopping from the perspective of website usability (Zviran et al. 2006; Palmer 2002), service quality (Zhilin et al. 2003; Gronroos et al. 2000; Santos 2003; Wolfinbarger and Gilly 2003), website design (Flavian et al. 2008; Zviran et al. 2006; Agarwal and Venkatesh 2002), and website quality (Lin 2007). Studies conducted in the past have shown that customer levels of satisfaction are positively influenced by these factors.

Web Usability

Ongoing research in this domain has drawn attention to the importance of website usability in terms of its impact on different success dimensions (Agarwal and Venkatesh 2002; Liu and Arnett 2000). Website usability is defined by Nah and Davis (2002, p. 99), as "the ability to find one's way around the web, to locate desired information, to know what to do next and, very importantly, to do so with minimal effort." Website usability helps customers use and interact with websites with ease.

Researchers in the past have focused particularly on different usability components or features and their impact on customer satisfaction. For example, Palmer (2002) finds website usability (download delay, navigation, interactivity, responsiveness, and information/content) to

be a construct which has a significant impact on customer satisfaction. Zviran et al. (2006) empirically investigate the effect of user-based design (personalization, structure, navigation, layout, performance, and search-ability) and website usability on user satisfaction. They find both website usability and user-based design to be associated with greater perceived user satisfaction. Similarly, research conducted by Kim and Eom (2002) and Flavian et al. (2006) indicates that usability is of great importance in enhancing customer satisfaction.

E-service Quality

The concept of e-service quality has gained importance with the advancement of the World Wide Web. E-service quality is sometimes defined as a customer's overall perception of the website, including the quality of the e-services offered and the overall quality of the website (Santos 2003). In other words, e-service quality assists customers in efficient online shopping and facilitates the quick and timely delivery of products and services (Zeithaml et al. 2002).

Researchers have identified several e-service quality determinants and their influence on customer satisfaction and other success dimensions. According to Santos (2003), e-service quality consists of incubative (ease of use, appearance, linkage, structure and layout, and content) and active (reliability, efficiency, support, communication, security, and incentive) dimensions. Santos' research findings show that providing better e-service quality not only increases customer satisfaction, but also leads to higher customer retention and profitability. Furthermore, Wolfinbarger and Gilly (2001) developed a scale consisting of four factors: website design, reliability, privacy/security, and customer service. Their findings show that 1) the reliability of a firm is the strongest predictor of customer satisfaction; 2) the functionality of a website is the strongest predictor of loyalty/intentions to purchase, and 3) the services provided by the firm help to predict loyalty, intentions to repurchase, and customer satisfaction.

Website Design

Website design is fundamental to creating a website. It determines the important website features that are critical to establishing the quality of service delivered through the website (Xue et al. 2000). According to Hope and Li (2004), design is "the way the content is made available to Web visitors."

Researchers have explored several design features and their impact on website success. Flavian et al. (2008) propose different design features that lead to a successful website, including aesthetic appearance, navigation, organized and managed content display, shopping process, and security/privacy concerns. Tarafdar and Zhang (2008) identify relevant design parameters (information content, ease of navigation, usability, download speed, customization, security, and availability) as having an influence on the performance and success of websites. Montoya-Weiss et al. (2003) suggest that an online service provider can influence its customers' use of an online channel and their overall satisfaction through three website design factors (information content, navigation structure, and graphic style) and two sets of customer evaluations (service quality and risk perceptions).

Web Quality

The relationship between website quality and business performance has been explored by a number of researchers (Kim and Stoel 2004; Lin 2007). Website quality has been defined by Aladwani and Palvia (2002) as a customer's assessment of how well a website's features meet their needs, and it is basically a reflection of the overall quality of the website.

A number of researchers have identified and considered the impact of individual website quality features on website success instead of treating website quality as a whole entity. For example, results from the study conducted by Kim and Stoel (2004) show that three website

quality dimensions, informational fit-to-task, transaction capability, and response time, have a significant influence on customer satisfaction. Similarly, Lin (2007) has identified system quality, information quality, and service quality as the three key website quality dimensions and has studied their impact on customer satisfaction. The results of her study show that two system quality variables (website design and interactivity), two information quality variables (informativeness and security), and three service quality variables (responsiveness, trust, and empathy) have an impact on customer satisfaction.

Hence, researchers have identified several common features that influence customer satisfaction and loyalty, and are instrumental in the success of a website, especially when it comes to information content. The existing research suggests that information content features presented to online customers are an important component of website usability (Palmer 2002), website design (Tarafdar and Zhang 2008), and website quality (Lin 2007), and therefore play an important role in enhancing customer satisfaction.

Information Content

An information search is the first step in a customer's purchase decision-making process. The more the information a customer possesses, the better and more informed their decision will be (Kulviwat et al. 2004). Information on a website has been defined as the "communicated material that appears on the website" (Montoya-Weiss et al. 2003, p. 450). Information content can include a range of materials such as details related to the services offered, order status or tracking, corporate policies, and/or public relations.

Researchers, in addition to further classifying information content, believe that the availability of information on a website is of great importance and is critical for the website visitor (Agarwal and Venkatesh 2002; Cole et al. 2000). Tarafdar and Zhang (2008) classify

content as the variety, amount, quality, and usefulness of information, while Palmer (2002) classifies information content as the amount and variety of information, the word count, and the content quality. Similarly, Aladwani and Palvia (2002) discuss features related to the content quality (i.e., usefulness, completeness, clarity, currency, and conciseness of content). According to Lynch and Ariely (2000), providing customers with exactly the information they want plays a vital role in influencing customer satisfaction. This is because, by acquiring information, the customer can reduce their perception of online risk (Dowling and Staelin 1994) and make informed purchase decisions (Zinkhan et al. 1987). In addition, by providing customers with easy access to the information they want, online firms can help reduce customer search time and effort. Overall, information content has been found to have a positive impact on customer satisfaction (Montoya-Weiss et al. 2003; Palmer 2002).

However, due to internets' information intensive nature, narrowing the search to the desired information is challenging and can prove time consuming and frustrating. Without tools that can help customers filter out irrelevant information, customers will spend considerable time and effort searching for the desired information. In addition to providing information, online retailers must make customer information search efficient and effortless by providing tools such as website personalization (Liang et al. 2007).

Website Personalization

A review of the literature reveals that personalization can exist in different areas, including personalized prices (Choudhary et al. 2005), content personalization (Jeevan and Padhi 2006), personalized email (Ansari and Mela 2003), personalized recommendations (Liang et al. 2007), personalized marketing (Venasen 2007), personalized services (Ball et al. 2006), and web personalization (Tam and Ho 2005). In the online context, personalization can be passive

(initiated and controlled by the supplier so that it requires no explicit or active efforts on the part of the visitor) or active (tailored to a customer's needs and wants based on information that is provided by the customer during the same or previous visits).

Researchers have defined website personalization in different ways. Eirinaki et al. (2003, p. 99) defines website personalization as "any action that adapts the information or services provided by a website to the needs of a particular user or a set of users". In general, Moon et al. (2008, p. 31) define personalization as "customizing some features of a product or service so that the customer enjoys more convenience, lower cost, or some other benefit."

Reviewing the literature, website personalization has been identified as an antecedent of customer satisfaction. For example, Liang et al. (2007) state that personalized services by reducing perceived complexity caused by information overload increase user satisfaction. According to Arora et al. (2008), greater customer satisfaction and higher profits are the practical advantages of personalization. Because personalization eliminates excessive information, which in turn, reduces customer's search effort and transaction time. Furthermore, personalized content also helps increase customer trust and emotional loyalty towards the online firm (Ball et al. 2006) as customers sense that they are getting personal attention.

2.1.2. Consequences of Customer Satisfaction

The customer's level of satisfaction is believed to have a direct impact on a number of success and performance dimensions. Existing studies show the effect of customer levels of satisfaction on purchase intention (Yoon 2002), word-of-mouth (Swan and Oliver 1989), level of customer loyalty (Anderson et al. 1994; Ball et al. 2006), sales performance (Feinberg and Kadam 2002; Ayanso et al. 2009) and the success of a website (Palmer 2002). Existing research suggests that customer satisfaction has a significant impact on customer purchase intention

(Taylor and Baker 1994). This is because satisfying past experiences positively influence customer intentions to purchase from the website in the future. Also, customers who have satisfactory or pleasing experiences are motivated to engage in positive word of mouth (Anderson 1998) because they want to share the positive experience with their friends and family. Furthermore, existing research also suggests a positive relationship between satisfaction and loyalty; i.e., the more satisfied customers are, the more loyal to the firm they will be (Rust et al. 2000).

Sales Performance

In this era of recession, sales and resulting revenue is the top priority of every organization. Reviewing the literature, the traditional view of sales primarily is discussed in econometric and sales promotional literature (Rust and Zahorik 1993). Econometric literature views sales to be an outcome of advertisements (Blattberg and Jeuland 1981; Aaker 1982). Whereas, sales promotion literature considers sales to be an outcome of promotional activities (Fader and McAlister 1990; Neslin 1990). In addition to the aforementioned factors, researches have also identified several other factors that contribute towards the firm's sales performance. For example, Rust and Zahorik (1993) show how customer satisfaction leads to customer loyalty and retention which subsequently results in increased market share and profits. Ranganathan and Grandon (2002) identify several website related factors (up-to-date information content, availability of decision aids, secured data transmission and privacy statement, availability of information about the firm, FAQ section, use of multimedia, and provision of individual accounts) that significantly influence online sales performance. Similarly Ayanso et al. (2009) using data of the 500 top ranked Web retailers in the U.S., empirically analyzed the relationship between retail service areas and the online sales performance of Web retailers. There results

show that retailer's efforts in multi-channel, content, and customer management positively influences Web retailers' sales performance.

Researchers in the past have highlighted the fact that customer satisfaction positively influences e-retailers' sales performance. According to Slater and Narver (2000), it costs up to five times as much to make a sale to a new customer as it does to make an additional sale to an existing customer. Therefore, by satisfying online customers, firms can retain customers, which in turn, can positively influence firms' sales. Online customer satisfaction also helps firms generate a loyal customer base, which ensures future sales through consequential purchases (Feinberg and Kadam 2002). Furthermore, Ayanso et al. (2009) show that customer satisfaction, by increasing website traffic (i.e., repeat visit) and revenue per transaction (i.e., average ticket amount), positively influences online retailers' sales performance.

2.2. Purchase Intention

Purchase intention has been used extensively in the literature as a predictor of subsequent purchases. Intentions to purchase play an important role in helping firms predict the actual purchasing behaviour of customers (Dodds et al. 1991). Pavlou (2003) defines purchase intention as the situation that arises when customers willingly involve themselves in online transactions. According to Hausman and Siekpe (2009), purchase intention, along with the intention to return, is one of the most commonly referred to online behavioural intentions. Several studies have been done to analyze the different drivers of purchase intention (see Cronin and Taylor 1992; Cronin et al. 2000; Yoon 2002).

2.2.1. Antecedents of Purchase Intentions

There have been several attempts to identify the dominant factors connected to purchase intention from different perspectives in the online context. Factors such as website design, flow,

attitude, trust, site involvement, and entertainment have been identified as key factors affecting purchase intention.

Website design

Researchers in the past have explored different design features and their impact on customer purchase intention. A study conducted by Hausman and Siekpe (2009) classifies website design elements into human (global search, feedback, and gift services) and computer (security of site, clear displays, up-to-date information, and order confirmation) factors. Their study shows that both computer and human factors influence customer attitudes towards the website, which in turn, influences intentions to return and purchase. Design features such as interactivity influence customer attitudes (Teo et al. 2003), and positive attitudes towards a website influence purchase intention (Stevenson et al. 2000). Similarly, Liang and Lai (2002) suggest that design features such as security, search engines, navigational hyperlink, service phone, and customized information are considered desirable by customers who shop online and influence a customer's future visits, and current and future purchases.

State of Flow

Inducing a state of 'flow' in customers visiting a website is considered an important attribute of an e-commerce website. Hausman and Siekpe (2009) propose that online flow is a "cognitive state" experienced during navigation, which results in more browsing and, ultimately, more purchases. According to Csikszentmihalyi (1997), flow is an experience which is enjoyable, involves machine interactivity and focused attention, and is self-reinforcing. In general, online flow absorbs the customer's attention and provides a pleasurable experience (Mannell and Jiri 1988) which leads not only to purchase intention, but also to repeat visits (Luna et al. 2002). Similarly, Koufaris (2002) examines how flow experienced by customers

visiting an online store for the first time can affect their intentions to return to the website and the likelihood they will make unplanned purchases. The literature indicates that overall, a higher level of flow is associated with a higher level of intention to revisit and purchase from the site in the future.

Customer Attitude

A review of existing research reveals that positive attitudes towards a website positively influence customer purchase intentions. Chen and Wells (1999, p. 28) report that customer attitudes towards a website demonstrate online shoppers' "willingness to respond favourably or unfavourably." Researchers have identified several determinants that influence customer attitude and their influence on purchase intention. For example, findings from past studies show that website features such as animation and graphics (Bruner and Kumar 2000); interactivity (Fiore et al. 2005); and navigation and information content (Richard 2005) positively influence customer attitudes towards a website. Furthermore, Stevenson et al. (2000) conclude that customer attitudes towards websites are very important because improving customer attitudes also improves customer purchase intentions. Other researchers have reached a similar conclusion that positive attitudes towards a website have a positive impact on customer purchase intention (Brown and Stayman 1992; Bruner and Kumar 2000).

Trust

The literature indicates that due to the open and global nature of Internet, customers have a lack of trust in e–retailers and perceive online transactions to be risky (Tan 1999; Lynch and Ariely 2000; Dollin et al. 2005). Trust has been defined as the expectation that the partner one is dealing with will not "engage in opportunistic behaviour" (Jarvenpaa 2000, p. 49). A high degree of trust in e-commerce (i.e., online firms and online forums) not only helps customers carry out

satisfying transactions (Wu and Cheng 2005; Chen and Barnes 2007), but also reduces behavioural uncertainty (i.e., online retailers can act opportunistically by taking advantage of the indirect nature of e-commerce.) and environmental uncertainty (i.e., the unpredictable nature of e-commerce, wherein both customer and retailer lack full control) (Pavlou 2003).

Researchers have focused on different trust building components or features and their impact on purchase intention. Chen and Barnes (2007) show that security, privacy, willingness to customize, and good reputation significantly affects initial trust, and that initial trust has a positive influence on customer purchase intention. Once trust is developed between the firm and the customer, customer risk perception is reduced, which in turn, encourages customers to comfortably shop online (Keh and Sun 2008; Selnes 1998). The conclusion that higher degree of customer trust in an online firm leads to a higher degree of customer purchase intention is further supported by (Jarvenpaa and Tractinsky 1999; Chen and Barnes 2007).

Studies in the past have also emphasized on several other factors that affect customer purchase intention. For example, Richard and Chandra (2005) provide insight into the individual and behavioural variables that affect customers' pre-purchase intentions. They find that the level of perceived challenge, reasons to visit the website, and site involvement have a positive impact on pre-purchase intention. Similarly, Shim et al. (2001) find that customers' intention to use the Internet for information searches is the strongest predictor of Internet purchase intention, and that it also mediates the relationship between purchasing intentions and other predictors (i.e., attitude towards Internet shopping, perceived behavioural control, and previous Internet purchase experience).

A review of literature reveals that information content is an important element of different antecedents of purchase intention. For example, information content is considered an

important component of website design (Liang and Lai 2002), trust (Park et al. 2005), and customer attitude (Richard 2005). As information search is the first step in a customer's purchase decision-making process, the more the information a customer possesses, the better and more informed their decision will be (Kulviwat et al. 2004).

Information Content

It is important for a website to provide customers with detailed information as required because before purchasing a product, customers look for necessary information such as brand, variety, price, and quality. Academic researchers and marketing practitioners argue that one of the main objectives of a company's website is to provide information to customers and other stakeholders (Chen and Wells 1999; Lohse et al. 2000). Studies in the past have shown that information content plays a vital role in influencing customer decision-making process (Ranganathan and Ganapathy 2002). Richard (2005) proposes that overall, the effectiveness of information content has a positive influence on customer purchase intention. According to Jiang (2002), providing customers with good information content helps customers make informed purchase decisions and improves their confidence in their choice. Other researchers have also reached similar findings that search for information content in online context is the strongest predictor of purchase intention (Lohse et al. 2000; Shim et al. 2001).

However, in addition to the importance of information content, past studies have emphasised on the importance of effortless and easy access to the desired information. In other words, only a small portion of information available online is actually appropriate or valuable for an individual customer. Hence, in addition to providing information content it is equally important to provide tools (e.g., website personalization) that allow customers to search desired information effectively and efficiently.

Website Personalization

Compared to the standard website, a personalized website is inherently better since it takes individual needs into account and often serves as a signal to the customer that the service provider is interested enough in the welfare of the customer to individualize services (Pitt et al. 2001). A number of researchers have featured the importance of website personalization and its impact on purchase intention. According to Yang et al. (2006), when customers are exposed to personalized content they tend to seek less information, and are likely to spend less time before making the purchase. Similarly Chang et al. (2005); Kim et al. (2008) propose that by providing guidance to individual customers during the purchasing process, website personalization makes the shopping experience easier (e.g., reduces information overload) and increases the customer's feelings of trust and loyalty. Furthermore, Jackson (2007) propose that website personalization by transforming e-commerce into relationship commerce, creates a trusting relationship (long-standing relationship) between the website and customer that not only satisfies and motivates customers to purchase the product, but also increases customer loyalty, switching costs, and customer retention.

2.2.2. Consequences of Purchase Intention

Besides identifying factors that affect customer purchase intention, researchers in the past have also identified purchase intention as a predictor of behavioural intention, subsequent purchases, and website success. Beerli and Santana (1999) state that purchase intention is an important measure of the customer's cognitive stage. According to Lavidge and Steiner (1961) the customer's ability to evaluate objects positively or negatively is a cognitive stage. Given this, with the help of purchase intention, firms can determine the way in which an individual will respond or their willingness to act in a certain desired manner.

Sales Performance

It is important to manage sales because it is the revenue generating element of almost every organization. Researchers in the past have considered purchase intention as a predictor of actual purchase. Mowen and Minor (2001) propose that purchase intention helps a firm evaluate the likelihood that a customer will behave in a certain way regarding the acquisition, use, and disposition of a product. Jiang and Benbasat (2007) argue that intention to purchase helps firms analyse the probability that a customer will buy a product or service from a particular website. According to Chen and Barnes (2007, p. 25) purchase intention is "the degree to which a customer is willing and intends to become involved in online transactions." Similarly, Pavlou (2003) state that customers with positive purchase intentions (positive feelings associated with the product or the service being offered) are more likely to involve themselves in an online transaction.

With information just a few clicks away, information technology has enabled customers to access a vast amount of information that can help them formulate their purchase decisions. However, this does not mean that in order to make informed decisions customer will continuously and endlessly search for information. Two contrasting aspects emerge about how information content on a firm's website affects customer's purchasing process: 1) Information online can facilitate a customer's purchasing process (Hausman and Siekpe 2009) and 2) Information online can adversely affect customer purchasing process due to information overload (Kim and LaRose 2004).

Shopping online has many potential benefits, one of which is the ability to obtain information that is user friendly and easy to acquire (Alba et al. 1997; Watson et al. 2000). The availability of easily accessible information in the online medium increases the number of

options (i.e., the number of different products available at different prices and at different locations) available to online customers (Pitt et al. 2002). With more information available, customers are more likely to spend time and effort on their decision processes in order to acquire additional benefits (i.e., informed purchases or better choices; lower prices) (Johnson and Payne 1985). When online customers are provided with information beforehand, they know what type of product or service they will receive and this reduces disconfirmation with their expectations (i.e., online customers will less likely be surprised or angry about the product or service received). Furthermore, the availability of vast amounts of information enables customers to search different merchants for the best product and the lowest price (Dickson 2000). This results in a downward pressure on prices that leads to a switch in market power from firm to customer (Bailey and Bakos 1997; Dickson 2000; Pitt et al. 2001). Hence, the online availability of information allows customers to make quality decisions that result in higher levels of satisfaction (Flavian et al. 2006).

The availability of information, institutively and theoretically, is an important factor in generating satisfying (Lynch and Ariely 2000) and positive feelings among online customers towards buying a product (Lohse et al. 2000). However, according to information overload theory, as the information load increases beyond a threshold, more customer effort is required to process the information and poorer decisions are often the result (Jacoby et al. 1974). The presence of a greater number of product information dimensions may amplify the information load and information search cost, and therefore, make it difficult for customers to fulfill their informational needs (Lee and Lee 2004). In other words, customers might be overwhelmed by the amount of information they obtain online. Furthermore, when customers are exposed to excessive information, they tend to get confused (i.e., customers may forget some of the

information needed for processing the primary task) (Speier et al. 1999), and therefore, feel less satisfied and less confident regarding the purchase decision (Keller and Staelin 1987; Lee and Lee 2004). Customers who select the Internet, keeping convenience in mind, will be spending much more time searching for the desired information due to the excess of information. This information load can cause frustration and irritation, and may result in the closure of the website (Kim and LaRose 2004).

Due to the varying information processing abilities that every individual customer has (Henry 1980), researchers have not been able to achieve a consensus regarding a universally accepted threshold of information load (Lee and Lee 2004). Due to the Internet's information intensive nature (Shim et al. 2001), customers want some kind of filtering mechanism to trim down the complex task of assessing and processing large quantity of information into easily acquirable and digestible information. Website personalization addresses concerns of information overload by customizing content to customer needs. Modifying website information to fit an individual's needs, personalized layout (i.e., web page modifies its layout, local information, and color based on individual user's profile) and personalized content (i.e., content of the web page is altered according to the user's preferences, knowledge, and interests) enhances online customer satisfaction (Liang et al. 2007), purchase intention (Yang et al. 2006), and loyalty (Szalay and Datovech 2000; Jackson 2007). In addition to the aforementioned benefits, personalized information also mitigates the problem of information overload up to a great extent (Rangaswamy and Balakrishnan 2002).

Furthermore, when it comes to online privacy issues (i.e., customers are not willing to share their personal information as they fear their information will be stolen or used for some other purpose), customers tend to employ a cost-benefit analysis (Culnan and Bies 2003).

Customers are more inclined to share their personal information when they realize that they will receive more benefits as a result (Culnan and Armstrong 1999). Therefore, easy access to the required information and convenience offered by website personalization not only helps online customers reduce their risk perception, but also helps them to overcome privacy issues (information risk) (Culnan and Bies 2003; Chellappa and Sin 2005).

Reviewing the literature, it is still not clear whether a firm should provide added or less amount of information in order to fulfill online customer's informational needs. In other words, there exists little consensus among researchers regarding the amount of information that should be presented in order to fulfill online customer's informational needs. In our study, we see things in totality. Rather than focusing on the amount of information that a website should present, we propose a model that can help online customers to filter out unwanted information regardless of how detailed it is. Proposed framework will provide an easy access to the information (i.e., filtering out unwanted information with the help of website personalization) that is relevant, meaningful, and can easily be processed. Furthermore, the proposed study will also provide empirical evidence that explains whether information alone is sufficient to satisfy and facilitate customers purchase decision, or firms should consider investing in technologies such as website personalization in order to leverage the importance of information content.

3. THEORETICAL BACKGROUND

The rapid evolution of technology during recent years has led to the development of fast and convenient shopping opportunities for customers. Online shopping has emerged as a powerful force. Since the emergence of the World Wide Web in the early 1990s, the Internet has rapidly mushroomed and today it is a key force driving businesses. While commerce may be conducted on the Internet in a number of ways, perhaps the most widely used method involves selling goods and services through a website. Regardless of size and scope, nearly all businesses now have a website (Cotter 2002). A corporate website augments the image of a business, and it helps firms generate more e-commerce sales (Geyskens et al. 2002) and net profits (Levenburg 2005).

An in-depth review of the literature on key website dimensions leading to customer satisfaction and purchase intention shows that certain website dimensions are more influential than others. For example, Ranganathan and Ganapathy (2002) discuss four key dimensions of B2C websites: information content, design, security, and privacy. They found that although all the dimensions have an impact on customer intention to purchase, security and privacy were found to have the strongest influence. Similarly, due to the newness and novelty of Internet as a shopping outlet, customers perceive different risks (e.g., product, delivery, and privacy risk), and therefore, place great importance on searching information before they make a decision or purchase (Shim et al. 2001). In addition to highlighting the fact that online shopping is perceived more risky than traditional retailing, studies in the past (Dollin et al. 2005), have emphasized the availability of website dimensions that can help in reducing online risk perception.

According to information search theory, information acquisition is one way online customers reduce their risk perception (Dowling and Staelin 1994; Park et al. 2005). In addition

to reducing online risk perception, the availability of relevant and easily accessible information helps customers make informed and potentially more satisfying buying decisions (Zinkhan et al. 1987; Szymanski and Hise 2000). The importance of information searching is heightened significantly in the context of online retailing as compared to conventional retail environment because of the Internet's power as an information search vehicle (Rowley 2000) and its information intensive nature (Shim et al. 2001).

Doing business online has numerous other advantages. Online retailers, through centralized warehouses, have access to a nearly unlimited "virtual inventory". As a result, they can offer customers easy access to a larger selection of products and lower prices than brick-and-mortar retailers. Increased Internet use has led to customers who are more aware of different product offerings. Kahn and Lehmann (1991) state that in traditional store sales, customers prefer not to spend their time and energy on finding the best offers in terms of prices or quantity. However, by using the Internet, online customers can easily find and compare different prices offered by several online retailers (Pitt et al. 2001; Baye et al. 2003). This convenience can motivate customers to engage in price comparison shopping, which leads to variety seeking in terms of the best price offered. With accurate and up-to-date product and price information at their fingertips, customers can quickly and easily find the best deals available. As such, the Internet has significantly reduced the cost and effort of comparison shopping, and a great number of customers are attracted by this advantage.

In a review of the online retailing literature, we find that two theories are the most significant: the theory of perceived risk and the information search theory. Both theories are valid for retailers using the Internet as a medium for carrying out their business. From the perspective of the theory of perceived risk, we observe that customers who shop online perceive

it to be riskier than traditional retailing (Park et al. 2005; Dollin et al. 2005). In an online environment, the customers have no physical contact with products and they lack face-to-face interaction with the firm. Due to these limitations, customers are not sure whether the product they want to buy online is worth the price (Li and Huang 2009), whether it will be delivered on time and in proper shape (Paraschiv and Spiekermann 2002), or if purchasing the product online will result in credit card fraud or personal information theft (Kim et al. 2008). Simultaneously, from the perspective of information search theory, we find that although shopping online has several potential risks, it offers many advantages, particularly ease of shopping, access to a larger selection of products, and ease of price and product comparison across different merchants (Spiller and Lohse 1998), all of which leads to customers who are able to make informed purchasing decisions.

3.1. Perceived Risk Theory (PRT)

Marketing researchers initially used perceived risk theory in order to understand the effect of unusual circumstances or incomplete information on customer purchases (Bauer 1967). Cox (1967) first described perceived risk as comprising of two components: uncertainty and adverse consequences. Uncertainty can be described as a function of the future which is unknowable, uncontrollable, and unpredictable (Lascaux 2003). The higher the product risk is, the higher the perceived uncertainty (Bhatnagar et al. 2000). At times, a customer may only have access to partial information. For example, from a website, the customer may know something about the product (e.g., how it looks from specific angles as per the images) but not how it feels or how to use it. This lack of information increases customer uncertainty.

Adverse consequences, on the other hand, are the negative outcomes that can result from a product purchase. There are several different types of possible negative outcomes which can be

categorized under different types of possible risks. In the past, researchers have identified different risk dimensions, including psychological, social, financial, performance, and physical risk, (Jacoby and Kaplan 1972); convenience risk (Li and Huang 2009); and product risk (Chang et al. 2005). Psychological risk is defined as the anxiety resulting from anticipated reactions occurring after purchasing and using the product, such as worry and regret (Perugini and Bagozzi 2001). Social risk is concerned with the adverse consequences associated with the unfavourable opinions of other people on account of the purchase and use of the product (Dholakia 2001). Financial risk is the potential monetary loss that customers may confront after purchasing particular products and services (Li and Huang 2009). Performance risk is defined as the likelihood that a product will perform as anticipated (Horton 1976). Physical risk pertains to safety issues arising from product usage, particularly for those products that are directly related to health and security (Li and Huang 2009). Convenience risk deals with the post-purchase inconveniences which the customers may face (Forsythe and Shi 2003). Kim et al. (2008, p. 546) state that "[p]roduct risk is associated with the product itself," meaning, for example, that the product received may be defective or the customer might not receive the right product (Chang et al. 2005). Risk, in general, can affect purchasing decisions in that a customer might not be sure whether the product purchased online will match or fulfill his/her motivation for buying the product. The purchased product may not satisfy the acceptance levels, or customers may feel that the product is not worth the price they paid.

Jacoby and Kaplan (1972) define perceived risk as a customer's assessment of the results of making a purchase mistake and the probability of making that mistake. Perceived risk mainly pertains to the search for information regarding products and services before actually buying the product (Dowling 1986). Since on-line customers have no physical contact with the products and

are presented with a large number of unknown brands, retailers, and manufacturers due to the international nature of the online medium, it is likely that perceived purchase risk has even more relevance for online markets than offline.

3.2. Information Search Theory (IST)

Information search theory posits that customers will stop the search when the expected benefits of the search equal or exceed the expected costs (Sproles et al. 1978). As shopping online reduces search costs and the effort required to search, individuals are more interested in using the Internet to locate opportunities for better prices and products. Information searching is a critical aspect of most decision-making tasks. Customers look for information in order to analyse different possibilities, streamline problems, and make choices. Stigler (1961) foundational work on the economics of information explains that the price difference for the same product at different online retailers is one of the main reasons customers search for information. Today, with the explosive growth of the World Wide Web, customers are well aware of price differences between different retailers. It is important for a website to provide customers with detailed and easily accessible information because before purchasing a product, customers look for information such as brand, variety, price, and quality. The easy availability of such information can significantly influence customer purchase decisions (Ranganathan and Ganapathy 2002).

Extensive research has been done on how much and what kind of information customers accumulate or search for before making a purchase (Mitra et al. 1999; Boshoff 2002; Browne et al. 2007). Research conducted by Ariely (1998) reveals the need for a systematic change in the design of online stores to vary information search costs. In her study, when the search for information regarding product quality was made easier by the online store design, subjects

showed less sensitivity to prices and purchased better quality and sometimes more expensive products. A website that provides quality information can reduce customer search costs (Liu et al. 2008) and create informed shoppers who make improved and potentially more satisfying buying decisions (Szymanski and Hise 2000). Similarly, Shim et al. (2001) found that the intention to use the Internet in order to search for information is not only the strongest predictor of Internet purchase intention, but it also mediates the relationship between purchase intentions and other success predictors. Hence, information search theory indicates that a website that provides easy access to quality information can have a positive impact on customer satisfaction (Szymanski and Hise 2000; Montoya-Weiss et al. 2003) and purchase intention (Lohse et al. 2000; Ranganathan and Ganapathy 2002).

3.3. Perceived Risk and Information Search Theory

Scholars of perceived risk theory have argued that the reason why customers engage in information searches is that the initial level of perceived risk related to a product may be above the customer's acceptable level. Information searching is thus considered to be a risk reduction strategy (Dowling and Staelin 1986) that helps bring down the 'inherent' risk of purchasing to a 'manageable' level (Bettman 1973). Customers try to reduce risk in many ways. For example, once they are satisfied with the functionalities, they may look for a cheaper price and then choose based on the 'look' of the object. Once the buyer perceives that purchase risk has been reduced to a reasonable or acceptable level on all risk dimensions, he or she stops searching and makes the purchase (Paraschiv and Spiekermann 2002). Perceived risk theory posits that information seeking can be effectively used for reducing perceived risk. It is only natural that the more information customers have about a product online, the more likely they are to make the purchase. Past research has shown that, in general, the greater the intensity of perceived risk, the

greater the need for information searches (Dowling and Staelin 1994; Mitra et al. 1999). Hence, in order to reduce perceived risk, customers search for relevant information (Park et al. 2005); this leads to informed shoppers who make improved and potentially more satisfying buying decisions (Szymanski and Hise 2000).

Studies conducted in the online context conclude that risk reduction positively impacts customer satisfaction and purchase intention (Kim and Stoel 2004; Montoya-Weiss et al. 2003; Vijayasarathy and Jones 2000; Boshoff 2002). Providing quality information to customers can reduce risk perception because information acquisition is one of the methods customers use to reduce their perception of risk (Taylor 1974; Park et al. 2005). Customers search for information not only to reduce risk, but for many other potential benefits such as finding better deals, price and product comparison (Negroponte and Maes 1996), to remain updated, and to make informed purchase decisions (Szymanski and Hise 2000; Zinkhan et al. 1987). It is important for firms to provide customers with tools or features that can help customers find desired information easily and reduce their perception of risk. . Researchers in the past, in addition to highlighting the importance of information content in terms of reducing online risk perception, have also connected the availability of certain website features with reduced risk perception. For example, Levenburg (2005) propose that online risk perception can be reduced by offering customers the necessary services before and after the purchase, this way firms can assure their consumers that the products being offered are worth purchasing and that any problem which occurs before or after the purchase will be quickly resolved. According to Lee and Park (2009) recommending relevant content and reducing customer information search efforts, personalized services can help customers reduce their perception of risk. Furthermore, Lee (2005); Hoffman et al. (1998)

propose that by providing interactive features such as online communities can enhance consumer trust in the on-line firm and reduce the perceived risk.

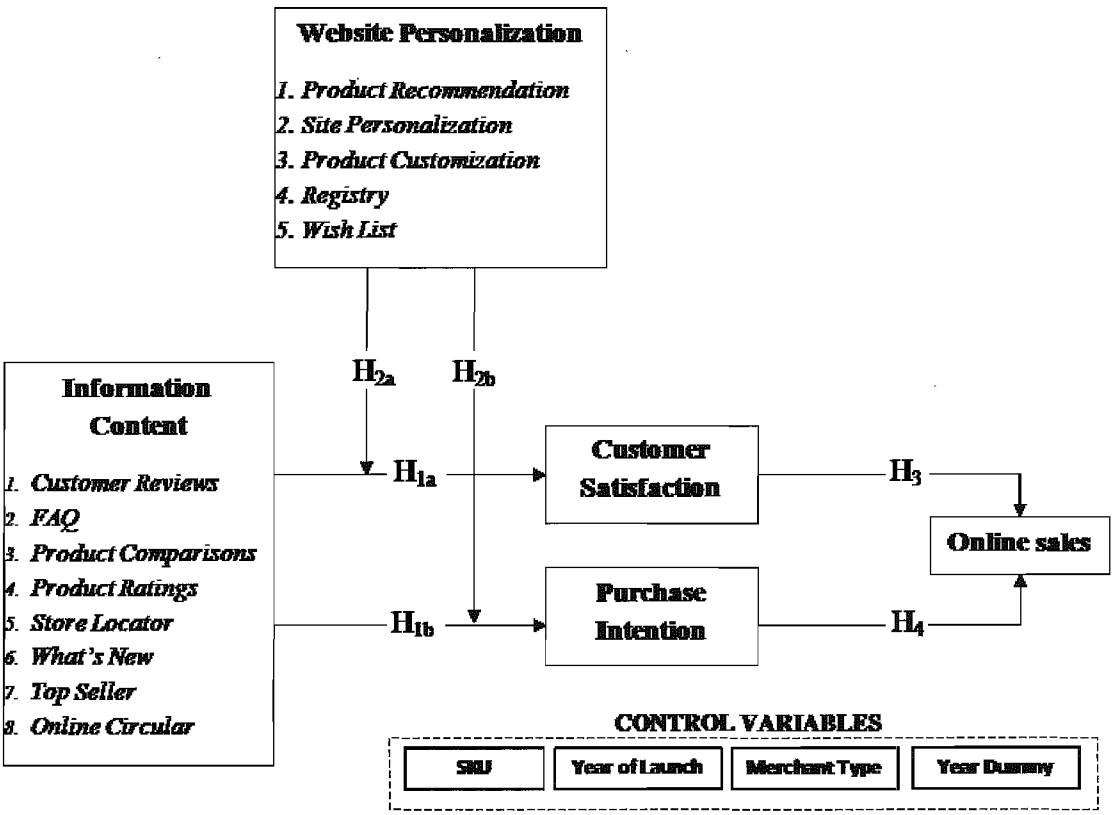
Trust has been identified as a valuable element in business relationships as it promotes risk taking in economic transactions (Egger 2001). In the online context, two major types of trust must be distinguished. The first type of trust exists between the online firm and the online customer (Bhattacherjee 2002; Kraeuter 2002); that is, customers assess the trustworthiness of the online firm with no intermediaries or third party involved (e.g., buying a product directly from the Nike website). The second type of trust in the online context exists between the customer and the third party or intermediaries (Palmer et al. 2000; Bailey and Bakos 1997); that is, the customer assesses the trustworthiness of the intermediary or the online forums involved (e.g., buying a product from a website offering Nike, Adidas, and Puma products). Trust building is a major method of reducing customers' perceptions of risk (Morgan and Hunt 1994). Information obtained from interactive functions, such as market research, interactive decision aids, and user groups or online communities generates higher levels of customer interest (Chakraborty et al. 2002), influences the level of satisfaction (Bauer et al. 2002), and reduces risk in different dimensions, including financial, social, and psychological risk (Paraschiv and Spiekermann 2002).

A number of frameworks have been suggested for online retailing, but still there exists little consensus among researchers and practitioners regarding the appropriate amount of information critical and essential to the improvement of customers' satisfaction and their purchase intention, and that eventually leads to the success of online businesses. Against this backdrop, this study will contribute to the current theoretical discussions and conversations about how information search and perceived risk theories can be applied to the management of online

retailer website features. In practice, the results and findings of this research will determine more precisely the intricate relationships between key website features and performance outcomes, and website dimensions (i.e. information content and website personalization) and performance outcomes, thus allowing online retailers to better manage their businesses by attracting more new customers as well as retaining their loyal customer bases.

4. HYPOTHESIS

Figure 1: ***Antecedents and Consequences of Customer Satisfaction and Purchase Intention***



4.1. Direct Effect of Information Content

4.1.1. Customer Satisfaction

The Internet is an information rich medium. According to Alba et al. (1997) the key difference between online and offline shopping is the availability and accessibility of information for online customers. However, due to virtual nature of online shopping environment, products are intangible so shopping online is perceived to be more risky (Tan 1999; Lynch and Ariely 2000; Dollin et al. 2005). Information provided on a firm's website plays a vital role in developing trust between the firm and the online customer (Wang and Emurian 2005; Flavian et al. 2006). Information acquisition, by amplifying online customer's trust, helps customers reduce

their perceived risk (Taylor 1974; Dowling and Staelin 1994; Park et al. 2005) while the availability of information on websites reduces customer search costs (Liu et al. 2008) and creates an informed shopper (Szymanski and Hise 2000). In the online context, customers have to rely on the information provided by the firm to judge the product's quality, performance, and functionality. Therefore, providing customers with comprehensive information helps them make better buying decisions and enhances customer satisfaction (Lynch and Ariely 2000; Montoya-Weiss et al. 2003). Therefore, we propose the following hypotheses:

H1a. The extent of the information content features presented to online shoppers is positively related to customer satisfaction.

4.1.2. Purchase Intention

Information about products and services is almost always obtained before making a purchase. The increased risks associated with online shopping (Pires et al. 2004) results in more information searching (Park et al. 2005). Lohse et al. (2000) found that the searching for product information is the most important predictor of whether a potential customer will make an online purchase. According to Shim et al. (2001), the intention to use the Internet to search for information is a strong predictor of Internet purchase intention. Research has shown that a reduced level of perceived risk is also positively associated with purchase intention (Vijayasarathy and Jones 2000; Kim 2006). The perceived risk impacts a customer's attitude towards a website, thereby indirectly having an impact on purchase intention (Heijden et al. 2003; Pires et al. 2004). Given this, we can posit that the information presented on a firm website will have a positive impact on purchase intention (Lohse et al. 2000; Ranganathan and Ganapathy 2002). Therefore, we propose the following the hypothesis:

H1b. The extent of the information content features presented to online shoppers is positively related to customer purchase intention.

4.2. Moderating Effect of Website Personalization

4.2.1. Customer Satisfaction

Keeping in mind huge variations in individual needs, personalized services tend to be considerably more satisfactory than a one-size-fits-all approach. By tailoring the information (i.e., reducing information overload and information search efforts) (Tam and Ho 2005) to the needs of customers, website personalization can enhance (i.e., positively moderate) the influence of information content on customer satisfaction. When customers are provided with relevant information, they tend to be more satisfied with the online firm (Zellweger 1997) because the website assists online customers in making better purchase decisions (Shankar et al. 2003). By providing assistance and guidance (i.e., providing recommendations) to online customers, website personalization can provide fast and easy access to the desired information (Gilmore and Pine 1997), which subsequently results in higher customer satisfaction (Oliva et al. 1992). For example, product recommendation services can reduce a customer's effort in finding a particular product. Large quantity of information available on a website (i.e. general information that is not targeted to an individual customer), with the help of website personalization is converted into high quality (i.e., relevant and useful) information. Provision of quality information reduces customer's search costs (Liu et al. 2008) and creates informed shoppers who make improved and potentially more satisfying buying decisions (Szymanski and Hise 2000). This is to say that, firms which use website personalization in order to filter out the irrelevant information can not only control customers' aimless surfing activities (Light and Maybury 2002), but also provide accurate and timely information that, in turn, often generates additional sales (Postma and Brokke 2002). Therefore, consistent with the results of Oliva et al. (1992) and Shankar et al. (2003), we propose the following hypothesis:

H2a. Website personalization will positively moderate the impact of information content on customer satisfaction.

4.2.2. Purchase Intention

By identifying and providing individualized information to each customer (i.e., modifying and extracting customer desired information from the general information available on the website and making it more meaningful), website personalization can augment (i.e., positively moderate) the impact of information content on customer's intention to purchase. Internet is an information rich medium which can easily lead to information overload for customers (Lee and Lee 2004), and this information load can easily cause confusion and frustration for customers while shopping. Using website personalization firms can address the overload problem. By filtering out irrelevant information and presenting information of likely interest for the customer, website personalization can provide easy access to information (effectiveness) with less effort (efficiency). By facilitating a customer's ability to find the needed information, at the right time (Gilmore and Pine 1997), website personalization reduces customers' perception of risk. According to information search theory, information acquisition is one of the methods customers use to reduce their risk perception (Taylor 1974; Park et al. 2005). This significantly influences customer's purchasing behavior (Kim et al. 2008; Chang et al. 2005). As such, we conclude that by using website personalization in order to convert general information into concise and relevant information, firms can offer customers convenience (i.e., delivering appropriate content that is easily accessible and digestible) and a sense of control over the exchange process (Van and Pruyn 1998), which significantly influences customer's purchase intentions (Rohm and Swaminathan 2004). Therefore, we propose the following hypothesis:

$H2_b$. Website personalization will positively moderate the impact of information content on customer purchase intention.

4.3. Online Sales Performance

4.3.1. Customer Satisfaction

Satisfaction reflects a firm's ability to fulfill customer's needs and expectations in a desired way. Customer satisfaction is believed to have a positive influence on online sales via different website success dimensions. According to Miguel et al. (2004), customer satisfaction leads to increased store sales by influencing the likelihood of repurchase and favourable word of mouth. The more satisfying an experience the customers have, the more likely they are to remain loyal. In other words, once customers are satisfied with a relationship, they lack motivation to search for alternatives. Therefore, satisfying online experiences, as well as generating positive purchase intentions (Yoon 2002), also helps firms retain customers. Furthermore, customer satisfaction, by increasing website traffic (i.e., repeat visit) and revenue per transaction (i.e., average ticket amount), positively influences online retailers' sales performance (Ayanso et al. 2008). Hence, we conclude that identifying and fulfilling online customer's informational needs and wants in an effective and knowledgeable way will positively influence customer satisfaction, and will subsequently result in higher sales performance. Therefore, we propose the following hypothesis:

H3. Customer satisfaction will positively influence online sales performance.

4.3.2. Purchase Intention

Studies in the past have supported purchase intention as a predictor of the actual purchase (O'Brien 1971; Morrison 1979). According to Jiang and Benbasat (2007), purchase intention allows firm to predict or evaluate the likelihood that a particular customer will purchase a product on a particular website. Customers with a positive purchase intention (i.e., customers have developed positive or favourable feelings towards the product) are more likely to make a

purchase (Pavlou 2003). Customers formulate positive purchase intention over a period of time (i.e., before purchasing a product, they search for information and the acquisition of the desired information makes customers feel more confident about their choices). Online customers perceive that the availability of useful and relevant information allows them to make better purchase decisions (Lynch and Ariely 2000; Kulviwat et al. 2004). Therefore, the availability of useful and relevant information positively influences customers' intentions to purchase, and eventually leads to actual purchase (O'Brien 1971; Morrison 1979; Leelayouthayotin 2004). Therefore, we propose the following hypothesis:

H4. Purchase intention will positively influence online sales performance.

5. METHODOLOGY

5.1. Data

In order to test our hypothesis, data was obtained from *Internet Retailer* (2006, 2007, and 2008), which ranks America's 500 largest online retailers for the years 2006, 2007, and 2008, based on their annual online sales. The data set also provides the retailer's background information, sales performance, and other web-related details (see Table 1 for the Total Sales and Sales of the Top 500 Web retailers in the three respective years). We retained data for 207 Web retailers after excluding missing data. The remaining data is comprised of 64 Web retailers out of the Top 500 in 2008, 71 from 2007, and 72 from 2006. The average size of the remaining retailers was approximately $51.7 billion (2006), $73.5 billion (2007), and $77.2 billion (2008). The merchandising categories represented in this remaining data set include: Apparel/Accessories (representing 12.1% of the retailers in our data), Books/CDs/DVDs (5.31%), Computer/Electronics (18.36%), Flowers/Gifts (2.89%), Food/Drug (10.14%), Hardware/Home Improvement (5.31%), Health/ Beauty (3.86%), Housewares/Home Furnishings (2.89%), Jewellery (2.89%), Mass Merchant (18.36%), Office Supplies (4.35%), Speciality/Non-Apparel (7.25%), Toys/Hobbies (2.42%), and Sporting Goods (3.86%) (see Table 2 for merchandising category comparisons across three years).

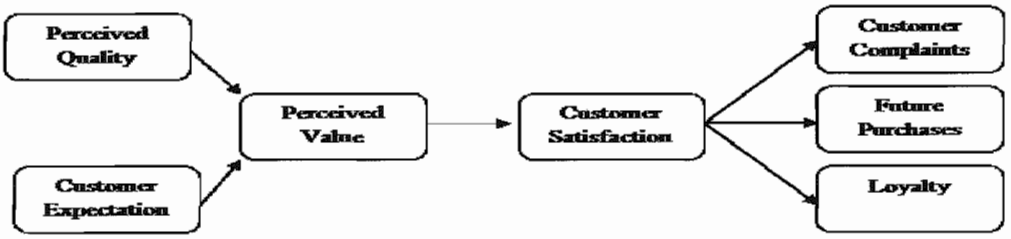
Table 1: Sales of the Top 500 Web Retailers in Three Respective Years

Year	Total Online Sales (US $ Billions)	Top 500 Online Sales (US $ Billions)	Top 500 Online Sales (% of Total Sales)
2006	136.20	83.60	61.38
2007	170.41	103.69	60.85
2008	178.18	115.85	65.00

Internet Retailer, based on a firm's historical merchandising channel or primary business, divides merchants into four types: Retail Chain, Web-Only, Catalog/Call Center, and Customer Brand Manufacturer. Retail Chain (i.e., store-based) contributed nearly 41%, 39%, and 39% of all online sales by the Top 500 Web merchants in the years 2006, 2007, and 2008. Similarly, Web-Only contributed 31%, 29%, and 32%; Catalog/Call Center, 14%, 20%, and 17%; and Customer Brand Manufacturer, 14%, 12%, and 12%, respectively. After excluding the missing data, a total of 68 (32.9%) merchants are Web-Only retailers, 70 (33.8%) are store-based retail chains, 16 (7.7%) are customer brand manufacturers, and 53 (25.6%) are catalog/call centers. In this study, similar to Ayanso et al. (2009), we further categorized merchant types into Web-Only and Non Web (i.e., Retail Chain, Catalog/Call Center, and Customer Brand Manufacturer) retailers.

Internet Retailer measures the customer satisfaction for the top 100 online US retailers using the methodology of the University of Michigan's American Customer Satisfaction Index (ACSI). The ACSI uses customer interviews as an input to a multi-channel cause and effect model with drivers of customer satisfaction on the left (customer expectations, perceived quality, and perceived value), customer satisfaction in the middle, and outcomes of customer satisfaction (customer loyalty, purchase behavior, and customer retention) on the right. Each driver of customer satisfaction is measured by several questions that are rated on a 0 to 100 scale. These questions help to determine customer evaluations of the antecedents of each driver.

Figure 2: Online Customer Satisfaction and Retention Programs (ForeSee Results)



Source: American Customer Satisfaction Index- ACSI Methodology (2009, Modified)

In addition to measuring customer satisfaction, *Internet Retailer* also provides insights into how customer satisfaction with specific elements of the web experience drives behavior: purchase intent, customer loyalty, customer complaints and future visits. In other words, a customer satisfaction score is used to predict customers' intention to purchase *(i.e., customer satisfaction scores anticipate whether a customer will purchase from the website or not*). In addition to using customer satisfaction scores, *Internet retailer* uses surveys that address how satisfaction directly influences customers' purchasing behavior.

Table 2: Number of Retailers Offering Different Product Categories

Category	2008% of total retailers	2007% of total retailers	2006% of total retailers
Apparel/Accessories	21.8% (109)	21% (105)	19.6% (98)
Books/CDs/DVDs	5.4% (27)	5.4% (27)	5.0% (25)
Computer/Electronics	11% (55)	11.2% (56)	10.8% (54)
Flowers/Gifts	2.6% (13)	2.8% (14)	3.2% (16)
Food/Drug	5.4% (27)	4.2% (21)	4.6% (23)
Hardware/Home Improvement	4.8% (24)	6.0% (30)	5.6% (28)
Health/ Beauty	5% (25)	4.8% (24)	4.2% (21)
Housewares/Home Furnishings	10.4% (52)	11.6% (58)	12.4% (62)

Jewellery	2.4% (12)	2.4% (12)	2% (10)
Mass Merchant	6.4% (32)	5.8% (29)	5.6% (28)
Office Supplies	3.8% (19)	3.4% (17)	2.8% (14)
Speciality/Non-Apparel	12% (60)	11.8% (59)	13.6% (68)
Toys/Hobbies	5.6% (28)	5.8% (29)	7.0% (35)
Sporting Goods	3.4% (17)	3.6% (18)	3.6% (18)

Source: Internet Retailer (2008)

5.1.1. Control Variables

In addition to using customer satisfaction and purchase intention in our hypothesized model, we also used four control variables: e-retailer's size, e-retailer's age, e-retailer type, and e-retailer's year of operation (i.e., 2006, 2007, and 2008). First, we controlled for the product variety offered by a retailer by using the number of stock keeping units (SKUs; log transformed variable). Studies in the past have shown that variety of SKUs offered on a firm's website influences future sales by having a positive influence on customer purchase behavior (McAlister et al. 1998; Boatwright and Nunes 2001). Second, we controlled for the retailer's age using the retailer's year of launch to control for the possible influence of the retailer's age on customer satisfaction, purchase intention, and sales. The firm's reputation and trust between other firms and customers is developed over a period of time, and therefore, can play an important role in customer purchasing decisions (Brynjlfsson and Smith 2000). Third, we controlled for the type of retailer, that is whether the retailer is Web-Only or not (i.e., Merchant Type). Fourth, we controlled for the year of operation (i.e., year in which the data were collected) using a dummy variable (i.e., Year Dummy) such that data from the year 2006 was set as 0, year 2007 as 1, and year 2008 as 2. The online retailing data in this study was collected over a period of three years.

By controlling for the year of operation in which the data were collected, we can detect whether or not the year from which the data comes, has an impact on the operationalization of our proposed model (i.e., whether the model works regardless of the year in which the data were obtained or if it works only for a particular year).

The website features that were extracted from the data are the most commonly found among online retailers. Originally 75 website features were extracted from the data. Using the procedure recommended by Ayanso et al. (2009) these website features were categorized under nine website dimensions including: information content, interactivity, navigation, consumer service, website personalization, product customization, sales promotion, visual appearance, and payment options. Subsequently due to our interest and research objectives, information content and website personalization were considered. In order to categorize the website features into information content and website personalization categorizes, we referred to the existing literature (Ranganathan and Ganapathy 2002; Ranganathan and Grandon 2002; Huang et al. 2006; Venasen 2007; Ayanso et al. 2008; Ayanso et al. 2009). Moreover, we also referred to practitioner-oriented guides to retail website design and usability in compiling our list (e.g., *Internet Retailer 2008*). As a result, eight website features in our data set were found to be related to information content (customer reviews, FAQ, product comparison, product ratings, store locator, what's new, top seller, and online circular) and five other website features were categorized under website personalization (product recommendation, site personalization, product customization, registry, and wish list).

In order to further validate this categorization, we used *Inter-rater reliability assessment* (Warner 2007). It assesses the proportion or percentage of agreement between the raters, and is fairly widely used to assess the reliability of scores. Normally, two independent raters are used in

order to assess the reliability, but more than two can be used in order to achieve parsimonious results (Lenke et at. 1998). A panel of five raters was selected on the basis of their past experience and familiarity with the online retailing literature. The raters were knowledgeable about the website dimensions and features considered in our study. Each rater was provided with a detailed description of the thirteen website features and two website dimensions (information content and website personalization). Raters were asked to make independent judgments about the categorization of the website features. Each rater was given a printed form on which to record his or her specific categorization for each of the website feature presented. The raters had ample time to categorize the features under the two website dimensions, information content or website personalization. All the raters participated individually rather than in a group setting (see *Appendix A* for detail explanation).

Thirteen website features that are provided on the top Web retailer's websites were identified in the data set. These features are defined by Ayanso et al. (2008) as "indicator variables," meaning they show different features that are present or absent on each retailer's site. A survey was conducted by *Internet Retailer* in order to identify different website features. Each Web retailer was asked, in a questionnaire, to list the specific online features they have implemented on their websites. The features that we have extracted from the data are those most commonly found on online retail websites. The numbers of features varies among different retailers. In this study, we assigned 1 to a feature that is present on the retailer's website and 0 if it is not present.

Table 3: Variables Extracted From the Data and Their Description in Our Study

Variables	Description
Information Content	Eight website features (customer reviews, FAQ, product comparison, product ratings, store locator, what's new, top seller, and online circular) that are related to information content
Website Personalization	Five website features (product recommendation, site personalization, product customization, registry, and wish list) that are related website personalization
Customer Satisfaction	Fulfilling customer's needs and expectations in a desirable way
Purchase Intention	Likelihood of site visitor to buy from that retailer
Sales Performance (ln)	Log transform of Online Annual Sales for the years 2006, 2007, and 2008
SKU (ln)	Log transform of the number of SKUs offered on the retailer's website
Year of Launch	Number of years since the online retail websites were launched
Merchant Type	Retailer is carrying out business only on the Web; no other channel (e.g., retail chain) is used
Year Dummy	Year of operation in which the data were gathered

We measured our independent variables based on their feature composition (Ayanso et al. 2009). For every retail website, the score was calculated on the basis of the number of features it offers in each of the two website dimensions. In our study, for instance, the information content consists of eight website features. In order to acquire the score of this component, we divided the number of features offered by a web retailer under the information content category with the total number offered under this category (i.e., 8). For example, if an online firm offers six out of 8 information content features, a score of 0.75 is assigned out of maximum 1.0 on the information content dimension.

5.2. Analysis

The hypothesized model was tested using structural equation modeling (SEM) analysis (Garson 1996). The data were analyzed using a covariance matrix as an input and maximum

likelihood estimation using the AMOS statistical program, version 17. SEM was selected as a statistical methodology because of its advantages over regression analysis, including flexible assumptions (particularly allowing interpretation even in the face of multicollinearity), its ability to test models with multiple dependents, its capacity to model error terms (Garson 1996), and its ability to allow researchers to test multiple relationships simultaneously (Hair et al. 2004).

The covariance modeling followed a two-step approach. The first step involved validating the structural model (i.e., meaningful categorization of website features under information content and website personalization by the means of *Inter-rater reliability* assessment). In the second step, we tested the structural model shown in Figure 1. Both exogenous (i.e., information content and website personalization were measured based on their feature composition) and endogenous (i.e., customer satisfaction, purchase intention, and sales performance) variables were modeled as observable variables. In order to use SEM, sample size should not be small as SEM relies on tests which are sensitive to sample size. Bentler and Chou (1987) recommended that in SEM at least a five-to-one sample size to parameter estimate should be observed. In this study, a sample size of 207 for a model with 9 variables (i.e., two exogenous, three endogenous and four control variables) is considered a reasonable sample size for SEM (Loehlin 1992; Garson 1996).

In order to measure the moderating influence, the interaction effect was modeled by creating an interaction term that is the product of information content (variable being moderated) and website personalization (variable that is moderating). Prior to creating the interaction term and hypothesis testing, we mean centered (i.e., subtracting the variable mean from all observations) the predictor variables (Cronbach 1987; Kopalle and Lehmann 2006) in order to achieve two distinct advantages. First, mean centering the variables that constitute the interaction

term can mitigate the potential threat of multicollinearity (Kopalle and Lehmann 2006). Second, mean centering improves the interpretability of the estimates (i.e., ability to distinguish the impact of main effect variable and interaction term). Furthermore, prior to the main body of analysis, we examined the patterns for mean, median, skewness, and kurtosis according to convention (Ghisellie et al. 1981). We found no threats to validity.

We hypothesized that the extent of the information content features presented to online shoppers will positively influence customer satisfaction (H_{1a}) and purchase intention (H_{1b}), in addition to this; we proposed that website personalization will positively moderate the impact of information content on customer satisfaction (H_{2a}) and purchase intention (H_{2b}). Since our structural model required the estimation of large number of parameters, we employed *Path Analysis* (i.e., a subset of SEM) in order to examine the hypothesized relationships (Maruyama 1998). As variables in our hypothesized model are measured (observable) variables, this allows us to use *Path Analysis*. According to Garson (1996), path analysis deals or contains only measured variables. The regression equations tested are specified below and the result for the *Path Analysis* appears in Table 12.

Customer Satisfaction:

$$\eta_1 \text{ [Customer Satisfaction]} = \gamma_{11} * \text{[Information Content]} + \gamma_{12} * \text{[Website Personalization]} + \gamma_{13} * \text{[Information Content *Website Personalization]} + \gamma_{14} * \text{[SKU]} + \gamma_{15} * \text{[Year of Launch]} + \gamma_{16} * \text{[Merchant Type]} + \gamma_{17} * \text{[Year Dummy]} + \zeta_1.$$

Purchase Intention:

$$\eta_2 \text{ [Purchase Intention]} = \gamma_{11} * \text{[Information Content]} + \gamma_{12} * \text{[Website Personalization]} + \gamma_{13} * \text{[Information Content * Website Personalization]} + \gamma_{14} * \text{[SKU]} + \gamma_{15} * \text{[Year of Launch]} + \gamma_{16} * \text{[Merchant Type]} + \gamma_{17} * \text{[Year Dummy]} + \zeta_2$$

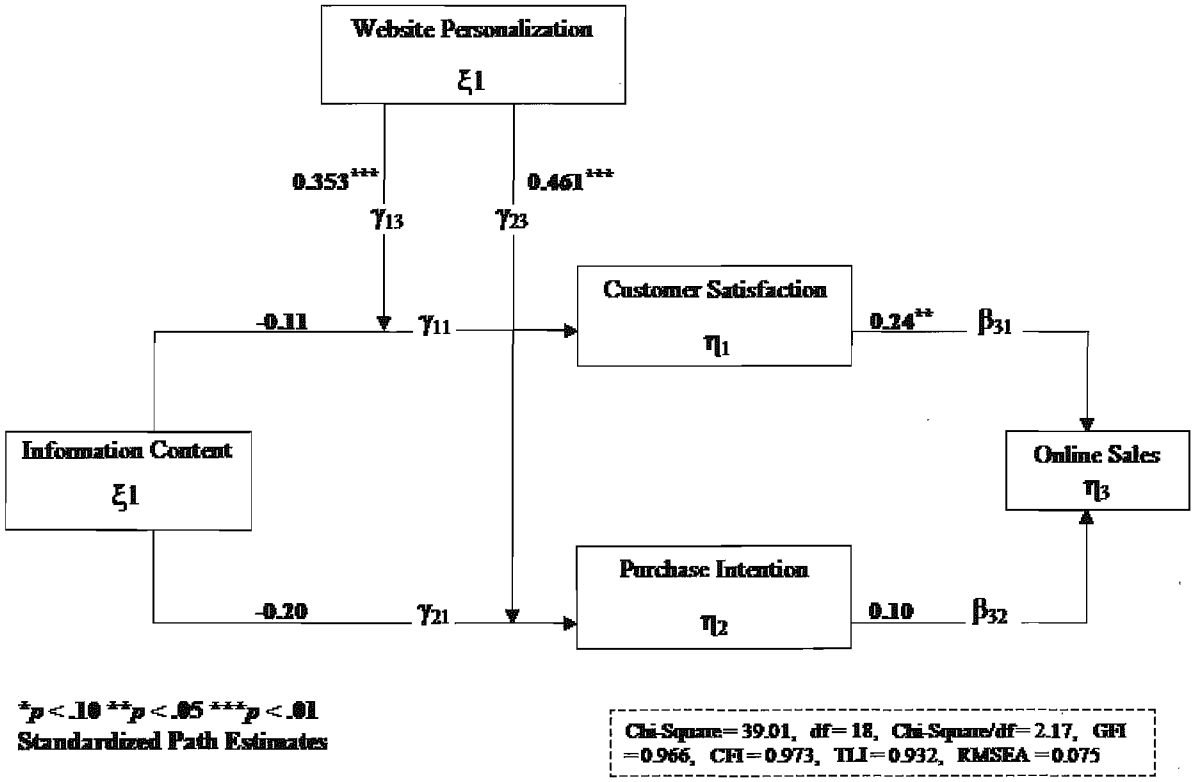
Similarly, in this study we also explored the influence of customer satisfaction and purchase intention on e-retailer's sales performance. We proposed that e-retailer's sales performance will be positively influenced by customer satisfaction (H_3) and purchase intention (H_4). The regression equation tested is specified below and the result for the *Path Analysis* appears in Table 12.

Sales Performance:

$$\eta_3 \text{ [Sales Performance]} = \beta_{31} * \text{[Customer Satisfaction]} + \beta_{32} * \text{[Purchase Intention]} + \gamma_{33} * \text{[SKU]} + \gamma_{34} * \text{[Year of Launch]} + \gamma_{35} * \text{[Merchant Type]} + \gamma_{36} * \text{[Year Dummy]} + \zeta_3$$

Overall, the model explained 22% of the variance in e-retailer's sales performance. To be consistent with the hypothesized model presented earlier in figure 2, information content (ξ_1) and website personalization (ξ_2) are treated as the exogenous variables. The endogenous variables include customer satisfaction (η_1) purchase intention (η_2) and sales performance (η_3). For the sake of clarity, symbol (γ) represents a path from an exogenous variable to an endogenous variable and (β) symbolizes causal relationship from one endogenous variable to another endogenous variable. Whereas, (ζ) is the error term.

Figure 3: Path Analysis Results of Antecedents and Consequences of Customer Satisfaction and Purchase Intention



In order to assess the goodness of fit of the model being tested, multiple fit tests were utilized: chi-square, goodness-of-fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI), and root mean square error of approximation (RMSEA). These tests are also recommended by Jaccard and Wan (1996) and Kline (1998). Table 4 shows the fit statistics for the hypothesized model.

Overall, the fit statistics indicate a good fit for the model. For a model to have a good fit, its chi-square value should not be significant (in this case, χ^2 (18) = 39.01). A significant chi-square value indicates that the given model's covariance structure is different from the observed covariance matrix. In order to accept a model, the GFI value should be equal to or greater than 0.90. According to Schumacker and Lomax (2004), the GFI value is usually high compared to

Table 4: Fit Statistics for Hypothesized Mediating Effect Model

	Scores	Recommended Value
Chi-Square (χ^2)	**39.01**	
p value	**0.01**	
Degrees of freedom	**18**	
Chi-square/ Degree of freedom	**2.17**	**< 3.00**
Goodness-of-fit index (GFI)	**0.966**	**> 0.90**
Comparative fit index (CFI)	**0.973**	**> 0.90**
Tucker-Lewis index (TLI)	**0.932**	**> 0.90**
Root mean square error of approximation (RMSEA)	**0.075**	**< 0.08**

other fit models; therefore, 0.95 should be the cut off point (in this case, GFI = 0.966). CFI allows researcher to compare hypothesized model fit with the null model (the "independent model"). In other words, it compares the covariance matrix of the hypothesized model with that of null model. Bentler (1990) suggests that CFI values above 0.95 indicate a good fit (in this case, CFI = 0.973). This indicates that 98% of the covariation in the data is reproduced by the hypothesized model. Similarly, the cut off value for TLI should be more than or equal to 0.90 (in this case, TLI = 0.932). We also reported RMSEA as it does not require a comparison with a null model as does, for instance, CFI. RMSEA provides an average lack of fit per degree of freedom. According to Hair et al. (2004), for a good model fit, RMSEA values should be less than or equal to 0.08 (in this case, RMSEA = 0.075). The RMSEA value of 0.075 which suggests a moderate fit of our model to the data. Overall, the model fit indices show that the hypothesized model fits the data quite well.

Table 5: Descriptive Statistics and Inter-correlation (n = 207)

	1	2	3	4	5	6	7	8	9
1. Information Content	1								
2. Website Personalization	0.522	1							
3. Customer Satisfaction	0.096	0.071	1						
4. Purchase Intention	0.208	0.143	0.066	1					
5. Sales Performance (ln)	0.362	0.22	0.308	0.318	1				
6. SKU (ln)	0.161	0.122	-0.037	0.027	0.245	1			
7. Year of Launch	-0.121	-0.086	0.096	-0.027	0.074	-0.045	1		
8. Merchant Type	-0.165	-0.091	-0.149	-0.398	-0.149	0.045	-0.029	1	
9. Year Dummy	0.587	0.658	-0.042	0.066	0.193	0.031	-0.015	-0.068	1
Mean	0.508	0.656	73.92	78.29	19.877	10.71	11.531	0.33	0.961
Standard Deviation	0.231	0.198	4.034	6.082	1.134	2.448	3.412	0.473	0.812

Based on our findings (Table 6), three of the hypotheses were supported. Contrary to what we anticipated, our results indicate that information content has no significant relationship with customer satisfaction ($\gamma_{11} = -0.113$, $p < 0.10$) and purchase intention ($\gamma_{21} = -0.2$, $p < 0.10$). Thus, H_{1a} and H_{1b} are not supported. Our results further show some interesting findings regarding website personalization as a moderator between information content and customer satisfaction and purchase intention. The results suggest that website personalization moderates the influence of information content on customer satisfaction ($\gamma_{13} = 0.353$, $p < 0.01$) and purchase intention ($\gamma_{23} = 0.461$, $p < 0.001$), therefore supporting H_{2a} and H_{2b}. In other words, websites that provide customized information (i.e., they filter out large quantities of unwanted information with the help of website personalization) can positively influence online customer satisfaction and purchase intention. After controlling for the effects of the stock keeping unit, year of launch, merchant type, and year dummy, our results suggest that there exists a positive significant

Table 6: Results for Path Analysis for the Hypothesized Model

Paths from	To	Hypothesis	Estimate	p-value	
Antecedents of Customer Satisfaction & Purchase intention					
Direct Paths					
Information Content	Customer Satisfaction	H1a (Not Supported)	-0.113	0.398	
Information Content	Purchase Intention	H1b (Not Supported)	-0.200	0.111	
Website Personalization	Customer Satisfaction		0.129	0.155	
Website Personalization	Purchase Intention		0.074	0.384	
Moderating Paths					
Information Content & Website Personalization	Customer Satisfaction	H2a (Supported)	0.461	0.007	***
Information Content & Website Personalization	Purchase Intention	H2b (Supported)	0.353		***
Consequences Of Customer Satisfaction & Purchase Intention					
Direct Paths					
Customer Satisfaction	Sales Performance	H3 (Supported)	0.240	0.014	***
Purchase Intention	Sales Performance	H4 (Not Supported)	0.100	0.330	
Control Paths					
SKU	Customer Satisfaction		-0.080	0.24	
Year of Launch	Customer Satisfaction		0.120	0.072	*
Merchant Type	Customer Satisfaction		-0.110	0.105	
Year Dummy	Customer Satisfaction		-0.258	0.007	***
SKU	Purchase Intention		-0.012	0.852	
Year of Launch	Purchase Intention		-0.009	0.882	
Merchant Type	Purchase Intention		-0.370		***
Year Dummy	Purchase Intention		-0.142	0.113	
SKU	Sales Performance		0.252		***
Year of Launch	Sales Performance		0.066	0.293	
Merchant Type	Sales Performance		-0.072	0.305	
Year Dummy	Sales Performance		0.190	0.003	***

Standardized estimates *$p <$ .10 **$p < .05$ ***$p < .01$

relationship between customer satisfaction and sales performance ($\beta_{31} = 0.24$, $p < 0.01$), thus supporting H_3. Whereas, we found no significant relationship between purchase intention and retailers' sales performance ($\beta_{32} = 0.10$, $p < 0.10$), thus H_4 is not supported.

Regarding the control variables, the following conclusions can be drawn from our empirical findings. The number of SKUs offered on a firm's website is positively related to the retailer's sales performance ($\gamma = 0.252$, $p < 0.001$). In brief, firms that offer a large number of SKUs perform better, in terms of sales performance, than firms offering a limited or small number of SKUs. Furthermore, our findings indicate that retailer's year of launch is positively related to the customer's level of satisfaction ($\gamma = 0.12$, $p < 0.10$); that is, all else being equal, customers feel more satisfied purchasing from retailers who have been in business for a longer period of time (i.e., younger retailers are outperformed by older counterparts). Our findings also indicate that customers are less satisfied ($\gamma = -0.11$, $p < 0.10$) and less motivated to purchase a product ($\gamma = -0.37$, $p < 0.01$) from retailers who run Web-Only (i.e., Merchant Type) operations. In other words, Web-Only retailers are more likely to enjoy a lower level of sales than other online merchant types. Last, our results show that the dummy variable (i.e., Year Dummy) is positively associated with the retailer's sales performance ($\gamma = 0.19$, $p < 0.01$). This indicates that there has been significant growth in the online retail industry as sale in 2007 and 2008, when compared to the sales of 2006, show an increasing trend.

5.3. Post Hoc Analysis

Originally, in our conceptual model we only hypothesized the indirect effect of information content, website personalization, and interaction term (i.e., information content x website personalization) on online sales through two mediating variables: customer satisfaction and purchase intention. The hypothesized mediating model fits the data reasonably well and meets all the minimum requirements (see table 4). Furthermore, the model adequately explains relationships among the variables considered, specifically for our sample of 207 e-retailing firms.

In addition to the hypothesized mediating effect only model, we conducted a *Post Hoc* analysis in order to explore the possibility that information content, website personalization and their interaction term may have a direct influence on online sales. A process similar to Qiu et al. (2009) was adopted in order to test for the direct and mediating effects of the three antecedents on online sales. Firstly, a re-specified direct effect only model with direct paths from information content, website personalization and the interaction term (i.e., information content x website personalization) to online sales was tested. In addition to utilizing multiple indices of overall fit (i.e., chi-square, GFI, CFI, TLI, RMSEA) for assessing the goodness of fit of different structural models, we also utilized the following four parsimony measures: AIC, ECVI, CAIC, and PNFI. According to Joreskog and Sorbom (2001), greater PNFI value indicates better fit and more parsimonious model. Whereas, for AIC, CAIC, ECVI it is the lower value that indicates better fit and more parsimonious model. The overall fit indices show that the direct effect only model (Model I in Table 7) fits the data quite well [χ^2 (17) = 39.38, GFI = 0.965, CFI = 0.971, TLI = 0.924, and RMSEA = 0.08].

Table 7: Fit Statistics for Hypothesized and Alternative Models

	χ^2 (df)	$\Delta\chi^2$ (df)	GFI	CFI	TLI	RMSEA	AIC	ECVI	CAIC	PNFI
Direct Effect Model (I)	39.38 (17)	0.37 (1) Model I & II	0.965	0.971	0.924	0.08	115.39	0.56	280.03	0.36
Mediating Effect Model (II)	39.01 (18)	15.18 (3) Model II & III	0.966	0.973	0.932	0.075	113.01	0.549	273.32	0.381
Direct & Mediating Effect Model (III)	23.83 (15)	15.55 (2) Model III & I	0.979	0.989	0.966	0.053	103.83	0.504	277.14	0.324

Secondly, we tested a direct & mediating effect model (Model III) that included both the direct and indirect effects (i.e., via customer satisfaction and purchase intention) of the three

antecedent variables on online sales. The statistics [χ^2 (15) = 23.83, GFI = 0.979, CFI = 0.989, TLI = 0.966, and RMSEA = 0.053] showed that the inclusion of mediating variables to explain online sales contributed to a better fit than the direct effect only model (Model I) [$\Delta\chi^2$ (2) = 15.55, $p < 0.01$] as well as the proposed mediating effect only model (Model II) [$\Delta\chi^2$ (3) = 15.18, $p < 0.01$] thus, supporting mediation (Hair et al. 2004).

Based on the goodness of fit and parsimonious indices, we clearly see that the direct & mediating effect model (Model III) is the best fit to our sample. However, we did not observe any significant departure between resulting estimates of the mediating only (presented in Table 6) and the direct and mediating effect model. Therefore, this further validates the robustness of our findings in terms of how the constructs are related.

6. CONCLUSION

6.1. Discussion

In this research, we investigated how different website features influence online sales by satisfying online customer's needs and inducing positive purchase intentions. In particular, this study provides insight into whether information content (regardless of how extensive it is) on a firm's website alone is sufficient to satisfy and generate positive purchase behaviour among online customers, or if external filtering mechanisms (in this case, website personalization) that make the availability of information more desirable and useful are necessary. Furthermore, this study provides empirical evidence that clarifies the role of customer satisfaction and purchase intention in analyzing the relationship between different website dimensions (i.e., information content and website personalization) and retailers' sale performance. This study also contributes to the literature on online retailing by explaining the role and implications of online risk perception and information search theories.

In acknowledgement of the effect of information content on customer behaviour, the intricacies of measuring and defining the optimal amount of information, the increasing demand of the Internet as an information search vehicle, and its tendency to induce information overload, the goal of this study was to examine and test empirically how information content in the presence of filtering mechanisms (i.e., website personalization) influences a customer's subjective state. Our findings show that information alone is not sufficient or has little influence on customer satisfaction and purchase intention. Even though the importance of information content is heightened significantly in the context of online retailing due to its information intensive nature, our results show that information alone is not enough for companies looking to satisfy and motivate customers to purchase. In the online context, before making a purchase,

customers search information in order to reduce the perception of risk. In other words, due to the information-intensive nature of the Internet, it would be difficult for customers to search the desired information in the absence of information filtering mechanisms. This increases the within-site information search costs and customers who are not able to find relevant information feel less confident and less satisfied with the search process. That is to say, customers who select the Internet, keeping convenience in mind, will be spending excessive time searching for the desired information can sometimes be frustrating for them. With respect to subjective states, this study confirms previous research (Green and Pearson 2009) that when people are provided general information (i.e. non-personalized information), they feel less satisfied and less motivated to buy from that website.

One of the most significant findings of our study is that in the presence of website personalization as a filtering tool (moderating variable), no matter how excessive the information is, the customers feel satisfied and motivated to buy from the website. In other words, the impact of information content on customer satisfaction and purchase intention can be leveraged or enhanced by allowing customers easy and quick access to the required information. Website personalization allows customers to search large volumes of data without the fear of information overload. With the help of website personalization, large quantity of information available on a firm website is converted into high quality (i.e., relevant and useful) information which in turn satisfies the customers' buying needs. That is to say, firms by using personalization features (e.g., product recommendation and site personalization) can convert excessive and unrelated information into meaningful information, which enables customers to make more informed and satisfying purchase decisions that require less cognitive effort. Therefore, filtering out irrelevant information for customers (i.e. eliminating useless information and bring to customer's attention

only the relevant information), website personalization trims down the complex task of assessing and processing a large quantity of information into easily acquirable and digestible information. In the context of this study, information that is targeted to an individual customer (personalized information) when compared to general information (non-personalized information) satisfies and motivates customers to purchase the product.

Moreover, our findings show that improved customer satisfaction leads to improved sales performance. This finding supports similar findings (e.g., Anderson and Sullivan 1993; Gomez et al. 2004; Ayanso et al. 2008) regarding the effects of satisfaction on sales performance. In general, firms that provide relevant and easy-to-obtain information (i.e., providing personalized information as compared to general information) can effectively and efficiently satisfy online customers' needs, which ultimately generate more sales for the online retailer. Furthermore, our findings show that purchase intention alone does not affect online sales performance. This finding contradicts previous findings (e.g., Morrison 1979; Leelayouthayotin 2004) that purchase intention is positively associated with actual purchase. Purchase intention can still be a predictor of an actual purchase, but purchase intention on its own is not sufficient to actually trigger sales.

Our study determines the precise relationship between information content and website personalization by portraying a bigger picture that enables us to understand the broader strategy of which these are both a part. Our findings show that information content and website personalization are complementary (i.e., together these dimensions allow customers to search and acquire right information at the right time and right place).

6.2. Managerial Implications

The above findings provide interesting implications for adopting website personalization in the online context. From the theoretical point of view, we have integrated risk perception and

information search theories, both which are relevant to providing overall personalized experience (i.e., providing appropriate and relevant information when ever needed by customers), and empirically explored their relative explaining capabilities in the online retailing context. For practitioners, the following recommendations are useful.

First, our findings indicate that an excess of information may not be beneficial to e-customers; rather, customers' exposure to overabundant information typically leads to poorer subjective states (i.e., customers are not satisfied or motivated to buy from the website). Information overload, where customers are not able to fully grasp, digest, or make sense of the information, adds to customer confusion and frustration, which eventually results in no sales. In other words, information content alone will not be a panacea for companies looking to grow and retain customers. Online managers who are trying to provide ever-increasing amounts of information in their effort to attract customers should pay more attention to information that is relevant to their customers. Otherwise, firms that strive aggressively to fulfill their customers' personalized needs and wants will leap ahead, having positioned themselves for success (i.e., more sales) while their competitors languish.

Secondly, our findings show that providing customers with relevant information that is easily accessible not only satisfies online customers, but also induces positive intentions to buy from that website. Although the cost of individual-specific personalization is much higher than for the one-size-fits-all approach, our findings show that if well implemented, website personalization offers promising results. Website personalization actually influences customer satisfaction and purchase intention by offering easy access to appropriate information. In other words, online retailers should invest in technologies that can convert information (regardless of how extensive the information is) into high quality information that is not only relevant and

appropriate for customers, but also easily accessible. Since it may cost a firm up to ten times more to acquire a new customer than retaining an existing one (Karimi et al. 2001), it is critical for firms to improve customer satisfaction; website personalization is an important vehicle to achieving this. Our results should alleviate online retailers' concerns over whether implementing website personalization is financially worthwhile or not.

Thirdly, information filtering techniques on the Internet to-date have mainly emphasized the informational aspects of shopping. Based on our findings, in addition to providing recommendations and personalized information, online retailers should provide features that allow users to customize products according to their individual preferences. By tailoring the whole customer experience, website personalization empowers customers to alter the interaction and relationship to suit their personal preferences. Receiving products and services that are personalized helps build emotional connections with customers (Weiss 1999) that ultimately can create satisfied and loyal customers.

Fourth, our results suggest that customer satisfaction plays an important role in augmenting online retailer's sales performance. However, the linkage between customer satisfaction and sales performance cannot be comprehended fully from observation, conceptual arguments, and descriptive statistics alone (Gomez et al. 2004). In this study, we propose a quantitative model that determines the website dimensions (i.e., information content and website personalization) that can positively influence customer satisfaction. It is by improving these dimensions that managers can achieve customer satisfaction and, ultimately, sales. In fact, our findings are consistent with the findings of *Internet Retailer* (2008) that show that customer satisfaction translates to real dollars. Customer satisfaction can predict what is to come and in this troubled economy smart companies by satisfying customers can improve sales. Given this,

we expect that the findings from this study will provide valuable managerial insights for the Web retailing industry as a whole.

6.3. Limitations and Future Research

Our research provides a unique perspective for managers given that our analysis is based on real data from a large number of top performing Web retailers. However, our results and conclusions are not without limitations. The first limitation has to do with the number of specific information and website personalization features identified in our study. We recognize that the number of features identified may not represent the exhaustive list of online features implemented by all Web retailers. There are certainly other online features that can elevate the role of information content and website personalization. We believe that future research can extend our conceptual model by including and evaluating these other online features.

Furthermore, our approach in this study is quantitative in nature (i.e., it measures information content and website personalization based on the number of features available on the retailer's website). Future studies on the quality of specific features and functions would certainly be a valuable addition to our current research. Moreover, our study focuses specifically on how web personalization operates as an information filter that can satisfy and facilitate customers' purchase decisions. Considering and evaluating other information filtering tools such as navigation would definitely be a useful contribution to the current understanding of these issues.

6.4. Conclusion

This paper examines the moderating role of website personalization (i.e., filtering mechanisms) in studying the relationship between information content provided on the top US retailers' websites, and customer satisfaction and purchase intention. Furthermore, this study also

explores the role played by customer satisfaction and purchase intention in studying the relationship between information that is personalized to the needs of individual customers and online retailers' sales performance. In addition to providing empirical evidence, this study also contributes to the literature of online retailing by integrating risk perception and information search theories.

Studies to date have had conflicting results when it comes to the amount of information that a website should present to its customers. Rather than focusing on the quantity of information, we examined the broader picture. We provide a unified framework that illustrates how online customers can acquire relevant information efficiently and effectively even in the presence of voluminous information. Using the data on the top Web retailers, this study extends the results of the literature (e.g., Szymanski and Hise 2000; Ayanso et al. 2008) and shows that the extent of retailers' efforts to provide information that is relevant, easy to digest, and accessible is positively associated with customer satisfaction and purchase intention. Furthermore, information that is targeted to an individual customer, by influencing customer satisfaction, serves as a driver to the retailer's online sales performance. In fact, the long term survival and profitability of online retailers does not depend on how extensive the information they provide is, but rather it is determined by how relevant and easily accessible that information is for customers.

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7. APPENDIX A

Inter-rater reliability assesses the proportion or percentage of agreement between the raters, and is fairly widely used to assess the reliability of scores (Warner 2007). A panel of five raters was selected on the basis of their past experience and familiarity with the online retailing literature. All the raters participated individually rather than in a group setting. All ten rater combinations (e.g., rater A & B, A & C, A & D…, and D & E) were tested (see Table 8 for an example of this test).

Table 8: Inter-Rater Reliability for Rater A and B

Person	A		
Person	B		
Cohen's Kappac	0.831168831		
A1 \ B1	Information Content	Website Personalization	Total
Information Content	Customer Review		0.615 (8/13)
	Online Circular		
	FFQ		
	Product Comparison		
	Product Ratings		
	Store Locator		
	Top Seller		
	What's New		
Website Personalization		Registry	0.385 (5/13)
	Wish List		
		Product Recommendation	
		Product Customization	
		Site Personalization	
Total	0.692 (9/13)	0.308 (4/13)	0.923 (12/13)

Notes: Number of agreement between Rater A and B: 8 + 4 = 12. Total number of judgments: 13 (sum of all row total or all column total). Po = observed level of agreement = number of agreement/total number of judgments = 12/13 = .923. Pc = chance level of agreement for each category, summed across two categories = (.692 x .615) + (.308 x .385) = .544

Each row corresponds to how rater A categorizes the website features under the two dimensions. Similarly, each column corresponds to how rater B categorizes the website features.

In order to assess the *Observed level of Agreement (Po)* between the two raters, we simply calculated the number of times the two were in agreement (see Table 9 for the results).

Table 9: Results of Rater A and B Rating

Description	Value
Number of agreements between rater A and B	12
Total number of judgments	13
Po Observed level of Agreement	0.923
Pc Chance Level of Agreement	0.544
Cohen's Kappa (K)	0.831

While calculating the *reliability index*, it is possible that a high level of agreement between the raters might be due purely to chance (Warner 2007). In order to further validate the reliability index, we calculated the *Chance Level of Agreement (Pc)*. We used the *Cohen's Kappa* (K) index of *Interrater Reliability* to further authenticate the rater's categorization of the website features. *Cohen's Kappa* (K) takes into account the proportion of agreement (Po, in this case: 0.923) and adjusts for the chance level of agreement (Pc, in this case: 0.544). According to Landis and Koch (1977), if the value of K is between 0.21 to 0.40, the results are fairly reliable; 0.41 to 0.60, moderately reliable; 0.61 to 0.80, substantially reliable; and 0.81 to 1.00, perfectly reliable.

$$K = \frac{(Po - Pc)}{(1 - Pc)}$$

Similarly, *Cohen's Kappa* values for all the ten combinations were calculated (Time1) and their average was taken in order to achieve parsimonious results (see Table 10 for *Cohen Kappa* values and their averages).

According to (Warner 2007), in order to assess the reliability of the results, a researcher should take at least two measurements from each participant and then assess the stability or

consistency of the results respectively. Therefore, the *test-retest reliability* of the categorization of website features by the raters was assessed at two points in time (the retest was carried out three months after the first reliability assessment). The same thirteen website features were reviewed again by the same five reviewers who participated the first time. The reviewers were once again asked to categorize the website features. In this way, *test-retest reliability* (Time 2) was used to analyze the consistency and reliability of the results from Time 1 (see Table 10 for Kappa values for Times 1 and 2).

Table 10: Inter-Rater Reliability Assessment

Raters	**Time 1**	**Time 2**
A1 & B1	0.831	
A1 & C1	1.000	
A1 & D1	1.000	
A1 & E1	1.000	
B1 & C1	0.831	
B1 & D1	0.831	
B1 & E1	0.831	
C1 & D1	1.000	
C1 & E1	1.000	
D1 & E1	1.000	
A2 & B2		0.831
A2 & C2		1.000
A2 & D2		1.000
A2 & E2		1.000
B2 & C2		0.831
B2 & D2		0.831
B2 & E2		0.831
C2 & D2		1.000
C2 & E2		1.000
D2 & E2		1.000
Average Kappa Value	**0.932**	**0.932**

In this case, the results were perfectly reliable and consistent across the two time periods (i.e., no difference between *Average Kappa* value during Time 1 and Time 2. See Table 11 for average *reliability assessment*).

Table 11: Inter-Rater Average Reliability Assessment

	Time 1	Time 2	Total Average
Average Kappa Value	0.932	0.932	0.932

In order to further validate the reliability assessment, the *Intra-rater reliability* (i.e., the agreement for the same rater rated on separate occasions) was conducted for the same five reviewers (i.e., Test1 and Test2). To assess the consistency of the results (i.e., Test1: see Table 12), we compared the Kappa values of the same raters obtained from Times 1 and 2. Furthermore, after assessing the same raters on the two occasions, we analyzed all possible rater combinations during the two time periods (Test2, see Table 12). Similar to *Inter-rater reliability*, *Intra-rater reliability* was assessed using the *overall percentage of agreement* and the *Kappa statistic*. The summary kappa scores and percentage agreement were calculated for each website dimension (n = 2) and also for each website feature (n = 13). The overall Kappa scores were calculated by taking the average Kappa scores for all combinations within each test (i.e., Test1 and Test2). Subsequently, we used the *test-specific* kappa values (see Table 13) to compute an overall *Kappa summary statistic* (in this case, *Average Intra-rater Kappa value* K = 0.966).

Table 12: Intra-Rater Reliability Assessment

Raters	Test 1	Test 2
A1 & A2	1.000	
B1 & B2	1.000	
C1 & C2	1.000	
D1 & D2	1.000	
E1 & E2	1.000	
A1 & B2		0.831
A1 & C2		1.000
A1 & D2		1.000
A1 & E2		1.000
B1 & A2		0.831

B1 & C2		0.831
B1 & D2		0.831
B1 & E2		0.831
C1 & A2		1.000
C1 & B2		0.831
C1 & D2		1.000
C1 & E2		1.000
D1 & A2		1.000
D1 & B2		0.831
D1 & C2		1.000
D1 & E2		1.000
E1 & A2		1.000
E1 & B2		0.831
E1 & C2		1.000
E1 & D2		1.000
Average Kappa Value	**1.000**	**0.932**

Table 13: Intra -Rater Average Reliability Assessment

	Test 1	**Test 2**	**Total Average**
Average Kappa Value	1.000	0.932	0.966

According to Landis and Koch (1997), a Kappa value above 0.81 is considered perfectly reliable (in this case, K = 0.966). Based on the *Inter-Intra reliability* results, eight features in our data set were found to be related to information content (customer reviews, FAQ, product comparisons, product ratings, store locator, what's new, top seller, and online circular) and five to website personalization (product recommendations, site personalization, product customization, registry, wish list).