www.elsevier.com/locate/ijpe

The Impact of E-service Offerings on the Demand of Online Customers

Xun Xu, Charles L. Munson, Shuo Zeng

PII: S0925-5273(16)30335-8
DOI: http://dx.doi.org/10.1016/j.ijpe.2016.11.012
Reference: PROECO6585

To appear in: *Intern. Journal of Production Economics*

Received date: 26 June 2016
Revised date: 31 October 2016
Accepted date: 21 November 2016

Cite this article as: Xun Xu, Charles L. Munson and Shuo Zeng, The Impact o E-service Offerings on the Demand of Online Customers, *Intern. Journal o Production Economics,* http://dx.doi.org/10.1016/j.ijpe.2016.11.012

The Impact of E-service Offerings on the Demand of Online Customers

Xun Xu[a], Charles L. Munson[b],* and Shuo Zeng[c]

[a] Department of Management, Operations, and Marketing; College of Business Administration; California State University, Stanislaus; One University Circle; Turlock, CA 95382; USA
[b] Department of Finance and Management Science; Carson College of Business; Washington State University; Box 644746; Pullman, WA 99164-4746; USA
[c] Technology and Operations Management Department; College of Business Administration; California State Polytechnic University, Pomona; 3801 W Temple Ave; Pomona, CA, 91768; USA

*Corresponding author. Tel: +1 509 335 3076; fax +1 509 335 3857
E-mail addresses: xxu@csustan.edu (X. Xu), munson@wsu.edu (C.L. Munson), shuozeng@cpp.edu (S. Zeng)

Abstract:

With the rapid growth of online shopping, online sellers are facing more sales opportunities and challenges in the highly-competitive e-commerce market. Sellers that can generate high customer cumulative ratings may experience higher demand and profits. We explore the question of how sellers can attain those high ratings. Using leading online shopping websites in China and the U.S., we collected data for 200 online sellers in both countries for each of 40 product categories (16,000 observations) pertaining to the sellers' respective customer cumulative ratings, history, price, and e-service offerings (customized website design, credit card payments/autopay, purchase security/seller communication, fast shipping, customer support, and refund opportunities). Via path analysis, we examine the extent to which online sellers' e-service offerings and characteristics influence customer cumulative ratings and demand. We find that the effects of online sellers' e-service offerings on customer cumulative ratings are moderated by product positioning (utilitarian/hedonic) and high/low perceived risk. Our evidence also suggests that high customer cumulative ratings positively influence demand. We discuss implications for customer online shopping behavior and online sellers' sales strategies.

Keywords: E-service, Customer Satisfaction, Demand, E-commerce, Service Operations Management

1. INTRODUCTION

Online shopping continues to grow rapidly. A great number of customers prefer online shopping to traditional "off-line" shopping due to convenience, time-savings, and so on (Mallapragada et al., 2016). Online shopping facilitates comparisons among different sellers because there is no physical distance between sellers who are just a mouse click away (Zeithaml, 1988). There are many factors influencing a customer's ultimate vendor choice, such as price, product, e-service offerings, and so on (Jiang et al., 2015). This paper focuses on the latter factor, investigating the effect of online sellers' different e-service offerings on customer demand as measured via customer cumulative ratings.

E-services, including information search services, agreement services, fulfillment services, and after-sales services, cover all of the services in the online shopping process (Bauer et al., 2006). In fact, e-services should cover all transaction stages to provide an interactive information flow, which is far more than just including access to the products and order fulfillment (Rust and Lemon, 2001). E-services provide additional value and utility beyond the product itself to online customers (Waltner, 2000). The quality of e-service offerings can increase online customers' purchase intentions, provide additional product value, enhance customer loyalty, and meet customers' new demands (Yu et al., 2015). In fact, inadequate e-service may cause online sales losses in the billions each year (Datamonitor, 2000). Online customers are less willing to purchase online from sellers with poor e-service (Bettua, 1999).

With the continuing improvement of information technology since the mid-1990s, many online shopping websites and online sellers have started offering e-services such as the personalized advice services provided by Ebay.com and Amazon. com (Xu et al., 2013). Other examples include transaction customization from Circuitcity.com (Thirumalai and Sinha, 2011), warranty and return services provided by sellers from Ebay.com (Pang et al., 2015), and prompt replies to customer needs from Ctrip.com (Gu and Ye, 2014).

Positive customer cumulative ratings can be considered as an intangible asset because they are formed through long-term accumulation (Gong and Wei, 2011). Customer cumulative ratings are presented in the form of previous customers' satisfaction levels and high evaluations, which may influence later customers' purchase intentions (Harrington, 2009). Sellers nowadays attempt to increase customer cumulative ratings through a variety of avenues. One of the most popular avenues is the provision of e-service offerings. Services offered by online sellers during the shopping process can attract customers and provide added value for the online retail experience (Homburg et al., 2002). Customer cumulative ratings can efficiently alleviate the higher perceived risk of online shopping compared with traditional brick and mortar store shopping due to the long physical distance between buyers and sellers (Bhatnagar et al., 2000) and therefore enhance customer purchase intention (Alhidari et al., 2015). Furthermore, many C2C websites and hotel booking websites can sort online sellers according to customer cumulative ratings, which results in higher demand for top sellers (Guo et al., 2013). The

importance of online cumulative ratings is particularly high because cumulative ratings are accumulated over time, which indicates positive goodwill and reputation of online sellers (Marinelli, 2007).

Customer cumulative ratings can also form an electronic word-of-mouth (eWOM) effect. Electronic word of mouth can be defined as "all informal communications directed at consumers through Internet-based technology related to the usage or characteristics of particular goods and services, or their sellers" (Litvin, et al., 2008, p. 461). Compared with traditional word of mouth, electronic word of mouth has a wider spread and faster speed of interaction and therefore has a much greater influence on demand (Cantallops and Salvi, 2014; Shin et al., 2014). Customer ratings and their generated eWOM have significant business value for companies (Luís Abrantes et al., 2013).

Our study examines online customers' behavior in the Chinese e-commerce market, which is among the most rapidly growing e-commerce markets in the world. According to Internet Live Stats, the popularization rate of Internet users was 7.30 % in 2004 and increased to 46.03% in 2014. Now China has more than 640 million Internet users—the largest in the world. Among those users, nearly 90% have experience searching for and purchasing goods through e-commerce. Chinese customers spend about 1 billion hours on the Internet daily, which is more than twice that of U.S. customers (Clemes et al., 2014). The total volume of online shopping transactions in China was more than $306 billion in 2013. Therefore, the Chinese e-commerce industry presents an excellent vehicle from which we can better understand the behavior of online customers. As an extension, we analyze a similar data set from Ebay to infer the generalizability of the results from China to commerce in other markets.

This study discusses the antecedents of online sellers' customer cumulative ratings and the influence of customer cumulative ratings on demand. Three research questions are raised: (1) How do various e-service offerings influence customer cumulative ratings of online sellers?; (2) Do product positioning and perceived risk play a role in how e-service offerings impact customer cumulative ratings?; and (3) Do customer cumulative ratings positively influence demand?

Overall, this paper contributes to the extant literature in the following ways. First, this is one of the first to explore the role of different e-service offerings on customer cumulative ratings. In particular, instead of treating the existence of e-service offerings in aggregate, we segment the offerings into specific types, which cover all of the online transaction stages: information, agreement, fulfillment, and after-sales phase (Bauer et al., 2006). Thus, we attempt to investigate which specific e-service offerings in which transaction stages are most helpful in enhancing customer response and which are not. Second, this essay investigates the influence of customer cumulative ratings on customer demand. The ratings are formed by accumulating customer evaluations, instead of using customers' average evaluations or average satisfaction rates, or the seller's average online rating scores, as in previous studies. The simple average number ranges from 0 to 5 and sometimes may be misleading. For example, a high average customer evaluation of a new seller could be confusing because the small number of initial visiting customers is not

representative of a long-term trend. Alternatively, customer cumulative ratings may be more reliable and could benefit online customers through word of mouth, which may influence purchase intentions to a large extent. Third, our data collection of 16,000 samples in Chinese and U.S. online markets covers 40 different products possessing a variety of characteristics, which allows us to explore the moderating roles of product positioning (utilitarian / hedonic) and high / low perceived risk in the online customer purchasing decision process. Finally, our conclusions can provide guidance regarding e-service offerings that is tailored to online sellers based on the placement of their products into one of four product characteristic quadrants.

2. THEORETICAL BACKGROUND

2.1 The Customer Decision-Making Process in Online Shopping

The theory of buyer behavior (Howard and Sheth, 1969) can be applied to both online purchase behavior and offline purchase behavior (Kukar-Kinney and Close, 2010). However, the customer decision-making process in online shopping has some special characteristics (Van der Heijden et al., 2003). For instance, one of the significant features of online shopping is comparison (Zeithaml, 1988). Comparison shopping is particularly easy when different sellers are easily accessible with a few mouse clicks. Customers first use information search to select their target product (Senecal et al., 2005). For a given product, customers then narrow down the searching scope to a set of sellers who have desired characteristics and offerings. Next, products for potential purchase are selected and a shopping cart forms (Narayana and Markin, 1975). Finally, customers remove excess/duplicate products from the shopping cart after comparing online sellers (Kukar-Kinney and Close, 2010).

Previous studies argue that traditional competitive factors, e.g., price, significantly influence the purchasing decisions of online customers (Griffis et al., 2012). In addition, however, customer demand may be influenced by more factors such as trust (Canetta et al., 2013) in online shopping than in physical shopping.

The conceptual framework of our study draws on foundations from (1) the service quality improvement and profitability model (Rust et al., 1995), (2) the eWOM model (Cantallops and Salvi, 2014), and (3) the browsing and purchasing online model (Mallapragada et al., 2016). The model of service quality improvement and profitability suggests that improvement efforts, which are e-service offerings in this study, can improve service quality and customers' perceived quality, and therefore can increase customer satisfaction. This provides the theoretical support for our first hypothesis. The eWOM model defines electronic word of mouth as all informal communications among customers that are related to the consumption of products and services or their sellers through Internet-based technology (Litvin et al., 2008). The impacts of eWOM, in terms of online ratings, reviews, and recommendations, include influence on customer online purchasing intention and decisions (Cantallops and Salvi, 2014). This provides the theoretical support for our second hypothesis. Finally, the browsing and purchasing online

model describes the two separate, but highly related processes in customer online shopping: (1) browsing online shopping websites and comparing products and (2) making an actual online purchase. Product and customer characteristics influence customer online shopping attitude, intention, and behavior in the browsing and purchasing stages. This provides the theoretical support for our third and fourth hypotheses.

2.2 The Influence of Online Sellers' E-Service Offerings on Their Customer Cumulative Ratings

We define e-service as any service offered by an online seller during the online shopping process. E-service covers all the services before, during, and after the delivery of an electronic purchasing transaction (Bauer et al., 2006; Ba and Johansson, 2008). Typically, e-service includes information search services such as offering superior website design, agreement services such as providing efficient ordering, fulfillment services such as furnishing reliable delivery, and after-sales services such as implementing a better return policy (Bauer et al., 2006).

Customer cumulative ratings are formed by the long-term accumulation of customers' evaluations and satisfaction levels, which refer to an evaluative summary of the purchasing experience based on the difference between expectation and perceived actual performance (Tse and Wilton, 1988). The seller's customer cumulative ratings can also be considered as a major element of its reputation and image (Marinelli, 2007).

E-service is identified as one the most important attributes for online sellers to attract customers (Ba and Johansson, 2008). The service-profit chain model, presented in Heskett et al. (1994), assumes a positive relationship between service quality and customer satisfaction, and it is supported by numerous empirical studies in e-commerce (Heim and Field, 2007).

There are several mechanisms behind the influence of e-service offerings on customer satisfaction. The quality of e-service offerings can be regarded as a key antecedent of customer satisfaction (Hoare and Butcher, 2008). E-service can provide extra information, choices, or benefits such as extended warranties, in addition to physical products, to enhance the retail experience (Homburg et al., 2002). Therefore, it can enhance customers' valuation of product offerings, build customer-retailer relationships, and therefore increase customer satisfaction and the product's perceived value (Falk and Hagsten, 2015). E-service can also enhance perceived control from customers and thus improve their satisfaction (Ba and Johansson, 2008). Better e-service quality can lead to higher perceived value added, increasing online customer satisfaction (Chang and Wang, 2008). Accumulated satisfaction and high evaluations from previous online customers form a high level of customer cumulative ratings for the online seller. Therefore, we hypothesize:

H1: E-service offerings positively influence online customer cumulative ratings.

2.3 The Influence of Online Customer Cumulative Ratings on Demand

Previous studies suggest that a seller's customer cumulative ratings positively influence customer demand and market share (e.g. Arrow and Nerlove, 1962). At the same time, a loss of customer cumulative ratings

may reduce demand (Deniz, 2007). Many theoretical models assume that demand is proportionally related to customer cumulative ratings (e.g. Grosset et al., 2011).

Online customer cumulative ratings can generate a vibrant word-of-mouth effect, which plays an important role in customers' final purchase decisions (Bayus, 1985). Previous studies find that word of mouth positively influences product sales, especially for online shopping (e.g. Duan et al., 2008; Cantallops and Salvi, 2014) because it can make online customers feel less risk caused by the spatial distance between the buyer and online sellers (Ganguly et al., 2009). Word of mouth serves as a communication tool that plays an important role in the consumer-to-consumer (C2C) market because it motivates customers to make a positive purchasing decision (Adjei et al., 2010). Online word of mouth in the form of sellers' cumulative ratings can also establish trust, which is a key factor in establishing and maintaining buyer and seller relationships and in reducing the buyers' perceived risk (Yan and Liu, 2009).

A high level of customer cumulative ratings can lead to higher clickstream, which is among the most influential factors known to increase customer demand in e-commerce (Montgomery et al., 2004). Most online shopping websites can rank the shops by sellers' rating, satisfaction rate, customer evaluation score, customer cumulative ratings, and so on. Sellers with a higher level of customer cumulative ratings are ranked higher, which may serve as a great advantage to increase the probability that customers will click them and add them into their consideration sets (Guo et al., 2013). The positive relationship between ranking position and seller inspection is discussed in previous studies (e.g. Xu and Kim, 2008). High ratings can also generate a positive electronic word-of-mouth effect, which leads to more collections or clickstream to the product's webpage (Zhang et al., 2010). Previous studies have provided clickstream analysis (e.g. Bucklin et al., 2002). Customer behavior across website search and within website search can be explained by clickstream analysis (Senecal et al., 2005). For online shopping, clickstream and customer demand are often discussed together (Jiang and James, 2006). Those online consumers with intended products for purchase but who have not yet picked a seller will continue to browse within a website and click various sellers' shopping pages (Bucklin and Sismeiro, 2003). The click behavior indicates a purchase intention that may lead to an actual purchase (Li et al., 2002; Moe and Fader, 2004). By spending time on surfing the product's webpage, online customers explore more information about the product and the seller. In this way, the longer visit duration of the seller's webpage enables online customers to decrease the risk-related perceptions of online purchase, and they are consequently more likely to buy products from that specific online seller (Mallapragada et al., 2016). Therefore, we hypothesize:

H2: Online customer cumulative ratings positively influence customer demand.

2.4 The Moderating Roles of Product Positioning and Perceived Risk

Our study classifies product category through two dimensions: product positioning (utilitarian/hedonic) (Huettl and Gierl, 2012) and perceived risk (high/low) (Lowe, 2010). Based on concepts described in

Kushwaha and Shankar (2013), Table 1 compares characteristics of utilitarian vs. hedonic product positioning, while Table 2 compares characteristics of high vs. low perceived risk.

Utilitarian products, such as office supplies, automotive accessories, and telecommunications equipment, are primarily purchased for long-term functional use. Customers buying utilitarian products mainly focus on their usefulness, functionality, practicality, and fulfillment of basic needs (Kim and Kim, 2016). Customers can easily evaluate utilitarian products because their benefits and goals are easily quantifiable, comparable, and justifiable (Okada, 2005). Customers often consider the consequence and effect of purchasing the utilitarian products (Batra and Ahtola, 1990). In contrast, customers often evaluate hedonic products more subjectively (Botti and McGill, 2011). Hedonic products, such as toys, wine, and jewelry, are often related to the sensation obtained from the experience of using the products and the playfulness of the purchasing experience (Voss et al., 2003; Okada, 2005). The benefits of using hedonic products are obtained from spontaneous affective responses, which are related more to excitement, escapism, enjoyment, sensory and emotional attributes (Klein and Melnyk, 2016). The playfulness of the purchasing experience mainly refers to online customers' fun and enjoyment from the process itself of shopping for hedonic products online (Jones et al., 2006). Customers view the experience as one of fun and fantasy, entertainment and exploration, (Hirschman and Holbrook, 1982; Kesari and Atulkar, 2016).

Consumers are more goal-oriented when purchasing utilitarian products, while they are more enjoyment-oriented when purchasing hedonic products (Strahilevitz and Myers, 1998). Therefore, customers purchasing utilitarian products may care more about e-service offerings that improve product utility, while customers purchasing hedonic products may care more about e-service offerings that improve the playfulness of the products or the purchasing process.

A customer's behavior during online shopping may be different depending on the product positioning. Customers searching for utilitarian products are more planned and goal-oriented (Novak et al., 2003) and therefore may be more rational (Chaudhuri, 2002). In contrast, customers searching for hedonic products have purchasing goals that are more ambiguous (Kushwaha and Shankar, 2013). Especially in an online shopping environment, these customers are more subjective and personal (Bridges and Florsheim, 2008) and consequently may exhibit more impulsive buying behavior, which is characterized by relatively fast decision-making and a subjective bias in favor of immediate possession (Rook and Gardner, 1993). Because the shopping behavior of customers buying utilitarian vs. hedonic products may differ, their expectations for e-service offerings may differ as well.

		Utilitarian Products	Hedonic Products
Product Characteristics	Attributes	Well-defined	Relatively ambiguous
	Purpose	Long-term functional use	Playfulness (pleasure,

			curiosity, fantasy, escapism, and fun)
	Goal	Utility maximization	Aesthetic appeal
Related Customer Purchasing Behavior	Purchasing Objective	Planned purchases, goal-oriented choice, cognitive involvement	Goal ambiguity
	Comparison Process	Easy to compare and evaluate	Variety seeking
	Value	Objective and consistent	Subjective and personal
	Purchasing Process	Task-related and rational	Impulsive buying
	Purchase Price	Search for good deals and high perceived value/cost ratio	Spend more and pay a premium
	Attachment	Logical	Emotional
	Satisfaction Source	Convenience, accessibility, selection, availability of information, lack of commitment	Stimulation/arousal, playfulness, and positive affect

TABLE 1
Product Positioning Characteristics

A product's positioning may also impact how its customers experience satisfaction. The satisfaction of buyers of utilitarian products mainly stems from convenience, accessibility, selection, availability of information, and lack of commitment. Meanwhile, the satisfaction of buyers of hedonic products mainly stems from stimulation/arousal, playfulness, and positive affect (Lim, 2014). Therefore, different e-service offerings may have a different relative ability to exceed customer expectations (hence raising customer satisfaction), depending on product positioning (Chitturi et al., 2008). Thus, we hypothesize:

H3: The level of influence of specific e-service offerings on online customer cumulative ratings differs between utilitarian and hedonic products.

Our study defines a product's perceived risk as performance risk, which is described as the loss experienced by customers when their expectations of a product do not actualize after purchase (Forsythe and Shi, 2003). Examples of high-perceived-risk products include electronics, musical instruments, and cosmetics, while examples of low-perceived-risk products include home and garden goods, pet items, and holiday items. A product's perceived risk is largely caused by the online customer's inability to examine products physically before buying (Bhatnagar et al., 2000). This risk is positively related to the product's price, the limitation of the desired information about the product, and the difficulty for online customers to adequately evaluate the product (Forsythe and Shi, 2003).

		High-Perceived-Risk Products	Low-Perceived-Risk Products
Product Characteristics	Consequence	Considerable uncertainty	Controlled uncertainty
	Probability associated with negative consequences	Greater	Lower
Related Customer Purchasing Behavior	Information searching	More likely to seek and use information	Less likely to seek and use information
	Consideration mechanism	More wary and risk averse	Less wary and risk neutral
	Risk handling behavior	Intensive (a variety of risk-handling activities)	Moderate
	Customer characteristics	More conservative and concerned	Seeking positive stimulation derived from novel products

TABLE 2
Perceived Risk Characteristics

Products with high perceived performance risk have a significant chance to incur negative consequences, and these consequences are usually more serious than those caused by low-perceived-risk products (Kushwaha and Shankar, 2013). Therefore, online customers of high-perceived-risk products are more conservative and concerned (Campbell and Goodstein, 2001). They are more goal oriented (Kushwaha and Shankar, 2013), more wary, and more risk averse (Campbell and Goodstein, 2001). Therefore, these customers prefer specific e-service offerings that would lower perceived risk.

Firms can lower perceived risk using a variety of risk-handling activities. Such activities include utilizing word-of-mouth information, brand reputation, and multiple channels to seek and use information (Gurhan-Canli and Batra, 2004). Therefore, specific e-service offerings that provide more information about online sellers and products would benefit customers of high-perceived-risk products more. Thus, we hypothesize:

H4: The level of influence of specific e-service offerings on online customer cumulative ratings differs between high-perceived risk and low-perceived risk products.

2.5 The Influence of Control Variables

The control variables in this study include product price and seller history, which are also considered as control variables in previous studies (e.g. Thirumalai and Sinha, 2011). Many previous studies find that price influences the demand of online selling or booking (Ma et al., 2016). Therefore, in this model, the relationship between price and demand is tested.

Seller history is chosen to be a control variable because a seller's cumulative ratings and number of reviews for its specific product are formed by accumulation through selling periods in the Chinese website Taobao. In this way, the number of years from the establishment of the online shop may positively influence the seller's cumulative ratings and the number of reviews for its specific product.

2.6 The Conceptual Model

As described in the next section, we collected data on six different types of e-service offerings. Consequently, Hypotheses H1, H3, and H4 are split and applied to each type separately. Analysis of each sub-hypothesis is provided in the discussion section. Based on the above discussion, our conceptual model is provided in Figure 1.

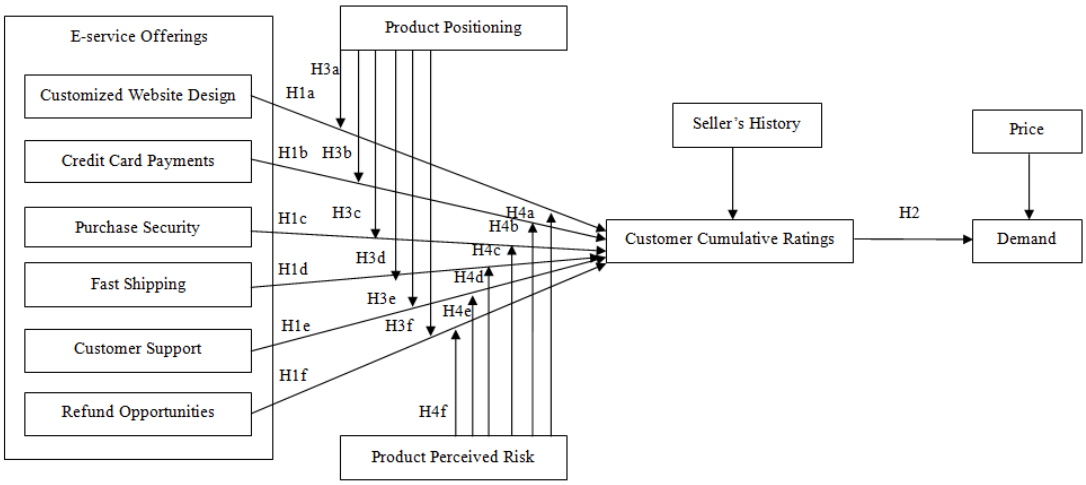

FIGURE 1
Conceptual Model for Empirical Study of E-Service Offerings

3. METHODOLOGY AND RESULTS

3.1 Data Collection

We collected data from the Taobao website (www. taobao.com), which is the leading online shopping website in China. It plays a similar role as Ebay in the United States and therefore can be considered as "Chinese Ebay." Taobao is the most popular online shopping website, having the largest number of commodities in China, and it bears the main characteristics of the Chinese e-commerce market (Wang et al., 2012). We describe our original Taobao study in Sections 3 and 4, and we describe our replication study in Ebay in Section 5.

We selected 40 products that included 20 utilitarian products and 20 hedonic products, which are categorized consistently with Kushwaha and Shankar's (2013) study, as shown in Figure 2. For each product, we selected 200 sellers. The data collection yielded 8000 samples. For each seller, we collected the relevant information one-by-one, which included the seller's information (e.g., username, number of online reviews, e-service offerings, customer cumulative ratings, and history) and the product information (e.g., price and demand). We recorded the seller's username to ensure that the same online seller did not appear twice in our samples. We clicked on the respective web page for all 8000 sellers and manually recorded the 12 pieces of data to be used in our study into a spreadsheet.

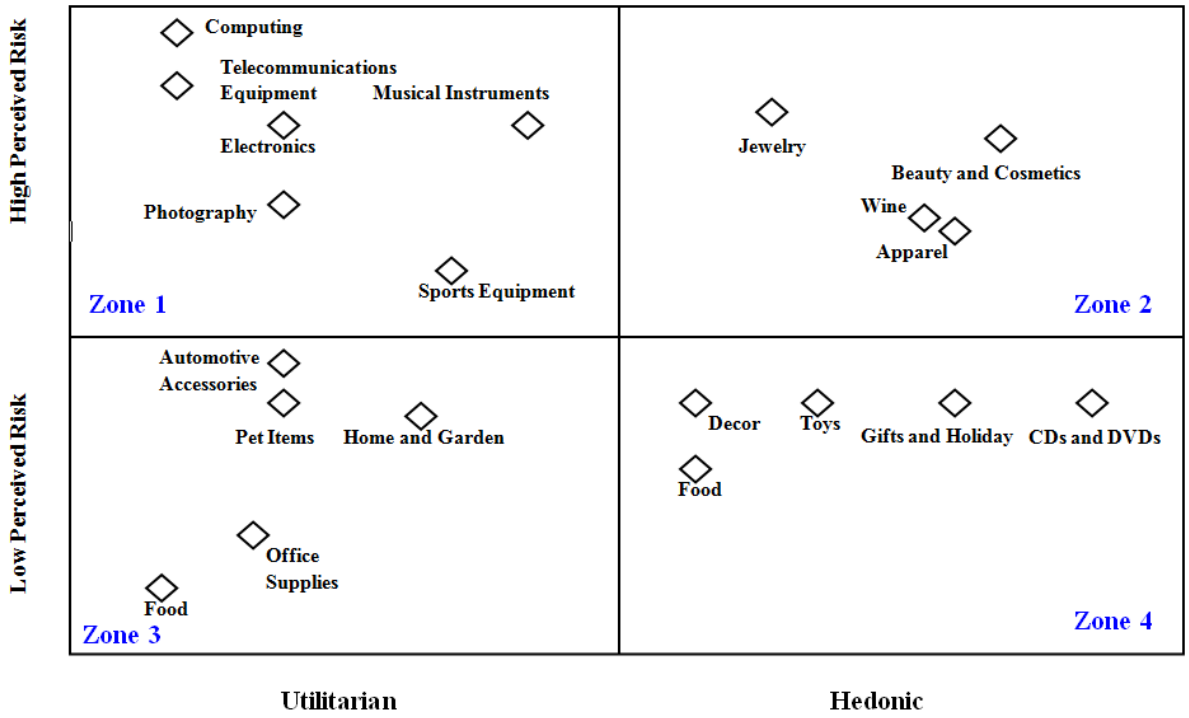

FIGURE 2
Categories of Tested Products
(Adapted from Kushwaha and Shankar (2013) to incorporate products in this study)

Customers consistently use relative prices to infer products' relative quality across a wide spectrum of countries, which is demonstrated by the price-quality effect (Nagle and Holden, 1995). In this study, we attempted to mitigate any price-quality impacts on customers' buying decisions by ensuring that the prices among all 200 sellers of each product type were no more than 10% apart.

3.2 Independent and Dependent Variables

3.2.1 E-service Offerings

We consider six main types of service offerings made by sellers on the Taobao website that cover all four e-service "processes" as described by Bauer et al. (2006): (1) information search service, (2) agreement service, (3) fulfillment service, and (4) after-sales service. We coded each of the six types of service offerings with a dummy variable (1 or 0). A value of 1 implies that the online seller signs the guaranteed terms provided by Taobao to offer the specific type of e-service. Otherwise, the variable is assigned a 0.

The information search service process mainly refers to customized website design, which is discussed in previous studies (e.g., Thirumalai and Sinha, 2011). For this study, customized website design indicates that the online seller has customized its webpage instead of using a default structure.

The agreement service process mainly refers to credit card payment and purchase security. Allowing online customers to purchase with a credit card makes the transaction process convenient and secure (Heim and Field, 2007). Purchase security means that the product being sold is made from the

original company and is not being represented fraudulently. Purchase security plays an essential role because Chinese online customers desire extra guarantees and warranties against product defects and other hazards, especially due to a lack of e-commerce-related laws and regulations in China (Liao et al., 2009). Together, credit card payment and purchase security can be considered to produce an efficient and authorized order process.

The fulfillment service process mainly refers to fast shipping, which is discussed in Omar et al. (2011). For this study, fast shipping indicates that online sellers must ship the products within 24 hours of the order arrival.

The after-sales service process includes refund opportunities (Griffis et al., 2012) and customer support (Heim and Field, 2007). Specifically, in Taobao, refund opportunities allow customers to exchange or return their purchased products within seven days for free. Customer support indicates that the buyer can receive compensation or other support when a seller engages in a fraudulent transaction or the products received are not the same as described online. It also provides warrantees against substandard products.

Although not comprising an exhaustive group, these six major e-service offerings provided by online sellers on the Taobao website cover the whole spectrum of e-service processes in online shopping. Therefore, analysis of these six e-service offerings can provide a snapshot of the importance and influence of all kinds of e-service.

3.2.2 Customer Cumulative Ratings

Customer cumulative ratings appear on each product page of the seller's website at an obvious location. Taobao measures customer cumulative ratings by the following method. A positive evaluation from the buyer adds one credit to the seller's customer cumulative ratings, while a negative evaluation subtracts one credit. A marginal evaluation does not change the cumulative credit total. The evaluation is provided by the buyer after the completion of the transaction. In other words, only after receiving the commodity through delivery would the customer provide the evaluation of the online seller. The customer cumulative ratings measure can represent a good proxy of the seller's goodwill, which is formed by long-term accumulation (Gong and Wei, 2011) and can refer to reputation and image (Marinelli, 2007).

3.2.3 Demand and Control Variables

On the Taobao website, both demand and price (a control variable) appear on each product's respective page. Demand represents the total amount of that product sold in the previous 30 days. In addition, the history (a control variable) of the seller's online shop is shown on the seller's webpage. The history identifies the year and month when the online seller opened its online shop. In our study, the variable of history represents the number of years between the opening of the seller's online shop and our data collection time.

3.3 Data Analysis and Results

We invoked path analysis to analyze the data. The descriptive statistics and correlation of the variables of all products are shown in Table 3. To determine direct influences, Hypotheses 1 and 2 were tested on each product separately. Alternatively, to explore the moderating roles of product positioning and perceived risk, Hypotheses 3 and 4 weree tested on all products jointly. The models appear to possess a good fit because the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), and the Normed Fit Index (NFI) are greater than 0.95, the Relative Chi-Square (Chi-Square / Degree of Freedom) is less than 3:1, the Root Mean Square Error of Approximation (RMSEA) is less than 0.07, and the Root Mean Square Residual (RMR) is less than 0.05. Categories are classified consistently with Kushwaha and Shankar's (2013) study. Standardized coefficients and hypothesis test results for hedonic products are provided in Table 4, while the parallel information for utilitarian products is provided in Table 5. Table 6 provides the results for the moderating variables of product positioning and perceived risk (Hypotheses 3 and 4, respectively). Finally, Table 7 summarizes the results of Hypotheses 1, 3, and 4 for all products. It provides guidance as to which type of e-service offering works well for which type of products.

----------Insert Tables 3−7 Approximately Here----------

4. DISCUSSION

4.1 The Role of E-Service Offerings in Customer Cumulative Ratings

Table 6 shows the moderating effect test results of Hypotheses 3 and 4. From Table 6, we see that H3a, H3d, and H3e are supported, while H3b, H3c, and H3f are not supported. Meanwhile, H4a, H4c, and H4e are supported, while H4b, H4d, and H4f are not supported. These results are incorporated into Table 7, which indicates that the role of online sellers' different e-service offerings in customer cumulative ratings depends on the both the type of e-service and the product category. Next we discuss each e-service offering in detail.

For H1a, H3a, and H4a, our results show that customized website design increases customer cumulative ratings of online sellers who sell products with high perceived risk and also for hedonic products (even with low perceived risk). Customized website design can extend the information about the products and sellers, provide a higher perception of navigation, and make the website more visible and easier for communication. These all mitigate products' perceived risks during the online shopping process and increase customer satisfaction and trust (Ganguly et al., 2009). Meanwhile, hedonic consumers primarily anticipate the sensation obtained from the experience of using the products, and this is often related to the playfulness of the shopping (Voss et al., 2003). A customized website design can provide the perception of personalizing the decision-making process for customers, which is highly valued with hedonic products and therefore increases customer satisfaction (Thirumalai and Sinha, 2011). However, for utilitarian products with low perceived risk, since customers pay more attention on the long-term functionality of the products, the information search process is relatively easy and may not necessarily be

enhanced via customized website design. Therefore, customized website design does not have a significant positive influence on utilitarian products with low perceived risk.

For H1b, H3b, and H4b, credit card payment does not have a significant effect on customer cumulative ratings for all of the online sellers in our study. Although a credit card payment provides a fast and safe way to make the transaction, providing this option does not increase customer satisfaction for Chinese online customers. This may be due in part to the low penetration of credit cards in the Chinese market because credit cards in China are still in the early growth stage of their product life cycle (Liu and Brock, 2010). Many Chinese customers do not hold credit cards and may not even be familiar with them. Instead, Taobao provides many payment tools such as Alipay and debit cards to facilitate the transaction. These payment tools have a high penetration in the Chinese market. In addition, Taobao charges online customers who use credit cards extra transaction fees (3%), which also discourages customers to use credit cards. We would expect that the result of H1b might differ in certain other countries such as the United States.

For H1c, H3c, and H4c, the results indicate that purchase security increases customer cumulative ratings of online sellers who sell products with high perceived risk. One of the inherent characteristics of online shopping is high perceived risk, and this is especially true for high-perceived-risk products (Sinha and Singh, 2014). Purchase security can reduce online customers' perceptions toward risk (Ganguly et al., 2009) and therefore enhance customer satisfaction. In addition, purchase security can also increase online customers' trust toward online sellers, strengthen the customers' and online-sellers' relationships, and improve customer satisfaction (Van der Heijden et al., 2003). Meanwhile, products with low perceived risk are more tangible; thus, online customers have more knowledge about them compared to high-perceived-risk alternatives (Nepomuceno et al., 2014). For these products, our data suggest that the effect of purchase security on customer purchase intention and customer satisfaction is not significant.

For H1d, H3d, and H4d, fast shipping appears to increase customer cumulative ratings of online sellers who sell hedonic products. Fast and on-time delivery performance of suppliers has been shown to be important to customers (Nakandala et al., 2013; Lu and Liu, 2015). It decreases the lead time of ordering and the amount of pipeline inventory, and it makes online shopping more attractive. Delivery time is among the important dimensions to evaluate the logistics service quality of online sellers, which has a significant positive relationship with customer satisfaction (Boone and Ganeshan, 2013). An important finding is that our data analysis shows that fast shipping only improves the customer satisfaction for hedonic products. The hedonic products tend to be purchased on impulse. Impulsive buying is characterized by relatively rapid decision making and a subjective bias in favor of immediate possession (Kacen and Lee, 2002). Customers buying hedonic products are less reflective in their thinking and pay little attention to potential negative consequences that may result from their actions (Hoch and Loewenstein, 1991). They focus more on the fun experience of the purchasing and use process, and

therefore are more eager to receive the products quickly. Thus, fast shipping is considered more important for hedonic products than for utilitarian products.

For H1e, H3e, and H4e, the results show that customer support increases the customer cumulative ratings of sellers who provide utilitarian products with high perceived risk. Customer support is one of the e-service offerings for post-service, which has a strong influence on the evaluations of online customers (Park et al., 2012). A product's perceived risk is an important factor in customer behavior (Kushwaha and Shankar, 2013). When the perceived risk increases, the customer engages in various types of risk-reduction activities such as information searching (Dowling and Staelin, 1994), and he or she cares more about online sellers' risk-reduction activities such as customer support, which has been shown to be very influential on customer evaluations (Gurhan-Canli and Batra, 2004). This is especially true for utilitarian products. Conversely, the consideration of future consequence for hedonic products is lower than that for utilitarian products (Sarkar, 2011). So online customers seeking to buy a hedonic product usually have a lower level of consideration of customer support. Also, customers buying hedonic products are more emotional than customers buying utilitarian products, who are more task-related and rational (Chaudhuri, 2002). Previous studies show that confidence and security, which can be strengthened by customer support, are antecedents of the feelings of satisfaction for consumers of utilitarian products (Chitturi et al., 2008). However, the delight of consumers of hedonic products stems from the promotion emotions of cheerfulness and excitement. Therefore, they may pay less attention to customer support. In summary, only purchasers of utilitarian products with high perceived risk are significantly influenced by customer support.

For H1f, H3f, and H4f, we find that refund opportunities increase customer cumulative ratings for all of the online sellers. A refund opportunity is among the most important post-service activities (Ramanathan, 2011) and represents an efficient way to implement service recovery actions when the previous service fails. Service recovery can increase customer satisfaction and re-purchase intention (Harris et al., 2006). Compared with physical store shopping, online shopping customers have a higher perception of risks and product uncertainties (Bhatnagar et al., 2000). A refund opportunity, as an important component in return management, is not only a necessary cost of doing business, but it also provides a great opportunity to generate higher customer satisfaction and repeat purchase, along with increased purchasing behavior (Ramanathan, 2011).

4.2 The Significant Positive Influence of Customer Cumulative Ratings on Demand

The results indicate that customer cumulative ratings have a significant influence on demand, supporting Hypothesis 2. High customer cumulative ratings can attract the attention of new customers and retain more loyal customers (Ouardighi and Pasin, 2006; Ramanathan et al., 2012) because the reputation generated by customer cumulative ratings could generate a higher level of customer-company identification for customers (Hong and Yang, 2009). The new visiting customers may be those who

originally purchased products from competitors; thus, the market share of a certain seller with increased customer cumulative ratings is enhanced (Fershtman, 1984).

The higher level of customer cumulative ratings of an online seller increases the trust of online customers. This enhances their desire to engage in the information searching process and to spend time on the seller's webpage (Bauer et al., 2006). Therefore, products on the high-rating online seller's website will have an increased likelihood to be added into the consideration sets of customers (Guo et al., 2013). Increased trust generated by higher cumulative ratings can also enhance buyer-supplier relationships (Yan and Liu, 2009), which strengthens the opportunities of communication and customized service and thus generates additional demand.

4.3 The Effects of Control Variables

The empirical results suggest that the control variable of product price does not have a significant influence on customer demand, at least within the range of prices included in our study. Thus, by controlling the price to be within a 10% difference, we appear to have effectively eliminated the influence of price difference on perceived product quality and thus eliminated the influence of price difference on demand.

The results further show that the control variable of online seller history has a positive influence on customer cumulative ratings for the majority of products. Customer cumulative ratings are formed through long-term accumulation. Thus, a longer history for a seller contributes to a higher level of customer cumulative ratings. Given that most of the online sellers in Taobao have a high satisfaction rate, more demand will occur and more positive evaluations will accumulate in the long run. However, because some of the newer sellers have a larger demand than the relatively older sellers due to providing more e-service offerings and other factors, their cumulating ratings may be also high. That is the reason why for the majority cases, instead of all, online seller history has a positive influence on customer cumulative ratings.

5. E-SERVICES IN EBAY: AN EXTENSION

5.1 Data Collection and Variables

To explore whether the results of our study of Taobao hold outside of China, we collected a similar data set from Ebay.com, which is one of the leading C2C online markets in the United States. We used the same 40 product types as in our China study, once again with 200 sellers each, totaling an additional 8000 observations. We utilized Ebay's Application Programmable Interface (API) to help us gather webpage data.

The Ebay and Taobao websites provide somewhat different data from each other. Fortunately, we could collect data from Ebay that represents six similar e-service offerings to those derived from the Taobao dataset. First, for customized website design, we tallied a numeric variable measured by the number of pictures posted by online sellers to display the product. Second, because credit cards are so

widely accepted by Ebay sellers that differentiating based on credit card acceptance would essentially be meaningless, we instead used autopay for this U.S. site in lieu of credit card payment. Autopay is a dummy variable that indicates whether the online seller requires immediate payment by the customer via a PayPal account at the time of purchase. Notably, both credit card and PayPal enhance the convenience and security of online transactions due to their similar mechanisms (Rossi, 2014). Third, because Ebay does not offer purchase security e-service like Taobao does, we used seller communication as a proxy for purchase security. This numeric variable ranges from 1 to 5, which is the average customer feedback score regarding experiences communicating with the online seller. Communication with online sellers enhances purchase security because it helps customers obtain more information about the product and the transaction (Bauer et al., 2006). Fourth, for fast shipping, we used a numeric variable representing the maximum number of days allowed for the online seller to prepare and ship the product after an order is placed by a customer. (Note that the expected direction of influence for this variable in the Ebay study will be opposite to that in the Taobao study, which uses a dummy variable where a value of 1 means "fast shipping.") Fifth, we used a numeric variable for refund opportunities that represents the maximum number of days allowed for the customer to return the product to the seller and ask for a refund. Sixth, customer support is a dummy variable that indicates whether the online seller has posted a return description, which shows that the online seller has return management and expresses extra care about customer satisfaction.

The dependent variables for customer cumulative ratings and demand, as well as the control variables for price and seller history, are equivalent to the measures used in the Taobao data set.

5.2 Data Analysis and Results

We again invoked path analysis to analyze the data from Ebay, using the Figure 1 model with the two substitutions noted above. The descriptive statistics and correlation of the variables of all products are shown in Table 8. The models appear to possess a good fit because the Goodness of Fit Index (GFI), the Comparative Fit Index (CFI), and the Normed Fit Index (NFI) are greater than 0.95, the Relative Chi-Square (Chi-Square / Degree of Freedom) is less than 3:1, the Root Mean Square Error of Approximation (RMSEA) is less than 0.07, and the Root Mean Square Residual (RMR) is less than 0.05. Standardized coefficients and hypothesis test results for hedonic products are provided in Table 9, while the parallel information for utilitarian products is provided in Table 10. Table 11 provides the results for the moderating variables of product positioning and perceived risk (Hypotheses 3 and 4, respectively). Finally, Table 12 summarizes the results of Hypotheses 1, 3, and 4 for all products.

----------Insert Tables 8−12 Approximately Here----------

5.3 Discussion

We find numerous similarities in the results between online markets in China and the U.S. With the Ebay data, we find that hypotheses 3 and 4 are supported, and hypothesis 1 is partially supported. As

with the Taobao data, these results demonstrate that the effects of online sellers' e-service offerings on customer cumulative ratings are moderated by product positioning (utilitarian/hedonic) and high/low perceived risk. In addition, we find that hypothesis 2 is supported with the Ebay data, suggesting as with Taobao that high customer cumulative ratings positively influence demand. In summary, these results support the generalizability of our findings to online markets outside of China.

In detail, for the six sub-hypotheses of hypothesis 1, we find many similarities with few inconsistencies between the two studies. We find that the influences of customized website design, fast shipping, refund opportunities, and customer support on customer cumulative ratings have similar patterns as in Chinese online market (with minor exceptions), which depend on product positioning and perceived risk. Furthermore, as credit card payments were not a significant factor in the Taobao study, the Ebay substitute of autopay also did not show a consistent significant impact across product categories for any of the zones of Figure 2. Although Ebay provides higher security and more convenience for online transactions, many credit cards used by U.S. customers also provide security by supplying refunds for fraudulent or disputed transactions (Whitrow et al., 2009). In addition, many customers still believe that credit cards offer the most beneficial and convenient way to make transactions (Faboyede and Egbide, 2012), which keeps those customers from seeking other transaction methods such as opening a new PayPal account in Ebay. The major inconsistency between the two markets appears when we examine the seller communication score Ebay. Unlike the significant results for purchase security in the Taobao study, we did not find a consistent significant influence across product categories for any of the zones of Figure 2 for seller communication in the Ebay study. Although communication with online sellers can help customers obtain more information about the product and the transaction, the search process does incur extra time. In addition, many customers communicate with online sellers mainly for product or service failures. While promoting communication as a service recovery strategy can alleviate customer dissatisfaction, it doesn't necessarily enhance customer satisfaction and the corresponding customer cumulative ratings (Gu and Ye, 2014).

6. THEORETICAL AND MANAGERIAL IMPLICATIONS

6.1 Theoretical Implications

Our study discusses demand management in the online channel. We explore the impact of e-service offerings on online customer demand through customer satisfaction, moderated by product positioning and perceived risk characteristics. Our study has several significant theoretical implications.

First, our study confirms the service quality improvement and profitability model by demonstrating that the various e-service offerings can enhance customer satisfaction. Our study extends the scope of the service quality improvement and profitability model from the traditional offline environment to the online environment. The e-service offerings in our study cover all of the online

transaction stages: information, agreement, fulfillment, and after-sales. In this way, our findings extend the process drivers of e-service quality (Heim and Field, 2007) by adding various e-service offerings as e-service quality drivers.

Second, our study supports the eWOM impact model by studying the impact of eWOM on online customer demand. The eWOM in our study is based on online customer ratings. Different from the online customer average ratings in most of the previous studies, our study uses online customer cumulative ratings. The cumulative ratings indicate both the average overall satisfaction of online customers and the number of online customers that have evaluated the online sellers. This shows both the online seller's e-service quality and the history of the online seller. The cumulative ratings reflect an accumulation of goodwill of online sellers. Therefore, our study provides another perspective to reflect the eWOM impact.

Third, our study confirms the browsing and purchasing online model by studying the corresponding variables reflecting each stage, namely, customized website design for the browsing stage and demand for the purchasing stage of customer online shopping behavior. Our study also shows the moderating effect of product category on customer perception of e-service offerings and the related online shopping behavior. This extends the product category effect in the browsing and purchasing online model by adding another attribute dimension of products: perceived risk in addition to product positioning.

6.2 Managerial Implications

Due to the significantly positive relationship between some specific online sellers' e-service offerings and customer cumulative ratings, online sellers should provide corresponding and qualified e-service to online customers to enhance customer satisfaction (Heim and Field, 2007). Whether providing specific e-service offerings is worthwhile depends on the products sold by online sellers. Online sellers may need to use different e-service strategies when selling utilitarian or hedonic products with different perceived risks.

In particular, online sellers who sell products with high perceived risk should provide the e-service offerings of customized website design, purchase security, and refund opportunities. We saw examples of customized website design on Ebay where sellers offering high-perceived-risk products such as jewelry posted more pictures and incorporated more product descriptions than many of the sellers offering low-perceived-risk products. Seller often also incorporate video into their online shopping websites for high-perceived-risk products such as the electronics sold in Appliancesonline (https://www.appliancesonline.com.au/). Meanwhile, JD Worldwide (www.jd.com), a popular online shopping website in China, is one of many online sellers providing purchase security for their sell high-perceived-risk products. Specifically, JD Worldwide offers purchase security for all products directly imported from overseas due to customer concerns about the quality of imported products. Finally, refund opportunity is universal for many online sellers. This guarantees customer satisfaction and reduces perceived risk due to the physical distance between online sellers and customers (Ramanathan, 2011). For example, Costco.com aims to ensure 100% customer satisfaction by providing a refund at any time after

purchase (except for certain electronics).

Furthermore, sellers of high-perceived risk utilitarian products should also offer strong customer support; whereas, sellers of high-perceived risk hedonic products should focus more on faster shipping. For example, many sellers selling computers and telecommunications devices such as iPads and iPhones on Ebay provide warranties to customers as a form of customer support (Pang et al., 2015). Meanwhile, many online sellers of high-perceived-risk hedonic products provide a same-day shipping policy to alleviate customers' impatience. For example, Ulta Beauty (www.ulta.com/), a popular beauty and cosmetics seller in U.S., promises that online orders arriving prior to noon will be processed and shipped the same day, with afternoon orders processed the following business day.

For online sellers who sell products with low perceived risk, sellers of utilitarian products value refund opportunities much more than other e-service offerings. Many such sellers believe that their flexible return and refund policies enhance sales by motivating repurchase behavior (Griffis et al., 2012). Meanwhile, sellers of hedonic products also value customized website design and fast shipping in addition to refund opportunities. Online toy sellers listed in Toysellers (www.toysellers.net) use colorful pictures, elegant descriptions, funny videos, and cartoon figures in their shopping websites to attract customers, and they control the handling time to ensure fast shipping. Some online sellers such as Goldie Blox (http://www.goldieblox.com/) even use blogs, discussion forums, and links to Facebook and Twitter on their shopping website to attract customers and enhance their enjoyment during their online shopping experience. Goldie Blox aims to ship orders immediately after arrival, and the seller uses Fedex as its only delivery partner to facilitate tracking during the shipping process.

Managers can strengthen the impact of e-service offerings in a variety of ways. For customized website design, online sellers should ensure that websites provide a high level of functionality, accessibility, efficiency of navigation, usefulness, and enjoyment of website use (Bauer et al., 2006). For transaction methods, sellers can expand options beyond traditional credit card and autopay acceptance. For example, sellers can utilize transaction bonuses promoted by a transaction agent (e.g., 5% cash back purchased from Amazon.com using a Discover credit card in certain months) or expand transaction methods (e.g., the "Easy Transfer" function developed by many online banks). For purchase security, online sellers should select qualified suppliers to ensure product quality and use efficient communication channels such as email, phone, and review board to communicate with customers about the quality of the product (Gu and Ye, 2014). For fast shipping, online sellers should attempt to minimize both handling time via prompt order processing and delivery time via selecting fast and reliable logistics providers. Furthermore, sellers can provide different shipping speeds with different costs, and they can also provide online tracking of the order. An estimated or guaranteed time of product arrival appearing on the website is beneficial (for example, Amazon.com). For refund opportunities, sellers can offer a variety of refund forms (e.g., cash back, exchange, and/or store credit), and they can offer a generous time-frame for the

refund window. To enhance customer satisfaction and repurchase intention even further, sellers can also pay the return shipping fee (Griffis et al., 2012), although most sellers in Ebay and Taobao ask buyers to pay to ship returns. Finally, for customer support, online sellers are encouraged to describe their products and service in extensive detail by providing plenty of introductions, pictures, and videos to build trustful customer relationships. This reduces customers' perceived risk and enhances customers' purchase intention (Canetta et al., 2013). In addition, warranty offerings also reduce customers' perceived risk and increase product utility, which enhances customer demand and willingness to pay (Pang et al., 2015).

Determining how much and which type of e-services to offer may not only depend on product categories—it may also depend on different demographic groups of customers. For example, in the Chinese market, customized web-site design may be particularly favored by customers in the coastal region of China due to their reputation for pursuing the latest fashions (Zhou et al., 2010). Alternatively, customers in the inland region of China may be more concerned with fast shipping due to their remote geographical location. In this way, knowing who the customers are may be particularly useful for sellers to make the proper decisions regarding e-service offerings.

The power of a positive eWOM effect can be enhanced through other methods in addition to increasing customer cumulative ratings. First, online sellers can utilize the online reviews to amplify the eWOM effect. Online sellers could encourage more customers to post their reviews online after purchasing (e.g., through offering a coupon for next purchase). They could also provide more communication channels (e.g. design a discussion board on the webpage) to increase the benefits of online communication and reviews on demand through word of mouth. Second, since for most products higher clickstream is an antecedent for generating more demand, sellers could increase clickstream generation efforts by providing e-service offerings and online advertising. Third, efficient online management through providing prompt responses to customer reviews and having timely interactions with customers through discussion boards and other electronic channels enhances customer satisfaction and alleviates customer dissatisfaction, especially when a service failure occurs, and thus increases the spread of positive eWOM (Gu and Ye, 2014). Fourth, sellers can utilize external resources to enhance eWOM. Providing links in the online shop to social media websites such as Facebook and Twitter can (1) offer more interactive information flow about the background of the products and sellers, (2) strengthen customer relationships, and (3) enhance purchase decisions (Nadeem et al., 2015).

For managers, the costs to provide each e-service offering must be taken into consideration. Although providing more e-service offerings may improve customer satisfaction, managers need to determine the optimal amount of e-service offerings by balancing costs and perceived benefits. Given limited resources, online sellers should set priorities on providing the e-services that most profoundly impact customer cumulative ratings for their products according to the results of our study.

7. CONCLUSION AND EXTENSION

7.1 Conclusion

By analyzing data collected from Taobao, a leading online shopping website in China, we found that some specific E-service offerings positively influence the customer cumulative ratings of online sellers. Specifically, five out of the six offerings examined appear to influence the ratings for sellers of at least certain types of products. Due in part to the unique characteristics of the Chinese market, providing the offering of credit card payments does not appear to make customers significantly more satisfied at this time. The influences of the other five e-service offerings vary by product positioning and perceived risk. In particular, online sellers who sell products with high perceived risk should provide the e-service offerings of customized website design, purchase security, and refund opportunities. Furthermore, sellers of high-perceived risk utilitarian products should also offer strong customer support; whereas, sellers of high-perceived risk hedonic products should focus more on faster shipping. On the other hand, for online sellers who sell products with low perceived risk, sellers of utilitarian products value refund opportunities much more than other e-service offerings. Meanwhile, sellers of hedonic products also value customized website design and fast shipping in addition to refund opportunities. Finally, we find that customer cumulative ratings positively influence customer demand for all categories of products.

As an extension, we collected a similar data from Ebay in the United States. We found that although autopay and seller communication do not appear to make customers significantly more satisfied, other findings from Ebay are similar to those in Taobao. This provides support that the results obtained from Chinese online market can be generalized to online markets outside China.

7.2 Implications for Future Research

Further research could extend our results in the following ways. First, a comparative study could be conducted to determine the potentially different effects of e-service offerings on the perception of online customers among different demographic groups. This could help firms determine how to provide customized e-service offerings toward different types of customers. Second, another comparison can be made between e-service offerings and offline service offerings. Whether the determinants of customer satisfaction toward service are the same for online customers and offline customers is worth investigation, especially with respect to customers who go to physical stores to evaluate products and then buy them online to get a cheaper price. In this case, the actual e-service offerings may play an important role for customers to decide whether the cheaper price can outweigh the risks and disadvantages of buying online. It would be worthwhile to explore how online sellers could take market share away from physical stores through more types of service efforts. Third, the relative costs of various e-service offerings could be analyzed more deeply. In this way, online sellers could best determine the optimal types and levels of e-service offerings to maximize their profits. Overall, with the explosive growth of e-commerce worldwide, both theoretical research and empirical findings will continue to identify best practices in

e-commerce.

REFERENCES

Adjei, M. T., Noble, S. M., & Noble, C. H. (2010). The influence of C2C communications in online brand communities on customer purchase behavior. Journal of the Academic Marketing Science, 38(5), 634-653.

Alhidari, A., Iyer, P., & Paswan, A. (2015). Personal level antecedents of eWOM and purchase intention, on social networking sites. Journal of Customer Behaviour, 14(2), 107-125.

Arrow, K., & Nerlove, M. (1962). Optimal advertising policy under dynamic conditions. Economica, 29(114), 129-142.

Ba, S., & Johansson, W. C., (2008). An exploratory study of the impact of e-service process on online customer satisfaction. Production and Operations Management, 17(1), 107-119. Batra, R., & Ahtola, O. (1990). Measuring the hedonic and utilitarian sources of consumer attitudes. Marketing Letters, 2(2), 159–170.

Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: A transaction process-based approach for capturing service quality in online shopping. Journal of Business Research, 59(7), 866-875.

Bayus, B. L. (1985). Word of mouth: the indirect effects of marketing efforts. Journal of Advertising Research, 25(3), 31-39.

Bettua, M. (1999). Rethinking e-commerce service. Call Center Solutions, 18 (July 1999), 148-150.

Bhatnagar, A., Misra, S. M., & Rao, R. H. (2000). On risk, convenience, and internet shopping behavior. Communications of the ACM, 43(11), 98-105.

Boone, T., & Ganeshan, R. (2013). Exploratory analysis of free shipping policies of online retailers. International Journal of Production Economics, 143(2), 627-632.

Botti, S., & McGill, A. L. (2011). The locus of choice: personal causality and satisfaction with hedonic and utilitarian decisions. Journal of Consumer Research, 37(6), 1065–1078.

Bridges, E., & Florsheim, R. (2008). Hedonic and utilitarian shopping goals: the online experience. Journal of Business Research, 61(4), 309-314.

Bucklin, R. E., Lattin, J.M., Ansari, A., Gupta, S., Bell, D., & Coupey, E. (2002). Choice and the internet: from clickstream to research stream. Marketing Letters, 13(3), 245-258.

Bucklin, R. E., Sismeiro, C. (2003). A model of web site browsing behavior estimated on clickstream data. Journal of Marketing Research, 40(3), 249-267.

Campbell, M. C., & Goodstein, R. C. (2001). The moderating effect of perceived risk on consumers' evaluations of product incongruity: preference for the norm. Journal of Consumer Research, 28(3), 439-449.

Canetta, L., Cheikhrouhou, N., & Glardon, R. (2013). Modelling hybrid demand (e-commerce "+" traditional) evolution: A scenario planning approach. International Journal of Production Economics, 143(1), 95-108.

Cantallops, S. & Salvi, F. (2014). New consumer behavior: a review of research on eWOM and hotels. International Journal of Hospitality Management, 36, 41-51.

Chang, H. H., & Wang, H. W. (2008). The relationships among e-service quality, value, satisfaction and loyalty in online shopping. European Advances in Consumer Research, 8(1), 10-14.

Chaudhuri A. (2002). A study of emotion and reason in products and services. Journal of Consumer Behaviour, 1(3), 267–279.

Chitturi, R., Raghunathan, R., & Mahajan, V. (2008). Delight by design: the role of hedonic versus utilitarian benefits. Journal of Marketing, 72(3), 48-63.

Clemes, M. D., Gan, C., & Zhang, J. (2014). An empirical analysis of online shopping adoption in Beijing, China. Journal of Retailing and Consumer Services, 21(3), 364-375.

Datamonitor. (2000). The U.S. market for Internet-based customer service. Product code: DMTC0681. New York: Datamonitor.

Deniz, A. (2007). Loss of customer cumulative ratings in the uncapacitated lot-sizing problem. Computers & Operations Research, 34(9), 2805-2823.

Dowling, G.R., & Staelin, R. (1994). A model of perceived risk and intended risk-handling activity. Journal of Consumer Research, 21(1), 119-134.

Duan, W., Gu, B., & Whinston, A. B. (2008). The dynamics of online word of mouth and product sales — an empirical investigation of the movie industry. Journal of Retailing, 84(2), 233-242.

Faboyede, O. S., & Egbide, B. C. (2012). 21st Century Private Higher Education in Africa: Improving the Quality of Curriculum Development with Financial Intelligence.

Falk, M., & Hagsten, E. (2015). E-commerce trends and impacts across Europe. International Journal of Production Economics, 170(Part A), 357-369.

Fershtman, C. (1984). Customer cumulative ratings and market shares in oligopoly. Economica, 51(203), 271-281.

Forsythe, S., & Shi, B. (2003). Consumer patronage and risk perceptions in internet shopping. Journal of Business Research, 56(11), 867-876.

Ganguly, B., Dash, S.B., & Cyr, D. (2009). Website characteristics, trust and purchase intention in online stores: an empirical study in the Indian context. Journal of Information Science and Technology, 6(2), 22-44.

Gong, Q., & Wei, P.F. (2011). Research of customer cumulative ratings from an accounting perspective. Contemporary Marketing, 9(1), 112-114.

Griffis, S. E., Rao, S., Goldsby, T. J., & Niranjan, T. T. (2012). The customer consequences of returns in online retailing: an empirical analysis. Journal of Operations Management, 30(4), 282-294.

Grosset, L., Roberti, P., & Viscolani, B. (2011). A goodwill model with predatory advertising. Operations Research Letters, 39(6), 419- 422.

Gu, B., & Ye, Q. (2014). First step in social media: Measuring the influence of online management responses on customer satisfaction. Production and Operations Management, 23(4), 570-582.

Guo, X., Ling, L., Dong, Y., & Liang, L. (2013). Cooperation contract in tourism supply chains: the optimal pricing strategy of hotels for cooperative third party strategic websites. Annals of Tourism Research, 41, 20-41.

Gurhan-Canli Z., & Batra, R. (2004). When corporate image affects product evaluations: the moderating role of perceived risk. Journal of Marketing Research, 41(2), 197-205.

Harrington, J. (2009). Games, Strategies and Decision Making, Chapter 15. New York, Worth Publishers.

Harris, K., Grewal, D., Mohr, L., & Bernhardt, K. (2006). Consumer responses to service recovery strategies: the moderating role of online versus offline environment. Journal of Business Research, 59(4), 425-431.

Heim, G. R., & Field, J. M. (2007). Process drivers of e-service quality: analysis of data from an online rating site. Journal of Operations Management, 25(5), 962-984.

Heskett, J. L., Jones, T. O., Loveman, G. W., Sasser, E., & Schlesinger, L. A. (1994). Putting the service-profit chain to work. Harvard Business Review, 72(2), 164-174.

Hirschman, E. C., & Holbrook, M. B. (1982). Hedonic consumption: emerging concepts, methods and propositions. The Journal of Marketing, 92-101.Hoare, R. J., Butcher, K. (2008). Do Chinese cultural values affect customer satisfaction / loyalty? International Journal of Contemporary Hospitality, 20(2), 156-171.

Hoch, S. J., & Loewenstein, G. F. (1991). Time-inconsistent preferences and consumer self control. Journal of Consumer Research, 17(March), 492-507.

Homburg, C., Hoyer, W.D., & Fassnacht, M. (2002). Service orientation of a retailer's business strategy: dimensions, antecedents, and performance outcomes. Journal of Marketing, 66(4), 86-101.

Hong, S.Y., & Yang, S. U. (2009). Effects of reputation, relational satisfaction, and customer–company identification on positive word of mouth intentions. Journal of Public Relations Research, 21(4), 381-403.

Howard, J. A., & Sheth, J. N. (1969). The theory of buyer behavior. New York, John Wiley & Sons, Inc.

Huettl, V., & Gierl, H. (2012). Visual art in advertising: the effects of utilitarian vs. hedonic product positioning and price information. Marketing Letters, 23(3), 893-904.

Jiang, P., & James, T. (2006). Building a customer base in the electronic marketplace: an empirical exploration of the e-tailing industry. Journal of Services Marketing, 20(6), 429-438.

Jiang, Y., Shang, J., Liu, Y., & May, J. (2015). Redesigning promotion strategy for e-commerce competitiveness through pricing and recommendation. International Journal of Production Economics, 167, 257-270.

Jones, M. A., Reynolds, K. E., & Arnold, M. J. (2006). Hedonic and utilitarian shopping value: Investigating differential effects on retail outcomes. Journal of Business Research, 59(9), 974-981.

Kacen, J. J., & Lee, J. A. (2002). The influence of culture on consumer impulsive buying behavior. Journal of Consumer Psychology, 12(2), 163-176.

Kesari, B., & Atulkar, S. (2016). Satisfaction of mall shoppers: A study on perceived utilitarian and hedonic shopping values. Journal of Retailing and Consumer Services, 31, 22-31.

Kim, S., & Kim, J. (2016). The influence of hedonic versus utilitarian consumption situations on the compromise effect. Marketing Letters, 27(2), 387-401.

Klein, K., & Melnyk, V. (2016). Speaking to the mind or the heart: effects of matching hedonic versus utilitarian arguments and products. Marketing Letters, 27(1), 131-142.

Kukar-Kinney, M., & Close, A.G. (2010). The determinates of consumers' online shopping cart abandonment. Journal of the Academic Marketing Science, 38(2), 240-250.

Kushwaha, T., & Shankar, V. (2013). Are multichannel customers really more valuable? The moderating role of product category characteristics. Journal of Marketing, 77(4), 67-85.

Li, S., Montgomery, A.L., Srinivasan, K., & Liechty, J.C. (2002). Predicting online purchase conversion using web path analysis. Working paper, Carnegie Mellon University.

Liao, H., Proctor, R. W., & Salvendy, G. (2009). Content preparation for e-commerce involving Chinese and U.S. online consumers. International Journal of Human-Computer Interaction, 25(8), 729-761.

Lim, W. M. (2014). Understanding the influence of online flow elements on hedonic and utilitarian online shopping experiences: a case of online group buying. Journal of Information Systems, 28(2), 287-306.

Litvin, S.W., Goldsmith, R.E., & Pan, B. (2008). Electronic word–of–mouth in hospitality and tourism management. Tourism Management, 29(3), 458-468.

Liu, M. T., & Brock, J. L. (2010). Antecedents of redemption of reward points: credit card market in China and international comparison. Journal of International Consumer Marketing, 22(1), 33-45.

Lowe, B. (2010). Consumer perceptions of extra free product promotions and discounts: the moderating role of perceived performance risk. Journal of Product & Brand Management, 19(7), 496-503.

Lu, Q., & Liu, N. (2015). Effects of e-commerce channel entry in a two-echelon supply chain: A comparative analysis of single- and dual-channel distribution systems. International Journal of Production Economics, 165, 100-111.

Luís Abrantes, J., Seabra, C., Raquel Lages, C., & Jayawardhena, C. (2013). Drivers of in-group and out-of-group electronic word-of-mouth (eWOM).European Journal of Marketing, 47(7), 1067-1088.

Ma, S., Lin, J., & Zhao, X. (2016). Online store discount strategy in the presence of consumer loss aversion. International Journal of Production Economics, 171(1), 1-7.

Mallapragada, G., Chandukala, S. R., & Liu, Q. (2016). Exploring the effects of "what" (product) and "where" (website) characteristics on online shopping behavior. Journal of Marketing, 80(2), 21-38.

Marinelli, C. (2007). The stochastic customer cumulative ratings problem. European Journal of Operational Research, 176(1), 389-404.

Moe, W. W., & Fader, P.S. (2004). Capturing evolving visit behavior in clickstream data. Journal of Interactive Marketing, 18(1), 5-19.

Montgomery, A., L., Li, S., Srinivasan, K., & Liechty, J. C. (2004). Modeling online browsing and path analysis using clickstream data. Marketing Science, 23(4), 579-595.

Nadeem, W., Andreini, D., Salo, J., & Laukkanen, T. (2015). Engaging consumers online through websites and social media: A gender study of Italian Generation Y clothing consumers. International Journal of Information Management, 35(4), 432-442.

Nagle, T. T., & Holden, R. K. (1995). The strategy and tactics of pricing (2nd ed.). Englewood Cliffs, NJ, Prentice-Hall.

Nakandala, D., Samaranayake, P., & Lau, H. C. W. (2013). A fuzzy-based decision support model for monitoring on-time delivery performance: A textile industry case study. European Journal of Operational Research, 225(3), 507-517.

Narayana, C. L., & Markin, R. J. (1975). Consumer behavior and product performance: An alternative conceptualization. Journal of Marketing, 39(4), 1-6.

Nepomuceno, M. V., Laroche, M., & Richard, M. (2014). How to reduce perceived risk when buying online: the interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns. Journal of Retailing & Consumer Services, 21(4), 619-629.

Novak, T., Hoffman, D., & Duhachek, A. (2003). The influence of goal-directed and experiential activities on online flow experiences. Journal of Consumer Psychology, 13(1), 3-16.

Okada, E. M. (2005). Justification effects on consumer choice of hedonic and utilitarian goods. Journal of Marketing Research, 42(1), 43-53.

Omar, M., Bathgate, I., & Nwankwo, S. (2011). Internet marketing and customer satisfaction in emerging markets: the case of Chinese online shoppers. Competitive Review: An International Business Journal, 21(2), 224-237.

Ouardighi, F. E., & Pasin, F. (2006). Quality improvement and customer cumulative ratings accumulation in a dynamic duopoly. European Journal of Operations Research, 175(2), 1021-1032.

Pang, G., Casalin, F., Papagiannidis, S., Muyldermans, L., & Tse, Y. K. (2015). Price determinants for remanufactured electronic products: a case study on eBay UK. International Journal of Production Research, 53(2), 572-589.

Park, I., Cho, J., & Rao, H. R. (2012). The effect of pre- and post-service performance on consumer evaluation of online retailers. Decision Support Systems, 52(2), 415-426.

Ramanathan, R. (2011). An empirical analysis on the influence of risk on relationships between handling of product returns and customer loyalty in E-commerce. International Journal of Production Economics, 130(2), 255-261.

Ramanathan, R., Ramanathan, U., & Hsiao, H. L. (2012). The impact of e-commerce on Taiwanese SMEs: Marketing and operations effects. International Journal of Production Economics, 140(2), 934-943.

Rook, D. W., & Gardner, M. (1993). In the mood: impulse buying's affective antecedents. Research in Consumer Behavior, 6(7), 1-28.

Rossi, C. (2014). The new online payment landscape: an analysis of the Italian e-wallet market. Tesi di Laurea in International trade and commercial policies, LUISS Guido Carli, relatore Stefano Manzocchi, 159.

Rust, R. T., & Lemon, K. N. (2001). E-service and the consumer. International Journal of Electronic Commerce, 5(3), 85-101.

Rust, R. T., Zahorik, A. J., & Keiningham, T. L. (1995). Return on quality (ROQ): Making service quality financially. Journal of Marketing, 59(2), 58-70.

Sarkar, A. (2011). Impact of utilitarian and hedonic shopping values on individual's perceived benefits and risks in online shopping. International Management Review, 7(1), 58-65.

Senecal, S., Kalczynski, P.J., & Nantel, J. (2005). Consumers' decision-making process and their online shopping behavior: a clickstream analysis. Journal of Business Research, 58(11), 1599-1608.

Shin, D., Song, J. H., & Biswas, A. (2014). Electronic word-of-mouth (eWOM) generation in new media platforms: The role of regulatory focus and collective dissonance. Marketing letters, 25(2), 153-165.

Sinha, P., & Singh, S. (2014). Product characteristics vis-à-vis consumers' risk perception: A conceptual study of online shopping. IUP Journal of Marketing Management, 13(2), 40-57.

Strahilevitz, M., & Myers, J. (1998). Donations to charity as purchase incentives: how well they work may depend on what you are trying to sell. Journal of Consumer Research, 24(4), 434–446.

Thirumalai, S., & Sinha, K. K. (2011). Customization of the online purchase process in electronic retailing and customer satisfaction: An online field study. Journal of Operations Management, 29(5), 477-487.

Tse, D. K., & Wilton, P. C. (1988). Models of consumer satisfaction: an extension. Journal of Marketing Research, 25(2), 204-212.

Van der Heijden, H., Verhagen, T., & Creemers, M. (2003). Understanding online purchase intentions: contributions from technology and trust perspectives. European Journal of Information Systems, 12(1), 41-48.

Voss K.E., Eric R.S., & Grohmann B. (2003). Measuring the hedonic and utilitarian dimensions of consumer attitude. Journal of Marketing Research, 40(3), 310-320.

Waltner, C. (2000). Web commerce means e-service. Information week, July 12, 2000, 68-72.

Wang, J., Jiang, J., & He, F. (2012). Problem and countermeasure on the development of mobile electronic commerce in China. In Instrumentation, Measurement, Circuits and Systems. Berlin Heidelberg, Springer, pp. 861-866.

Whitrow, C., Hand, D. J., Juszczak, P., Weston, D., & Adams, N. M. (2009). Transaction aggregation as a strategy for credit card fraud detection. Data Mining and Knowledge Discovery, 18(1), 30-55.

Xu, D. (2013). Integrating Service Quality with System and Information Quality: An Empirical Test in the E-Service Context1. Available at SSRN.

Xu, Y., & Kim, H.W. (2008). Order effect and seller inspection in online comparison shopping. Journal of Retailing, 84(4), 477-486.

Yan, X., & Liu, K. (2009). Optimal control problems for a new product with word-of-mouth. International Journal of Production Economics, 119(2), 402-414.

Yu, J., Subramanian, N., Ning, K., & Edwards, D. (2015). Product delivery service provider selection and customer satisfaction in the era of internet of things: A Chinese e-retailers' perspective. International Journal of Production Economics, 159, 104-116.

Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence. Journal of Marketing, 52(3), 2-22.

Zhang, Z., Ye, Q., Law, R., & Li, Y. (2010). The impact of e-word of mouth on the online popularity of restaurants: A comparison of consumer reviews and editor reviews. International Journal of Hospitality Management, 29(4), 694-700.

Zhou, J. X., Arnold, M. J., Pereira, A., & Yu, J. (2010). Chinese consumer decision-making styles: a comparison between the coastal and inland regions. Journal of Business Research, 63(1), 45-51.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Variables	Mean	SD	CWD	CCP	PS	FS	CS	RO	SH	CCR	PR	DE
Customized Website Design (CWD)	0.35	0.50	1.00									
Credit Card Payments (CCP)	0.70	0.46	0.22	1.00								
Purchase Security (PS)	0.14	0.35	0.14	0.04	1.00							
Fast Shipping (FS)	0.18	0.38	0.02	-0.07	0.08	1.00						
Customer Support (CS)	0.85	0.36	0.12	0.16	-0.09	-0.19	1.00					
Refund Opportunities (RO)	0.42	0.49	0.16	0.20	-0.02	-0.07	0.02	1.00				
Seller History (SH)	3.27	2.42	0.37	0.30	0.14	0.07	0.13	0.22	1.00			
Customer Cumulative Ratings (CCR)	33017.73	183953.77	0.13	0.08	0.13	0.11	0.06	0.13	0.21	1.00		
Price (PR)	450.11	626.07	0.07	0.03	0.00	-0.01	0.02	0.05	0.06	-0.01	1.00	
Demand (DE)	18.45	108.11	0.10	0.06	0.04	0.04	0.00	0.07	0.06	0.05	0.01	1.00

TABLE 3

Descriptive Statistics and Correlation of Variables of All Products in the Taobao Study

Name	Product Category	Perceived Risk (H = high; L = low)	Lowest Price (RMB)	Hypothesis 1						Hypothesis 2	Control Variables	
				H1a	H1b	H1c	H1d	H1e	H1f	H2	Price	History
Greeting cards	Holiday	L	2	0.26***	0.01	−0.04	0.22***	0.09	0.24***	0.21**	0.03	0.19**
Lanterns	Holiday	L	20	0.29***	−0.01	−0.05	0.14**	0.01	0.52***	0.21**	0.01	0.18**
Frames	Decor	L	40	0.22***	−0.03	0.02	0.30***	0.05	0.18**	0.21**	−0.13	0.24***
Handheld game consoles	Toys	L	66	0.40***	0.09	0.01	0.15*	0.01	0.16*	0.17*	−0.12*	0.16*
Building blocks	Toy	L	70	0.26***	0.01	0.03	0.33***	0.01	0.28***	0.19**	0.06	0.12
Chocolate	Food	L	100	0.15*	0.02	0.04	0.24***	−0.01	0.15*	0.15*	−0.01	0.26***
Guanyin pendant	Jewelry	H	135	0.35***	0.08	0.21***	0.15*	0.11	0.22***	0.14*	0.12	0.15*
Wine	Wine	H	140	0.25***	0.01	0.40***	0.15*	0.08	0.28***	0.22**	−0.06	0.15**
Barbies	Toys	L	150	0.29***	0.07	0.01	0.18**	0.06	0.15*	0.15*	0.04	0.15*
Sunscreen	Beauty	H	170	0.14*	0.04	0.25***	0.14*	−0.05	0.22***	0.16*	0.01	0.28***
DVD players	DVDs	L	190	0.56***	0.03	0.01	0.21***	0.07	0.20***	0.18*	−0.01	0.16*
Vases	Decor	L	210	0.27***	−0.04	0.12	0.33***	0.06	0.23***	0.19**	−0.07	0.23***
Roses	Gifts	L	250	0.38***	0.03	0.10	0.24***	0.07	0.18**	0.41***	−0.08	0.11
Facial cleansers	Beauty	H	275	0.15*	0.05	0.23***	0.15*	−0.01	0.25***	0.19**	−0.08	0.20**
Eye cream	Cosmetics	H	300	0.16*	0.04	0.14*	0.36***	−0.06	0.24***	0.19*	0.01	0.15*
Necklaces	Jewelry	H	400	0.15*	0.02	0.21**	0.21**	0.03	0.16*	0.15*	0.02	0.16*
Rings	Jewelry	H	500	0.15*	0.04	0.27***	0.15*	0.09	0.17**	0.19**	−0.02	0.18*
Perfume	Cosmetics	H	600	0.20**	0.04	0.15*	0.26***	0.01	0.37***	0.15*	−0.01	0.16*
Formal dresses	Apparel	H	800	0.16*	0.02	0.41***	0.19**	0.05	0.15*	0.15*	−0.03	0.15*
Wedding dresses	Holiday	L	900	0.39***	0.11	0.11	0.15*	0.11	0.23***	0.30***	−0.01	0.16*

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 4

Hypotheses Test Results of the Path Analysis for Hedonic Products in the Taobao Study

Name	Product Category	Perceived Risk (H = high; L = low)	Lowest Price (RMB)	Hypothesis 1						Hypothesis 2	Control Variables	
				H1a	H1b	H1c	H1d	H1e	H1f	H2	Price	History
Pencils	Office supplies	L	3	0.01	0.08	−0.02	−0.02	0.01	0.16*	0.19**	0.02	0.19**
Flowerpots	Garden	L	30	−0.06	0.06	0.02	−0.07	0.01	0.15*	0.23***	−0.03	0.30***
Albums	Photography	H	50	0.15*	0.07	0.15*	0.11	0.17*	0.28***	0.17*	0.06	0.15*
Rice	Food	L	60	0.10	0.08	0.10	0.10	0.04	0.22**	0.19**	−0.01	0.23***
Basketballs	Sports equipment	H	100	0.29***	0.01	0.16*	−0.01	0.20**	0.16*	0.20**	0.10	0.15*
Pillows	Home	L	120	0.08	0.07	0.05	0.12	0.07	0.15*	0.47***	−0.02	0.21***
Computer speakers	Computing	H	150	0.36***	0.12	0.23***	0.12	0.17*	0.20**	0.19**	0.08	0.21***
Cat food	Pet items	L	200	0.11	0.08	0.11	0.09	0.10	0.16*	0.32***	−0.10	0.08
Telephones	Telecommunications	H	275	0.36***	−0.07	0.24***	0.13	0.15*	0.24***	0.14*	0.02	0.17**
Ofc. chairs	Office supplies	L	300	0.10	−0.08	0.02	−0.04	0.02	0.47***	0.17*	−0.01	0.29***
Faucets	Home	L	330	0.10	−0.04	0.02	0.01	−0.01	0.15*	0.26***	0.09	0.43***
Mattresses	Home	L	350	0.08	0.06	0.01	0.03	−0.04	0.15*	0.16*	−0.01	0.24***
Car seats	Auto accessories	L	400	0.11	0.13	0.14	−0.01	0.09	0.21**	0.22**	0.10	0.15*
Toilets	Home	L	500	−0.01	0.09	−0.03	0.12	0.01	0.20**	0.15*	0.01	0.39***
Guitars	Musical instruments	H	550	0.31***	0.03	0.26***	0.06	0.15*	0.21**	0.19**	0.02	0.15*
Printers	Office supplies	L	600	0.01	−0.03	−0.04	0.02	−0.10	0.22**	0.51***	0.06	0.39***
Suitcases	Home	L	700	0.07	−0.02	−0.02	0.02	0.02	0.16*	0.15*	−0.11	0.23**
Washing machines	Electronics	H	1000	0.36***	0.05	0.21***	0.09	0.16*	0.19**	0.30***	−0.01	0.33***
Ipad 2s	Computing	H	3000	0.15*	0.01	0.22***	0.03	0.15*	0.16*	0.18**	−0.02	0.15*
Iphones	Telecommunications	H	3500	0.16*	−0.02	0.24***	0.04	0.16*	0.15*	0.35***	0.10	0.38***

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 5

Hypotheses Test Results of the Path Analysis for Utilitarian Products in the Taobao Study

Hypothesis 3	Standard Coefficients	Hypothesis 4	Standard Coefficients
H3a	0.14*	H4a	0.15*
H3b	0.01	H4b	0.02
H3c	0.03	H4c	0.30***
H3d	0.25***	H4d	0.07
H3e	-0.15*	H4e	0.13*
H3f	-0.01	H4f	0.01

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 6

Test Results of Hypotheses 3 and 4 in the Taobao Study

E-service Offering	Zones from Figure 2 with Supported Products
Customized Website Design	1, 2, and 4 [High Perceived Risk and/or Hedonic]
Credit Card Payments	None
Purchase Security	1 and 2 [High Perceived Risk]
Fast Shipping	2 and 4 [Hedonic]
Customer Support	1 [High Perceived Risk and Utilitarian]
Refund Opportunities	1, 2, 3, and 4 [All]

TABLE 7

Summary of Test Results of Hypotheses 1, 3, and 4 in the Taobao Study

Variables	Mean	SD	CWD	AP	SC	FS	CS	RO	SH	CCR	PR	DE
Customized Website Design (CWD)	3.64	3.07	1.00									
Autopay (AP)	0.73	3.79	0.00	1.00								
Seller Communication (SC)	4.94	0.07	-0.10	0.01	1.00							
Fast Shipping (FS)	2.50	4.08	0.00	-0.03	-0.17	1.00						
Customer Support (CS)	0.55	0.50	-0.04	0.04	0.15	-0.21	1.00					
Refund Opportunities (RO)	25.73	11.28	0.08	0.03	0.10	-0.12	0.16	1.00				
Seller History (SH)	7.68	4.93	-0.20	0.03	0.26	-0.22	0.19	0.05	1.00			
Customer Cumulative Ratings (CCR)	52980.85	132759.13	0.12	0.02	0.05	-0.10	0.09	0.14	0.15	1.00		
Price (PR)	58.35	73.31	0.12	0.03	-0.08	0.14	-0.01	0.04	-0.01	0.01	1.00	
Demand (DE)	20.83	73.00	0.11	0.04	0.05	-0.08	0.05	0.06	0.08	0.12	-0.01	1.00

TABLE 8

Descriptive Statistics and Correlation of Variables of All Products in the Ebay Study

Name	Product Category	Perceived Risk (H = high; L = low)	Lowest Price ($)	Hypothesis 1						Hypothesis 2	Control Variables	
				H1a	H1b	H1c	H1d	H1e	H1f	H2	Price	History
Greeting Cards	Holiday	L	3	0.16*	−0.13	−0.03	−0.22**	0.09	0.16*	0.16*	−0.07	0.18**
Legos	Toys	L	10	0.15*	0.12	−0.05	−0.17*	−0.07	0.33***	0.15*	−0.01	0.26***
Flower Bouquets	Gifts	L	10	0.15*	−0.10	0.06	−0.19**	0.04	0.22***	0.15*	−0.08	0.36***
Frames	Decor	L	11	0.17*	0.10	0.11	−0.28***	0.10	0.18**	0.21**	0.08	0.20**
Handheld game consoles	Toys	L	11	0.15*	−0.02	0.15*	−0.24***	0.05	0.34***	0.20**	0.01	0.19**
Facial cleansers	Beauty	H	12	0.15*	0.15*	−0.09	−0.22**	0.04	0.15*	0.17*	−0.02	0.20**
Jesus pendants	Jewelry	H	13	0.21**	0.03	0.05	−0.23***	−0.14	0.15*	0.17*	0.12	0.33***
Vases	Décor	L	15	0.16*	−0.03	−0.04	−0.15*	0.06	0.16*	0.16*	−0.02	0.21**
Chocolate	Food	L	15	0.24***	−0.04	−0.09	−0.20**	0.00	0.17*	0.15*	−0.02	0.18**
Eye cream	Cosmetics	H	15	0.19**	0.09	0.00	−0.15*	0.09	0.24***	0.18**	−0.05	0.12
Rings	Jewelry	H	20	0.16*	−0.03	0.18**	−0.15*	0.06	0.16*	0.15*	−0.02	0.46***
Wine	Wine	H	21	0.17*	0.07	0.20**	−0.21**	−0.09	0.16*	0.24***	−0.01	0.13
Barbies	Toys	L	23	0.16*	0.10	−0.05	−0.18**	0.02	0.17*	0.46***	−0.04	0.18**
Sunscreen	Beauty	H	26	0.15*	0.02	0.01	−0.15*	0.08	0.15*	0.17*	−0.06	0.15*
DVD players	DVDs	L	29	0.16*	0.00	0.10	−0.18**	−0.13	0.20**	0.15*	−0.09	0.24**
Perfume	Cosmetics	H	35	0.17*	0.09	0.08	−0.24***	−0.01	0.18**	0.16*	−0.04	0.26***
Artificial Christmas trees	Holiday	L	50	0.15*	0.22***	−0.02	−0.19**	0.11	0.18**	0.18**	−0.11	0.18
Necklaces	Jewelry	H	60	0.17*	0.01	−0.13	−0.21**	0.09	0.16*	0.16*	0.12	0.17*
Formal dresses	Apparel	H	120	0.20**	−0.08	0.10	−0.17*	0.12	0.16*	0.17*	−0.05	0.16*
Wedding Dresses	Holiday	L	120	0.17*	0.00	−0.05	−0.16*	0.05	0.28***	0.45***	−0.03	0.15*

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 9

Hypotheses Test Results of the Path Analysis for Hedonic Products in the Ebay Study

Name	Product Category	Perceived Risk (H = high; L = low)	Lowest Price ($)	Hypothesis 1						Hypothesis 2	Control Variables	
				H1a	H1b	H1c	H1d	H1e	H1f	H2	Price	History
Pencils	Office supplies	L	5	0.02	0.28***	−0.09	−0.11	0.06	0.21**	0.19**	−0.06	0.21**
Albums	Photography	H	8	0.18**	0.02	−0.01	−0.12	0.19**	0.15*	0.19**	−0.07	0.34***
Cat food	Pet items	L	10	0.13	0.04	−0.07	0.03	−0.13	0.15*	0.32***	0.02	0.15*
Flowerpots	Garden	L	10	0.02	−0.07	−0.06	−0.08	0.02	0.22***	0.21***	−0.04	0.21***
Coffee	Food	L	12	0.07	0.24***	−0.07	−.10	−0.02	0.30***	0.15*	0.10	0.44***
Basketballs	Sports equipment	H	15	0.21**	−0.04	0.08	0.01	0.15*	0.16*	0.15*	−0.12	0.35***
Computer speakers	Computing	H	20	0.20**	−0.02	0.03	−0.03	0.17*	0.21**	0.15*	0.02	0.19**
Telephones	Telecommunications	H	20	0.16*	0.04	0.02	−0.04	0.16*	0.17*	0.18**	−0.03	0.15*
Shower heads	Home	L	25	−0.11	0.15*	0.15*	−0.09	−0.01	0.16*	0.31***	0.04	0.23***
Pillows	Home	L	30	−.05	0.13	0.09	−0.05	−0.11	0.16*	0.16*	−0.12	0.17*
Car seats	Auto accessories	L	50	−.03	0.11	−0.04	−0.03	0.08	0.26***	0.16*	0.01	0.18**
Faucets	Home	L	50	0.05	0.02	0.01	−0.03	0.11	0.15*	0.21**	−0.07	0.25***
Printers	Office supplies	L	50	0.09	0.16*	−0.02	−0.08	0.09	0.16*	0.23***	−0.09	0.16*
Suitcases	Home	L	60	−0.10	0.17*	−0.03	−0.12	−0.01	0.17*	0.15*	0.10	0.30***
Guitars	Musical instruments	H	80	0.24***	0.09	−0.05	−0.07	0.21**	0.27***	0.22***	0.12	0.18**
Ofc. chairs	Office supplies	L	90	−0.11	0.02	0.10	−0.02	−0.13	0.20**	0.14*	−0.06	0.12
Ipads	Computing	H	100	0.18**	0.01	0.21**	0.03	0.15*	0.16*	0.18**	−0.02	0.15*
Mattresses	Home	L	180	0.12	0.14	0.02	−0.05	−0.13	0.36***	0.19**	0.08	0.16*
Laptops	Electronics	H	250	0.18**	−0.03	0.05	−0.04	0.15*	0.17*	0.16*	−0.01	0.21**
Iphones	Telecommunications	H	300	0.21**	−0.08	0.03	−0.13	0.23***	0.18**	0.15*	−0.09	0.21**

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 10

Hypotheses Test Results of the Path Analysis for Utilitarian Products in the Ebay Study

Hypothesis 3	Standard Coefficients	Hypothesis 4	Standard Coefficients
H3a	0.19**	H4a	0.15*
H3b	0.04	H4b	−0.06
H3c	−0.01	H4c	0.03
H3d	0.16*	H4d	−0.03
H3e	−0.17*	H4e	0.16*
H3f	0.05	H4f	0.07

*p < 0.05; ** p < 0.01, *** p < 0.001

TABLE 11

Test Results of Hypotheses 3 and 4 in the Ebay Study

E-service Offering	Zones from Figure 2 with Supported Products
Customized Website Design	1, 2, and 4 [High Perceived Risk and/or Hedonic]
Autopay	None
Seller Communication	None
Fast Shipping	2 and 4 [Hedonic]
Customer Support	1 [High Perceived Risk and Utilitarian]
Refund Opportunities	1, 2, 3, and 4 [All]

TABLE 12

Summary of Test Results of Hypotheses 1, 3, and 4 in the Ebay Study

HIGHLIGHTS

- We observed 16,000 online sellers in China and the US to analyze their e-service offerings
- Six e-service offerings lead to high customer cumulative ratings
- Effects are moderated by utilitarian vs. hedonic products
- Effects are moderated by high vs. low perceived risk
- As high ratings positively influence demand, firms should focus on e-service