Customers’ perceptions of online retailing service quality and their satisfaction

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Abstract Online service quality is one of the key determinants of the success of online retailers. This exploratory study revealed some important findings about online service quality. First, the study identified six key online retailing service quality dimensions as perceived by online customers: reliable/prompt responses, access, ease of use, attentiveness, security, and credibility. Second, of the six, three dimensions, notably reliable/prompt responses, attentiveness, and ease of use, had significant impacts on both customers’ perceived overall service quality and their satisfaction. Third, the access dimension had a significant effect on overall service quality, but not on satisfaction. Finally, this study discovered a significantly positive relationship between overall service quality and satisfaction. Important managerial implications and recommendations are also presented.

Introduction

As the online retail industry entered the shakeout stage in early 2000, many online retailers have capitulated, merged with other firms, or resorted to downsizing as a survival strategy. According to one report (www.webmergers.com, 2003), since January 2000, nearly 900 US online firms have shut down and 31 percent of those firms were online retailers. In addition to other factors, such as stiff competition among rivals and entrenched customer shopping habits, failure of online retailers is primarily due to poor quality services rendered to their customers (Zeithaml, 2002).

To survive in fierce industry competition, many practitioners and academicians in this field have recently focused on how to improve online services to attract potential customers and on how to retain current customers. Zeithaml (2002) has emphasized that companies should focus on online service encompassing all cues and encounters that occur before, during, and after the transactions. Of course, if properly utilized, the Internet can definitely be a powerful tool to increase overall service offerings (Griff and Palmer, 1999) and to provide online customers with a variety of benefits such as, convenience of ordering products/services, instantaneous checking of the availability...
Thus, to expand loyal customer base and improve profitability, it is crucial for online retailers to understand in depth what online customers perceive to be the key dimensions of service quality and what impacts the identified dimensions have on customers’ satisfaction. Unfortunately, while numerous studies have examined such issues in the context of traditional service, relatively little research has empirically addressed such issues in the online retailing environment.

The specific objectives of this research were to:

- identify key underlying dimensions of online retailing service quality as perceived by online customers;
- assess the relationships between the service quality dimensions identified earlier and the online customers’ perceptions of overall service quality;
- examine the relationships between the service quality dimensions and the online customers’ overall satisfaction; and
- measure the relationship between online customers’ perceived overall service quality and their level of satisfaction.

This paper discusses relevant literature and research questions, followed by research method, analyses and results, discussion and conclusions, and limitations and future directions.

**Literature review and research questions**

*Perceived service quality and its key dimensions*

Online retailers heavily involve non-human interactions between customers and online retailers’ information systems. There are mainly two types of interactions over the Internet:

1. The interactions between customers and online retailers’ employees via either Internet-based communication tools, such as e-mail, chat room, and message board, or traditional communication channels.
2. The interactions between customers and online retailers’ Web sites, through which customers can search and retrieve necessary information, and place their orders.

In particular, these customer-to-Web site interactions in online retailing, to a great extent, have replaced traditional customer-to-employee interactions such as sales clerk services (Lohse and Spiller, 1998).

The unique interactive processes between online retailers and customers present a serious challenge to both practitioners and academicians regarding online service quality measurement and customer satisfaction. Although numerous studies have addressed customers’ perceptions of service quality and their satisfaction in the traditional service setting, a relatively small volume of literature has empirically examined the service quality and satisfaction issues in the online retailing environment.

To provide a theoretical framework for online service quality study, two areas of literature were reviewed. The former was the online service quality and customer
satisfaction literature, while the latter was the information systems and Web site design quality literature. Based on a comprehensive literature review, the authors identified the following two broad conceptual categories related to online service quality: customer service quality and online systems quality. Major findings of the relevant literature are discussed according to the two categories in this section.

Customer service quality. Perceived service quality can be defined as a global judgment or attitude related to the superiority of a service (Parasuraman et al., 1988). The term perception pertains to the consumers’ beliefs concerning the received or experienced service (Brown and Swartz, 1989; Parasuraman et al., 1988).

In the past three decades, numerous studies have attempted to discover the global or standard dimensions of service quality that are considered important by customers (e.g. Parasuraman et al., 1985, 1988; Paulin and Perrien, 1996; Pitt et al., 1999; Sasser et al., 1978). Among them, Parasuraman et al.’s (1985) work has been regarded as most prominent. This study uncovered, through a series of focus group sessions, ten dimensions of service quality that are generic and relevant to services in general: tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding the customer, and access.

Later, these ten dimensions were purified into five by using factor analysis: tangibles, reliability, responsibility, assurance, and empathy (Parasuraman et al., 1988). Based on these five dimensions, Parasuraman et al. (1988) developed a global measurement for service quality, namely, SERVQUAL. Since then, the SERVQUAL measurement has been applied to measure the service quality in various service industries by many researchers.

However, prior research suggests that service quality tends to be context-bounded and service-type-dependent (e.g. Bienstock, 1997; Jun et al., 1998; Van Dyke et al., 1997). Moreover, the SERVQUAL measurement does not embrace the unique facets of online service quality, such as customer-to-Web-site interactions, since this instrument was constructed based mainly on customer-to-employee interactions. For example, O’Neill et al. (2001) examined the dimensionality of the online library service quality by factor-analyzing the collected data regarding the 18 scale items, which were largely based on the 22 items of the original SERVQUAL instrument. They found four online service quality dimensions such as contact, response, reliability, and tangibles and argued that the five-component structure of the SERVQUAL instrument was not confirmed in their study.

Accordingly, various researchers have recently sought to identify key service quality attributes that best fit the online business environment. Zeithaml (2000) has found 11 dimensions of online service quality in a series of focus group interviews: access, ease of navigation, efficiency, flexibility, reliability, personalization, security/privacy, responsiveness, assurance/trust, site aesthetics, and price knowledge. Later, Yoo and Donthu (2001) develop a measurement instrument of online service quality, SITEQUAL, with four dimensions: ease of use, aesthetic design, processing speed, and security.

Cox and Dale (2001) have noted that traditional service quality dimensions, such as competence, courtesy, cleanliness, comfort, and friendliness, are not relevant in the context of online retailing, whereas other factors, such as accessibility, communication, credibility, and appearance, are critical to the success of online businesses. Similarly, Madu and Madu (2002) propose the following 15 dimensions of online service quality
based on the relevant literature review: performance, features, structure, aesthetics, reliability, storage capacity, serviceability, security and system integrity, trust, responsiveness, product/service differentiation and customization, Web store policies, reputation, assurance, and empathy. In the same vein, Wolfinbarger and Gilly (2002), through focus group interviews, a content analysis, and an online survey, have uncovered four factors of online retailing experience: Web site design, reliability, privacy/security, and customer service.

Other studies have identified key dimensions of online service quality in the context of narrowly defined online businesses, such as banks, portal services, and travel agencies. For instance, Joseph et al. (1999) have uncovered six underlying dimensions of online banking service quality: convenience/accuracy, feedback/complaint management, efficiency, queue management, accessibility, and customization. Van Riel et al. (2001) have derived three key portal service quality attributes, such as core service, supporting service, and user interface.

**Online systems quality.** Because e-commerce is a recently emerging field, little academic literature in this field has addressed in-depth online systems quality. Online systems quality can be divided into information systems quality and information quality. Information systems quality refers to the quality of software development whereas information quality pertains to the accuracy, timeliness, currency, and reliability of information (DeLone and McLean, 1992). To measure end-users’ satisfaction with information systems, Doll and Torkzadeh (1988) have purified 13 items proposed by Baroudi and Orlikowski (1988) into 12 items that gauge five quality dimensions influencing end-user satisfaction: content, accuracy, format, ease of use, and timeliness. The reliability and validity of this scale have been confirmed in other studies (Doll et al., 1994; Hendrickson and Collins, 1996). Beyond the five attributes employed in the measurement scale, other attributes unique to the Internet, such as security and privacy (Giannakoudi, 1999), can also be considered important in assessing online systems quality.

Another important aspect of online systems is to enable customers to function more independently and conduct many transactions on their own. As end-users, consumers often seek desired products/services information through Web sites. Thus, in this online market, customers are essentially “self-served” much of the time. They can search for particular products/services, chat with other members in virtual communities, and obtain advice or comments from peers (Armstrong and Hagel, 1996; Hagel, 1999). Therefore, the Web site should be well organized enabling consumers to navigate smoothly and in an enjoyable manner (Rice, 1997); and the design of the database should be timely, informative, and user-friendly (Wigand, 1997). In essence, the Internet has created a new form of relationship marketing that provides direct linkage between target customers and online companies.

Recently, several studies on e-commerce have noted that some features of Web sites are critical to their business success. For example, D’Angelo and Little (1998) argue that factors such as navigational and visual characteristics, and practical considerations, such as images, background, color, sound, video, media, and content, are important considerations in designing a Web site. Lohse and Spiller (1998) also note that online business Web site characteristics, such as a feedback section and product lists, are crucial in generating sales.

Later, Liu and Arnett (2000) consider four factors, such as system use, system design quality, information quality, and playfulness, as major ingredients for the
success of a Web site. Cox and Dale (2002) have identified and statistically validated four important quality factors of the Web site: ease of use (the design of the Web site), customer confidence (how the Web site inspires trust by the customer), online resources (capability of the Web site to offer products/services), and relationship services (how the Web site bonds with the customer and inspires loyalty).

In the context of a narrowly-defined business Web site, Waite and Harrison (2002) have found seven key factors of online bank Web sites that affect consumer satisfaction: transaction technicalities, decision making convenience, interactive interrogation, specialty information, search efficiency, physical back-up, and technology thrill. Similarly, Zhang and von Dran (2001) have examined the CNN.com Web site and identified ten dimensions of Web site quality: information content, enjoyment, privacy, user empowerment, visual appearance, technical support, navigation, organization of information, content, credibility, and impartiality.

In sum, most of the prior service quality studies, as discussed earlier, have focused on interpersonal interactions between customers and service providers. Yet, relatively little empirical research has been conducted systematically and extensively to identify the key quality dimensions of online services (Zeithaml, 2002), which are rendered to customers mainly through non-human interfaces. This research gap leads us to our first research question:

**RQ1.** What do online customers perceive to be the key dimensions of service quality in online retailing?

In addition, based on a review of the relevant literature, the authors identified two important research issues relating to online service quality and customer satisfaction. First, few empirical studies have investigated the relative importance of online service quality dimensions to customers’ perceived overall service quality and their satisfaction. Next, scant research has empirically examined the relationship between customers’ perceived overall service quality and their satisfaction in the context of online retailing. The following subsections discuss these research issues and their related research questions.

**Service quality dimensions and overall service quality**

Prior research suggests that not all service quality dimensions have the same effect on consumers’ quality perceptions or their satisfaction. It is thus important to identify, among a variety of quality dimensions, which dimensions are more crucial than others in enhancing the level of overall service quality as perceived by customers, and to measure to what extent they should be. By addressing these important questions, an organization can understand what service areas it should concentrate on to improve its service quality and customer satisfaction effectively, while avoiding the investment of much money and other resources in providing service quality dimensions that may not pay off (Oliva *et al.*, 1992).

In examining the relative importance of service quality dimensions to overall service quality, a number of researchers applied the five SERVQUAL dimensions to various service industries. For example, Rosen and Karwan (1994) identified significant dimensions in four different service settings: “understanding the customer” in restaurants; “assurance” and “reliability” in health care; “reliability” and “tangibles” in lecture teaching; and “assurance” in bookstores. Johnston (1995) identified
“responsiveness” as the most important dimension of banking service quality. In the case of the information systems service, Jayasuriya (1998) found that two dimensions, “responsiveness” and “assurance,” seem to be the most important considerations in assessing service quality.

In the online retailing environment, Rice (1997) examined what made users revisit a Web site and discovered that the most important variables were design features (e.g. content, layout, ease of finding information, and ease of navigation) and emotional experience (e.g. enjoyable and exciting visits). Hoffman and Novak (1997) pointed out that personalization was the essence for online firms to materialize the Internet as a unique consumer market. Griffith and Krampf (1998) mentioned that the lack of prompt responsiveness, especially to e-mail inquiries, was the most common phenomenon in cyberspace. They further pointed out that US retailers needed enough staff supports in order to improve their customer service access through the Web sites and to satisfy their customers.

Balfour et al. (1998) put emphasis on transaction security and personal information privacy when examining consumer needs in global electronics. Dellaert and Kahn (1999) conducted laboratory experiments to understand how the waiting time of information download negatively affects consumers’ perceptions on the performance of the Web site. They demonstrated that negative effects could be neutralized by effectively managing waiting experiences.

Liu and Arnett (2000) considered four factors, such as information quality, system use, system design quality, and playfulness, as major determinants for the success of Web sites in the context of e-commerce. Based on a survey of 250 online banking and securities brokerage users, Sohn (2000) found that trust, interactivity, ease of use, contents of Web pages and functional Web sites, reliability, and the speed of delivery are the six most significant service quality dimensions as perceived by customers.

Therefore, in the online retailing environment, it is essential to understand what dimensions are the most critical to online customers’ overall service quality assessment. This issue is the focus of the second research question:

**RQ2.** What are the most influential online retailing service quality dimensions, in achieving a high level of overall service quality as perceived by online customers?

*Service quality dimensions and customer satisfaction*

Customer satisfaction is often defined as the customers’ post-purchase comparison between pre-purchase expectation and performance received (Oliver, 1980; Zeithaml et al., 1993). The relationship between service quality and customer satisfaction has gained increasing attention and stimulated considerable debate during the past decade. Some authors (e.g. Grönroos, 1983) argued that there is a significant overlap between these two concepts, and thus, they can be used interchangeably.

On the other hand, other researchers (e.g. Bitner et al., 1990; Carman, 1990; De Ruyter et al., 1997; Lee and Yoo, 2000) attempted to differentiate between these two constructs. They argued that whereas service quality is an overall evaluation of the service under consideration, customer satisfaction is often viewed as the result of specific service transactions.

De Ruyter et al. (1997) summarized the conceptual gap between the two constructs as the following: customer satisfaction is directly influenced by the intervening
variables of disconfirmation, while service quality is not; satisfaction is based on predictive expectation while service quality is based on an ideal standard expectation; and the number of antecedents of the two concepts differ considerably.

Johnston (1997) found that, in the retail banking industry, three dimensions, such as commitment, attentiveness/help, friendliness and care, are the most important factors leading to customer satisfaction, while the other three dimensions, such as aesthetics, integrity, functionality and reliability, are the most important aspects of determining customer dissatisfaction. Therefore, it is worthwhile to investigate the relative importance of service quality dimensions to customers’ satisfaction in the online retailing setting. The third research question examined this issue:

*RQ3.* What are the most influential online service quality dimensions that are associated with a high level of customers’ satisfaction in online retailing?

**Overall service quality perceptions and customer satisfaction**

Regarding the relationship between customers’ perceptions of overall service quality and their satisfaction, some researchers argued that service quality was not related to customer satisfaction under certain circumstances. For instance, Parasuraman et al. (1985) found several examples where even though consumers were satisfied with a particular service, they did not think that it was of high quality. Along these lines, Storbacka et al. (1994, p. 24) also noted that:

A customer could, therefore, respond on a questionnaire that a particular bank is of high quality, even if this did not mean this customer was satisfied with using the bank. Its interest rates on loans may be too high or it might not fit the customer’s preferences for some other reason.

Approaching this issue differently, other researchers (e.g. Cronin and Taylor, 1992; Oliver, 1980) suggested that service quality would lead to customer satisfaction/dissatisfaction. However, there has been some controversy in quality management literature over the issue of the sequential order of the two constructs, “quality-influences-satisfaction” vs “satisfaction-influences-quality”. For example, Cronin and Taylor (1992) and Parasuraman et al. (1988) viewed customer satisfaction as a cumulative evaluation and a consequence of perceived service quality.

Therefore, it is necessary, in the context of online retailing, to investigate the question of whether the customers’ perceived service quality is significantly and positively related to their overall satisfaction. Such a relationship was explored in the final research question:

*RQ4.* Is there any positive relationship between the level of customers’ perceived overall service quality and their satisfaction in online retailing?

**Research method**

**Measures**

For this research, the authors initially developed 51 scale items based on the relevant literature review. Of those, two items were to measure two outcome variables, such as overall service quality and satisfaction, and the remainder were to assess online systems quality and customer service quality. The authors adopted and modified
several dimensions of SERVQUAL proposed by Parasuraman et al. (1985, 1988), such as reliability, responsiveness, and credibility, to fit the setting of online retailing.

A pretest of the questionnaire was conducted to assess the content validity of measurement scales. Content validity can be evaluated by a panel of persons, sometimes experts, who judge whether a scale logically appears to reflect accurately what it purports to measure (Zikmund, 1991). Four academicians, whose fields are related to the areas of service quality, e-commerce, and information technology, reviewed the questionnaire draft. Based on their suggestions, ten scale items were reworded because they had ambiguous terms and nine, measuring three service quality attributes such as competence, courtesy, and tangibles, were deleted because they were not directly related to online service quality. Cox and Dale (2001) also argued that these three constructs were primarily concerned with the interpersonal encounters between employees and customers, and for the most part, irrelevant for measuring service quality in the Web site experience. The length of the questionnaire was another consideration in excluding the scales items pertaining to the three quality dimensions.

The finalized survey questionnaire consisted of 42 scale items: the first 40 items were to measure the consumers’ perceptions of online service quality regarding their most recent purchasing experiences; the remaining two items were to assess customers’ perceived overall service quality and their satisfaction, respectively. The first 40 items were related to six dimensions of online systems quality (e.g. content, ease of use, accuracy, aesthetics, timeliness, and convenience) as well as seven dimensions of online customer service quality (e.g. reliability, responsiveness, credibility, security, access, communication, and understanding the customer). The respondents were requested to select the response that best indicates their experiences and perceptions on each statement, using a five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Each question also allowed the respondents to check “not applicable” if necessary.

For this research, the authors categorized the respondents into three groups by asking them to select one of the following three options: over the past 12 months:

1. I have selected and purchased at least one product/service over the Internet (online customers group).
2. I have searched for product/service information over the Internet but have not purchased a product/service (information searchers group).
3. I have never used the Internet or used the Internet for purposes other than product/service information search (e.g. e-mail) or purchase (“others” group).

Participants
The respondents were:

• Full- and part-time MBA and executive MBA students, and undergraduate students majoring in business administration at two major universities, each located in the Southwest and the Midwest region of the USA.
• Members of the Institute for Supply Management (ISM) local chapter in the Southwest region of the USA and those of the American Society for Quality Control (ASQC) local chapter in the Midwest region of the USA.
The selection of subjects was deemed to be appropriate for the following four reasons. First, the majority of Internet users are technical professionals and university students (Pitkow and Kehoe, 1996). Second, students are among the most active online buyers and thus their Internet and actual purchasing experiences qualify them as a proper sample of online shopping research (Yoo and Donthu, 2001). Third, students and non-students do not differ significantly in their quality/reliability perceptions (Peterson and Jolibert, 1995). Finally, the student and professionals who responded to the present survey indicated that they purchased a variety of products or services, such as books/magazines, leisure travel, CD/music, computer hardware, and computer software, which are similar to the items purchased by general online shoppers participating in prior studies such as that of Fenech and O'Cass (2001) and the UCLA Center for Communication Policy (2003).

**Data collection procedure**
The survey questionnaires were distributed to 260 respondents; 228 usable questionnaires were collected, resulting in an 87.7 percent response rate. The demographic characteristics of the respondents are summarized in Table I. Of the 228 respondents, 60.1 percent were online purchasers (students and professionals) and 39.9 percent were non-online purchasers.

<table>
<thead>
<tr>
<th>Classification</th>
<th>No.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (n = 228)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>139</td>
<td>61.0</td>
</tr>
<tr>
<td>Female</td>
<td>89</td>
<td>39.0</td>
</tr>
<tr>
<td>Education (n = 227)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School or lower</td>
<td>3</td>
<td>1.3</td>
</tr>
<tr>
<td>Some College</td>
<td>81</td>
<td>35.7</td>
</tr>
<tr>
<td>College graduate</td>
<td>63</td>
<td>27.8</td>
</tr>
<tr>
<td>Graduate School</td>
<td>80</td>
<td>35.2</td>
</tr>
<tr>
<td>Age (n = 222)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-24</td>
<td>99</td>
<td>44.6</td>
</tr>
<tr>
<td>25-34</td>
<td>66</td>
<td>29.7</td>
</tr>
<tr>
<td>35-44</td>
<td>33</td>
<td>14.9</td>
</tr>
<tr>
<td>45-54</td>
<td>14</td>
<td>6.3</td>
</tr>
<tr>
<td>55-64</td>
<td>8</td>
<td>3.6</td>
</tr>
<tr>
<td>65 or over</td>
<td>2</td>
<td>0.9</td>
</tr>
<tr>
<td>On average, how often do you use the Internet for information search, online shopping, or other purposes? (n = 228)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a month</td>
<td>5</td>
<td>2.2</td>
</tr>
<tr>
<td>Once a week</td>
<td>22</td>
<td>9.6</td>
</tr>
<tr>
<td>2-5 times a week</td>
<td>73</td>
<td>32.0</td>
</tr>
<tr>
<td>1-4 times a day</td>
<td>91</td>
<td>39.9</td>
</tr>
<tr>
<td>5-8 times a day</td>
<td>18</td>
<td>7.9</td>
</tr>
<tr>
<td>9 times a day</td>
<td>19</td>
<td>8.4</td>
</tr>
</tbody>
</table>

Classification of the respondents based on purchase types (n = 228)

<table>
<thead>
<tr>
<th>Classification</th>
<th>No.</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online purchaser (student; professional)</td>
<td>137</td>
<td>60.1</td>
</tr>
<tr>
<td>Non-online purchaser</td>
<td>91</td>
<td>39.9</td>
</tr>
</tbody>
</table>
respondents, approximately 60 percent (137) were online customers and the remaining 40 percent (91) represented non-online customers (a combination of the information searchers and “others” groups). As for the age group, 45 percent of the respondents were in the range of 16-24; 30 percent, 25-34; 15 percent, 35-44; and 11 percent, 45 years or more. In terms of the average frequency of Internet usage, 40 percent of the respondents had accessed the Internet from one to four times a day; 32 percent, two to five times a week; 16 percent, five times or more a day; 10 percent, once a week; and 2 percent, once a month.

Since this study focused on online customers’ perceptions of online retailers’ service quality, only the responses from the 137 online customers were utilized for the analysis of this study. Of the 137, 58 were students and the remaining 79 were professionals. To ascertain whether there are any perceived differences between the student and professional groups regarding the survey questionnaire items, a Multivariate Analysis of Variance (MANOVA) analysis and subsequently a series of t-tests were performed on the data collected from the two groups of online customers. The MANOVA results indicated that there was a highly significant agreement between the two groups in their responses to the scale items (Wilks’ Lambda = 0.063, F = 0.492, p = 0.836). The post hoc t-test results supported this finding, showing that there was a significant disagreement between the two groups on only three out of total 42 scale items. These results indicated that the responses from the two groups could be merged into one dataset and utilized for subsequent analyses.

Analyses and results
Factor analysis
The first research question focused on identifying key online retailing service quality dimensions, as perceived by online customers. Principal component factor analysis with a Varimax rotation was employed to examine those dimensions.

After deleting two items with low inter-item correlations out of 40 scale items addressing the specific characteristics of service quality, the initial factor analysis extracted ten factors. The authors further eliminated those items that did not load strongly on any factor (below 0.5) or had cross-loadings. A total of 17 additional items were deleted after three iterations. The retained 21 items were factor analyzed again. Six factors were generated and accounted for 63.2 percent of the total explained variance (see Table II). All items of a scale strongly loaded on one factor and weakly on all the other factors, thereby satisfying the requirements of convergent and discriminant validity (Cohen et al., 1992).

As shown in Table II, the six derived factors were:
(1) Reliable/prompt responses.
(2) Access.
(3) Ease of use.
(4) Attentiveness.
(5) Security.
(6) Credibility.

As measured by Cronbach’s alpha, reliability analysis results for the six extracted factors were 0.92, 0.78, 0.82, 0.73, 0.77, and 0.59, respectively. The results demonstrated
<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Cronbach alpha</th>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable/prompt responses</td>
<td>0.92</td>
<td>The quantity and quality of the product/service I received was exactly the same as that I ordered</td>
<td>0.82</td>
<td>0.09</td>
<td>0.14</td>
<td>0.00</td>
<td>0.09</td>
<td>−0.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The product/service I ordered was delivered to me within the time promised by the online retailer</td>
<td>0.79</td>
<td>−0.02</td>
<td>0.22</td>
<td>0.02</td>
<td>0.15</td>
<td>−0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The billing process was accurately handled and its records were kept accurately</td>
<td>0.77</td>
<td>0.13</td>
<td>0.19</td>
<td>0.11</td>
<td>0.20</td>
<td>−0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The online retailer responded to my inquiry promptly</td>
<td>0.75</td>
<td>0.21</td>
<td>0.19</td>
<td>0.24</td>
<td>0.02</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the online retailer promised to e-mail or call me by a certain time, it did so</td>
<td>0.70</td>
<td>0.24</td>
<td>0.22</td>
<td>0.21</td>
<td>0.15</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The system of the Web site rapidly retrieved the information I requested</td>
<td>0.59</td>
<td>0.28</td>
<td>0.20</td>
<td>0.23</td>
<td>0.11</td>
<td>0.05</td>
</tr>
<tr>
<td>Access</td>
<td>0.78</td>
<td>The Web site showed its street and e-mail addresses, and telephone and fax numbers</td>
<td>0.04</td>
<td>0.74</td>
<td>−0.05</td>
<td>0.06</td>
<td>0.23</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If I want to, I could easily contact a customer service representative over the telephone</td>
<td>0.17</td>
<td>0.74</td>
<td>0.12</td>
<td>0.10</td>
<td>0.17</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The online retailer offered multiple ordering options such as telephone or mail options</td>
<td>0.30</td>
<td>0.72</td>
<td>0.29</td>
<td>−0.01</td>
<td>0.03</td>
<td>−0.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For more information, I could turn to the online retailer’s chat rooms, bulletin boards, or others</td>
<td>0.12</td>
<td>0.58</td>
<td>0.08</td>
<td>0.24</td>
<td>−0.22</td>
<td>0.04</td>
</tr>
<tr>
<td>Ease of use</td>
<td>0.82</td>
<td>The Web site address was easy to remember</td>
<td>0.21</td>
<td>0.09</td>
<td>0.78</td>
<td>0.05</td>
<td>0.16</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The organization and structure of online catalogs were logical and easy to follow</td>
<td>0.26</td>
<td>0.13</td>
<td>0.77</td>
<td>0.17</td>
<td>0.07</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All the terms and conditions (e.g. payment, warranty, return policies) were easy to read/understand</td>
<td>0.31</td>
<td>0.01</td>
<td>0.61</td>
<td>0.34</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The contents in the Web site were easy to understand</td>
<td>0.29</td>
<td>0.43</td>
<td>0.60</td>
<td>0.08</td>
<td>0.14</td>
<td>0.00</td>
</tr>
</tbody>
</table>

(continued)
<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Cronbach alpha</th>
<th>Items</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attentiveness</td>
<td>0.73</td>
<td>The online retailer gave me personalized attention</td>
<td>0.10 0.12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Web site had a message area for customer questions and comments</td>
<td>0.07 0.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I received a personal “thank you” note via e-mail or other media after I placed an order</td>
<td>0.28 −0.01</td>
</tr>
<tr>
<td>Security</td>
<td>0.77</td>
<td>I felt secure in providing personal information for online purchase</td>
<td>0.21 0.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I felt the risk associated with online transactions was low</td>
<td>0.25 0.12</td>
</tr>
<tr>
<td>Credibility</td>
<td>0.59</td>
<td>The Web site showed how long the online retailer has been in this online business</td>
<td>−0.14 0.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>I received special rewards and discounts as promised from doing business with the online retailer</td>
<td>0.13 −0.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentage of variance explained by each dimension (total 66.28 percent)</td>
<td>18.85 12.27</td>
</tr>
</tbody>
</table>

Notes: Extraction method: Principal Component Analysis; Rotation method: varimax with Kaiser normalization
that all the scales, except the credibility dimension, had relatively high reliability and were suitable for further analysis. The reliability of the credibility dimension, 0.59, was deemed relatively low but acceptable for the exploratory nature of the present study.

The first factor, reliable/prompt responses, accounted for the largest proportion (18.9 percent) of the total explained variance and was considered the most important. This factor was defined by six scale items and was primarily related to the concept of providing reliable, prompt, and timely services to customers. The second factor, access, explained 12.3 percent of the variance and was constructed by four scale items, including the availability of a company’s street and e-mail addresses, and telephone and fax numbers, and the accessibility of service representatives. The third factor, ease of use, accounted for 11.5 percent of the variance and comprises four scale items which are primarily associated with well-organized online catalogs, concise contents, and easy to understand terms and conditions.

The fourth factor, attentiveness, explained 9.3 percent of the variance and consisted of three items, including the provision of personalized attention to customers and the availability of message areas on the Web sites to handle customers’ individual questions and comments. The fifth factor, security, accounted for 7.7 percent of the variance and comprises two scale items, such as customers’ secure feelings in providing personal information and customers’ perceptions of low risks associated with online purchases. The last sixth factor, credibility, represented 6.6 percent of the variance and was defined by two items, for example, introducing an online retailer’s business history on the Web site.

### Regression analysis

The second and third research questions were concerned with assessing the impacts of the six online retailing service quality dimensions on customers’ perceived overall service quality and their satisfaction, respectively. Separate regression analyses were performed for each of the two dependent variables, “customers’ overall service quality” and “customers’ satisfaction”. The six factors previously identified by factor analysis were entered as independent variables. In order to control the effects of three demographic variables, such as age, gender, and educational background, these variables were also included as independent variables in the two regression equations. The overall model fit for each regression equation was assessed by $F$ statistics. The regression models for overall service quality and satisfaction were both statistically significant at $p < 0.001$ (see Tables III and IV).

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Standardized coefficients beta</th>
<th>$t$-value</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable/prompt responses</td>
<td>0.574</td>
<td>4.984</td>
<td>0.000**</td>
</tr>
<tr>
<td>Attentiveness</td>
<td>0.518</td>
<td>5.409</td>
<td>0.000**</td>
</tr>
<tr>
<td>Ease of use</td>
<td>0.256</td>
<td>2.110</td>
<td>0.018*</td>
</tr>
<tr>
<td>Access</td>
<td>0.204</td>
<td>2.476</td>
<td>0.041*</td>
</tr>
<tr>
<td>Security</td>
<td>0.068</td>
<td>0.752</td>
<td>0.456</td>
</tr>
<tr>
<td>Credibility</td>
<td>0.014</td>
<td>0.167</td>
<td>0.868</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable: online consumers’ perceived overall service quality ($F = 37.43$, $p < 0.001$, adjusted $R^2 = 0.768$, $R^2 = 0.789$); * $p < 0.05$; ** $p < 0.001$
The results of regression analysis for overall service quality are presented in Table III. This regression equation accounted for 76.8 percent of the variance of the dependent variable \( (F = 37.43, p < 0.001) \). Four independent variables, such as “reliable/prompt responses,” “attentiveness,” “ease of use,” and “access,” had statistically significant and positive relationships with the overall service quality. The reliable/prompt responses dimension was the most significant independent variable with the largest beta coefficient, followed by the attentiveness, ease of use, and access dimensions. Two dimensions, security and credibility, turned out to be statistically insignificant at \( p < 0.05 \) in this regression model.

The results of regression analysis on customer satisfaction are summarized in Table IV. This regression equation explained 73.4 percent of the variance of the dependent variable \( (F = 38.71, p < 0.001) \). Three independent variables, “reliable/prompt responses,” “attentiveness,” and “ease of use,” were significantly and positively associated with customer satisfaction. The reliable/prompt responses dimension was the most influential factor that impacted customer satisfaction, followed by the attentiveness and ease of use dimensions. Three dimensions, such as access, security, and credibility, were statistically insignificant at \( p < 0.05 \) in this regression equation.

**Correlation analysis**

The final research question addressed the issue of whether there is a positive relationship between customers’ perceived overall service quality and their satisfaction. To answer this question, the correlation analysis was performed between overall service quality and satisfaction and the analysis result indicated that there was a statistically significant and positive association between the two variables (the correlation coefficient was 0.77, \( p < 0.01 \)).

**Discussion**

**Service quality dimensions**

The first issue addressed in this study was what online customers perceive as the key dimensions of service quality in online retailing. The analysis identified a total of six key service quality dimensions: reliable/prompt responses; access; ease of use; attentiveness; security; and credibility. These dimensions, except the ease of use dimension, share in their meanings many common aspects with those service quality determinants derived within the context of traditional, offline service industries by prior research (e.g. Parasuraman et al., 1985, 1988). On the other hand, all six

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Standardized coefficients beta</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable/prompt responses</td>
<td>0.605</td>
<td>4.994</td>
<td>0.000**</td>
</tr>
<tr>
<td>Attentiveness</td>
<td>0.585</td>
<td>5.573</td>
<td>0.000**</td>
</tr>
<tr>
<td>Ease of use</td>
<td>0.305</td>
<td>2.474</td>
<td>0.017*</td>
</tr>
<tr>
<td>Access</td>
<td>0.100</td>
<td>1.095</td>
<td>0.280</td>
</tr>
<tr>
<td>Security</td>
<td>0.095</td>
<td>0.959</td>
<td>0.343</td>
</tr>
<tr>
<td>Credibility</td>
<td>0.028</td>
<td>0.332</td>
<td>0.742</td>
</tr>
</tbody>
</table>

**Notes:** Dependent variable: online consumers’ satisfaction \( (F = 38.71, p < 0.001, \text{ adjusted } R^2 = 0.715, R^2 = 0.734); * p < 0.05; ** p < 0.001 \)
dimensions also have their own unique service quality characteristics inherent in the online retailing environment.

First, the reliable/prompt responses dimension refers to the ability to perform the promised service accurately, dependably, promptly, and timely. Online consumers apparently want to receive the right quality and right quantity of items that they ordered within the time frame promised by the online retailers, and they expect to be billed accurately by them. Moreover, online retailers should have clear and effective mechanisms for handling returns and providing online guarantees (Zeithaml, 2002).

In reality, product and service order fulfillment still remains the most troublesome area for online retailers, and most online consumers feel frustrated with the poor service reliability provided by virtual stores (Jedd, 2000). The primary reasons are the lack of strong internal and external collaboration. Internal collaboration includes tight integration of Web sites with customer service operations and effective communication among different functional departments. In turn, external collaboration means integration of supply chain partners (e.g. suppliers, packaging and shipping companies).

Irrespective of the operational models of warehousing and shipping, the most important factor is the quality of the management system (Gray, 2000). For instance, replenishment systems should have the capacity to forecast demand for particular items and should integrate forecasting with order processing. Some measures, dealing particularly with packaged connectors to third-party systems, such as enterprise resource planning (ERP) and customer relationship management (CRM) applications, and formal partnerships with vendors of third-party software, can be taken to implement effective back-end integration.

In addition, online customers expect the online retailers to respond promptly to their inquiries, especially e-mail inquiries. It is well advised that online retailers improve their customer service response time via e-mail automation. For example, KBtoys.com has developed an e-mail management system that utilizes algorithms and set pattern-matching criteria to automate as many processes as possible before an e-mail reaches a customer service representative, thereby automatically answering 25 percent to 40 percent of all incoming e-mails (Ulfelder, 2002).

Another important facet of prompt responses is related to information downloading time. Previous studies revealed that there is a significant positive correlation between the information downloading speed and the Web user’s satisfaction (Page and Lepkowska-White, 2002; Van Riel et al., 2001). Dellaert and Kahn (1999) conducted four computer-based experiments to show that waiting time could affect evaluations of Web sites negatively if there was uncertainty about the wait, as in the case of no countdown information available. Therefore, it is recommended that the online retailers should choose an efficient host server and avoid using extensive high-resolution graphics (Doherty et al., 1999).

Second, the access dimension refers to the ease of contact and information gathering from the online retailer. Online customers prefer to have multiple ways to contact online retailers, such as their street and e-mail addresses, and telephone and fax numbers. Burke (1997) and Cox and Dale (2002) found that online consumers often need to contact a customer representative over the telephone and by other conventional communication means. Thus, it is recommended that online retailers adopt the electronic CRM such as a call center system that handle queries from various channels.
such as e-mail, telephone, fax and the Internet (Kim and Eom, 2002). In addition, online consumers often want to access a variety of informative sources, such as chat rooms and bulletin boards, to obtain up-to-date and useful information for making informed purchasing decisions.

Third, the ease of use dimension is directly related to the unique characteristics of online systems. In maintaining their Web sites, online retailers need to focus on easy navigation for their online systems, well-organized and well-structured online catalogs, concise contents, and easy-to-understand terms and conditions in their Web sites. More specifically, a Web site should be configured to allow customers to reach a desired Web page from anywhere in the Web site’s hierarchy easily (Kim and Eom, 2002). Otherwise, customers would have considerable difficulty in navigating pages and would be unlikely to complete transactions.

Fourth, the attentiveness dimension refers to the extent to which online retailers provide personalized services to their customers. As Luedi (1997) and Madu and Madu (2002) argued, the fierce competition in the Web marketplace places online retailers in a position where simply posting product or service catalogs on the Web and combining them with an interactive order processing facility, to process orders and capture payments, is not enough to ensure their survival. Although a Web site is basically an impersonal medium, in order to attract and retain customers, a company needs to differentiate its products and services from those of its competitors based on its personalized services to customers.

The results of the present study indicated that online customers are longing for personalized or individualized attention from online retailers. To show a human side to customers, a company needs to have enough staff members to answer customers’ diverse questions via phones and e-mails and to educate and empower customers in using electronic media. Furthermore, online retailers need to maintain message areas on their Web sites in order to listen to individual customers’ voices, thereby better understanding their changing preferences and predicting their future requirements. Online firms can also offer personalized services to their customers in order to build customer loyalty, since they can automatically track, through the Internet, customers’ purchasing behaviors and gather information from their integrated database.

Fifth, the security dimension is concerned with online transaction safety and customer privacy. Szymanski and Hise (2000) and Yoo and Donthu (2001) empirically found that customers’ perceptions of online security played an important role in their satisfaction and purchasing intention. In fact, the perceived lack of security on public networks is a stumbling block to the growth of e-commerce and online consumers often have serious concerns about the security of online credit card transactions and the interception of their personal information (Fenech and O’Cass, 2001; Madu and Madu, 2002).

Passwords and user names themselves are not enough to guarantee secured transactions on the Web. More advanced methods of encryption, as well as digital signatures, need to be developed and standardized (Kim and Eom, 2002). Customers should also be able to immediately change access codes upon receipt of their ordered products/services in order to reduce the security risk in the delivery process (Grover et al., 1998). In addition, online retailers should maintain clear security and privacy policies on their Web sites (Franzak et al., 2001).

Finally, the credibility dimension refers to trustworthiness and believability of the online retailers. Unlike a traditional service environment where it is possible to
establish a relationship of trust through physical contacts, it is very difficult to inspire customer trust in cyberspace (Kim and Eom, 2002; Madu and Madu, 2002). The results of this study indicate that online consumers seem to consider the following factors, such as a lengthy business history and the provision of special rewards and discounts as promised to repeat buyers and loyal customers, as good indicators of credible online retailers.

**Traditional vs online service quality dimensions**

The comparisons between SERVQUAL’s traditional service quality dimensions with those of online service quality uncovered by the present study are presented in Table V. Four of the five traditional service quality dimensions, such as reliability, responsiveness, assurance, and empathy, were also considered important by online customers, as indicated on Table V. First, the two traditional service quality dimensions, responsiveness and reliability, were combined into one of the online 

<table>
<thead>
<tr>
<th>Traditional service quality (SERVQUAL)</th>
<th>Online service quality (present study)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangibles</td>
<td>Appearance of physical facilities, equipment, and appearance of personnel</td>
</tr>
<tr>
<td>Reliability</td>
<td>Ability to perform the promised service dependably and accurately</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Willingness to help customers and provide prompt services</td>
</tr>
<tr>
<td>Assurance (a combination of competence, courtesy, credibility, and security)</td>
<td>Knowledge and courtesy of employees and their ability to inspire trust and confidence</td>
</tr>
<tr>
<td></td>
<td>Trustworthiness, believability, and honesty of the service provider</td>
</tr>
<tr>
<td></td>
<td>Safety in online transactions and privacy of sensitive information</td>
</tr>
<tr>
<td>Empathy (a combination of access, communication, and understanding the customer)</td>
<td>Caring, individualized attention the firm provides its customers</td>
</tr>
<tr>
<td></td>
<td>Mostly, not applicable to online retailing due to non-human interactions via Web sites</td>
</tr>
<tr>
<td>Ease of use</td>
<td>Ease of navigation, well-organized and understandable content, and smooth transactional processes</td>
</tr>
</tbody>
</table>

**Source:** a Adapted from Parasuraman et al. (1988)
service quality attributes: reliable/prompt responses. In fact, the two dimensions appear to demonstrate a close complementary interrelationship, since consumers understandably do not wish to receive prompt but unreliable services, or vice versa.

Second, the assurance dimension in SERVQUAL, by definition, frequently interfaces with two online service quality dimensions, namely credibility and security. Third, the empathy dimension in SERVQUAL encompasses the construct of access in the online setting. Finally, it is important to point out that, while the tangible dimension is not, for the most part, applicable to the online service experience, the ease of use dimension derived in this study reflects a particularly unique aspect of online systems quality.

**Relative importance of service quality dimensions**
The second and third issues in this research focused on understanding different impacts of each service quality dimension on, respectively, consumers’ perceived overall service quality and satisfaction. Addressing these issues will help online retailers develop and implement effective service quality improvement initiatives within their organizations.

As presented in the results section, four dimensions had significant and positive impacts on customers’ perceived overall service quality. These dimensions were found to be, in descending order of importance, reliable/prompt responses, attentiveness, ease of use, and access. On the other hand, three dimensions had significant and positive effects on customer satisfaction. They are, in descending order of importance, reliable/prompt responses, attentiveness, and ease of use.

The reliable/prompt responses dimension is the most influential determinant in achieving high levels of both overall service quality and customer satisfaction. This finding parallels the results of prior studies on service quality and customer satisfaction in the traditional, offline service setting (Bitner et al., 1990; Parasuraman et al., 1988) as well as in the online service environment (O’Neill et al., 2001; Srijumpa et al., 2002). Thus, online retailers need to pay special attention to this dimension. Next, the attentiveness and ease of use dimensions are the second and third most influential factors in defining both overall service quality and customer satisfaction.

In addition, statistically, the access dimension had a significant and positive effect on enhancing overall service quality, but did not show a significant relationship with customer satisfaction. Finally, it is interesting to note that neither “security” nor “credibility” had statistically significant associations with both overall service quality and customer satisfaction.

**Overall service quality and customer satisfaction**
The last research issue addressed the relationship between customers’ perceived overall service quality and their satisfaction. This research finding demonstrated a statistically strong association between the two variables. This conclusion is consistent with those of prior studies (e.g. Duffy and Ketchand, 1998; Srijumpa et al., 2002) in that the customers’ satisfaction is strongly influenced by the overall service quality provided for them.
Conclusion

With Internet and Web technologies, online customers can have unlimited access to the information they require and may enjoy a wider range of choices in selecting products and services with highly competitive prices. Therefore, it is generally not easy for online retailers to gain and sustain competitive advantages based solely on a cost leadership strategy in rival-driven online retailing. Rather, the subtle “differentiating” service quality levels of the online retailers have increasingly become a key driving force in enhancing customers’ satisfaction and in turn in expanding their customer bases. The finding of this research confirmed that there is a strong and positive relationship between online retailers’ service quality and their customer satisfaction.

Service quality improvement initiatives should begin with defining the customers’ needs and preferences, and their related quality dimensions. If online retailers understand what dimensions customers use to judge quality, they can take appropriate actions to monitor and enhance performance on those dimensions and remedy service failures. This study identified a total of six key online service quality dimensions. Obviously, in order to maintain a high level of overall service quality, the online retailers should pay attention to all six dimensions identified in this study. However, to strengthen competitiveness in the extremely competitive market, given limited organizational resources, it is recommended that the online retailers focus particularly on four dimensions, reliable/prompt responses, attentiveness, ease of use, and access, in order to achieve high levels of consumers’ perceived overall service quality and their satisfaction simultaneously.

More specifically, the authors found the following managerial implications. First, the prompt/reliable service dimension indicates that online retailers should provide customers with accurate and prompt service deliveries. The failures of online retailers in delivering accurate services in a timely manner often result from the lack of synchronizing online (e.g. marketing and sales functions) with offline (e.g. inventory and logistics management functions) business processes. Therefore, it is recommended that online retailers implement information systems that integrate all their online and offline operations to improve their delivery performance. It is also imperative that online retailers have a smooth physical distribution channel. If an online retailer lacks sufficient resources for building such a channel, it may outsource its logistics function to a third party specializing in logistics management to ensure timely and accurate service deliveries.

Second, the attentiveness dimension suggests that online retailers should do their best to provide personalized or individualized services to their customers, even though they use an impersonal medium, a Web site, as their primary marketing and distribution channel. It is well advised that online retailers need to have enough staff members to answer customers’ diverse questions via telephones and e-mails or utilize the electronic CRM applications as discussed earlier. In addition, while maintaining message areas on their Web sites in order to listen to individual customers’ voices, online retailers should have their customer representative monitoring the behaviors of online shoppers, and proactively offering help when the shoppers appear in need of a helping hand. Particularly, online retailers’ Web sites can customize the interfaces with their visitors by using so-called “personalization software”. This software utilizes a self-learning engine to evaluate visitors’ real-time behaviors, such as “what a visitor is
looking at” and allows online retailers to offer relevant suggestions to customers (Koller, 2001).

Third, the ease of use dimension indicates that in maintaining their Web sites, virtual store managers should focus on easy navigation for their online systems, well-organized online catalogs, and concise contents. Particularly, well-designed navigational structure can facilitate customers’ perceptions of online control and enjoyment. Further, a good Web site should always clarify the meaning of interactive messages in order to facilitate the “flow”. Finally, the access dimension refers to the ease of contact and information gathering from the online retailer. Thus, it is suggested that online retailers should enable customers to make inquiries and obtain useful information through online and offline media. Besides the widely used communication channels such as e-mail and telephone, online retailers also need to offer live text chat, co-browsing, and page pushing (Waltner, 2000). In addition, virtual store managers may encourage customers to share their views on certain products. For example, they may create online communities for their customers, which would allow customers to access experts and other customers with similar interests and experiences.

Limitations and future research
There are some limitations in this study. One major limitation is in sampling. Since the survey was given to a non-random sample of students, managers, and engineers drawn from the Southwest and Midwest regions of the USA, the prudent reader may need to interpret the results of the study with caution, particularly with respect to the generalization of research findings to US online customers as a whole.

Future research should make several extensions of the current study. First, to verify the service quality dimensions derived in this study and to enhance the generalizability of the research findings, future research needs to use more diversified random samples and should employ a confirmatory factor analysis.

Next, a future study needs to examine the causal relationships, rather than simple associations, between online service quality dimensions, consumers’ perceived overall service quality, and their satisfaction by employing a more rigorous research methodology, such as a structural equation modeling technique. Finally, the same research issues addressed in this study may need to be explored in the business-to-business e-commerce setting.

References


