Relationships among Service Quality, Customer Satisfaction and Customer Loyalty: A Case Study on Mobile Shopping APPs

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Abstract. Employing various scales that measure the e-commerce service quality in regard to mobile shopping APPs, this study aims to analyze consumers' awareness of the mobile shopping APP service quality, and to explore how mobile shopping APP service quality may influence customer satisfaction and customer loyalty. Convenience sampling was used with consumers who had used mobile shopping APP as questionnaire respondents. A total of 211 valid questionnaires were collected. The data elicited from the questionnaire survey were quantitatively analyzed. The result was then combined with demographic variables to empirically analyze the significant related factors of mobile shopping APP service quality that determine customer satisfaction and customer loyalty. Privacy/security, personalization, reliability and tangibility remain important factor in the measurement of mobile shopping applications. The research result will serve as a reference for businesses to focus more on management issues and make improvement accordingly.

Keywords: mobile shopping, APP, service quality, customer satisfaction, customer loyalty

1. INTRODUCTION

The online marketplaces of the twenty-first century, together with fundamental changes to consumer lifestyles, have compelled organizations to transform the way they conduct business. In particular, increasing consumer demand for superior service, together with the acceptance and widespread use of information technology, mobile devices, the Internet and social media, require that firms rethink their business strategy (Kandampully et al., 2015). In the past, it was only possible to browse websites and click on webpages to inquire about and purchase products. However, with present advancements, companies can take the initiative in providing consumers with information about relevant products merely through the utilization of mobile shopping APPs. This allows consumers to have full access to promotional messaging through mobile devices anytime or anywhere, while being able to quickly and conveniently purchase products by touching a shopping APP displayed on their mobile device with their finger and going to a company's exclusive product trading platform. Therefore, one topic worth exploring is how the operators of B2C type mobile shopping APPs create and maintain long-term transactional relationships with consumers, who have a multitude of choices at their disposal in an age in which information flows rapidly. This study focuses on an investigation of the relationship between mobile shopping APP service quality, customer satisfaction levels, and customer loyalty in light of consumer service and safety issues for mobile shopping APPs.

2. LITERATURE REVIEW AND HYPOTHESES

2.1 E-Service Quality and M-Service Quality

Recent developments have led researchers and practitioners to re-evaluate service quality, in the context of information technology. The traditional service quality is defined as a "consumer's judgment about an entity's overall excellence or superiority" (Parasuraman et al., 1988). Zeithaml et al., (2000) and Zeithaml, (2002) defined: e-service quality is "the extent to which a Web site facilitates efficient and effective shopping, purchasing, and delivery of products and services".

There are different approaches to measure service quality in marketing literature. Most commonly known is SERVQUAL and SERVPERF. SERVQUAL scale was developed by Parasuraman et al. (1988). According to the scale, there are five dimensions in order to

measure service quality. These are tangibles, reliability, responsiveness, assurance, and empathy. Comparatively, Cronin and Taylor (1992) worked on service quality by using performance that their scale was called SERVPERF. Another, Zeithaml et al. (2002) developed an e-service quality model (E-SQ) consisting of seven different dimensions, namely, ease of use, privacy, graphic design, information availability, reliability, compensation and contact. Later, Parasuraman et al. (2005) developed a measure of e-service quality on online shopping sites including four different dimensions – fulfillment, efficiency, availability and privacy. Mobile services are considered as a new marketing application while the use of mobile technology increased in recent years. Therefore, relatively little research has attempted to identify the key determinants of mobile service quality. Although m-commerce is frequently characterized as an extension of e-commerce, it can also be regarded as a separate channel that delivers unique value to consumers (Balasubramanian et al. 2002).

2.2 Service Quality of Mobile Shopping Applications

In recent years, mobile shopping applications have made a significant rise in popularity. Mobile shopping applications are (usually smartphone-based) applications that provide customers with an enhanced shopping experience. They are cheap to deploy, as most people carry smartphones and are already familiar with mobile applications (Put et al., 2014). Compared to traditional mobile web sites, mobile apps provides several advantages for marketers because mobile apps offer greater security features as well as allow consumers bypass competitors' information and go directly to the marketer's self-contained environment (Taylor and Levin, 2014). In this new environment, "unless conventional merchants adopt an entirely new perspective – one that allows them to integrate disparate channels into a single seamless omnichannel experience – they are likely to be swept away" (Rigby, 2011).

Tan et al. (2008) consider seven dimensions for mobile service quality: perceived usefulness, perceived ease of use, content, variety, feedback, experimentation, and personalization. Mobile devices are personalized, so while personalization occurs, consumers will have positive attitudes (Tan et al., 2008). Huang et al. (2015) assessed m-commerce shopping experiences for both virtual and physical products. Through a five step validation, the M-S-QUAL construction concluded with five factors (contact, responsiveness, fulfillment, privacy and efficiency) for the supporting services in the process of virtual product shopping and four factors (contact, responsiveness, fulfillment and efficiency) for the supporting services in the process of physical product shopping. This study focuses on the perceived service quality of mobile shopping applications. For the purpose of this study, seven criteria were developed from reviewing previous studies by Kolesar and Wayne Galbraith (2000), Zeithaml et al. (2002), Parasuraman et al. (2005), and Huang et al. (2015) as well as collecting expert opinions. Seven attributes for selecting mobile shopping applications are below: efficiency, fulfillment, privacy, responsiveness, personalization, tangibility, and reliability.

2.3 Influence of Service Quality of Mobile Shopping Applications on Customer Satisfaction

Research on the cognitive bases of satisfaction pays attention to the formation of cognition and how such cognition affects a user's emotional response and subsequent behavior (McKinney, Yoon and Zahedi, 2002). In the management information system (MIS) research area, user satisfaction has been employed as a surrogate for information systems success, and therefore, has frequently been measured (Bailey and Pearson, 1983; Doll and Torkzadeh, 1988; Wang, 2003). Earlier studies found direct relationship between service quality and satisfaction (Cronin and Taylor, 1992; Cronin and Taylor, 1994; Cronin et al., 2000; Keaveney and Parthasarathy, 2001; Lim et al., 2006; Shin and Kim, 2008; Parasuraman, et al, 1988). Service quality is closely related to consumer satisfaction as it reflects the customers' evaluation of the performance of service providers. Several researchers have explored specific quality dimensions of this type of service in the mobile services environment (Kaynama and Black, 2000 ;Wang and Lo, 2002; Cho and Sung, 2007; Lu, Zhang and Wang, 2009). In studies of mobile services, the relationship between service quality and customer satisfaction have been obtained (Wang and Lo, 2002; Kim et al., 2004; Turel and Serenko, 2006; Wang and Liao, 2007; Shin and Kim, 2008; Kuo et al., 2009; Lai et al., 2009).

According to Zhao et al., (2012), in the context of mobile services, consumers may not meet with the service provider face to face, the interaction between the two parties occurring through the mobile device is still an important

component in mobile service delivery. For example, Wang et al. (2004) found that assurance, which reflected the interactive factors in service quality, influenced customer satisfaction in mobile services within China Telecom significantly.

In keeping with the above arguments, it is reasonable to think of a close relationship in place between service quality of mobile shopping applications and consumer satisfaction, which brings us to propose the following work hypothesis:

H1a: Efficiency is positively associated with customer satisfaction.

H1b: Fulfillment is positively associated with customer satisfaction.

H1c: Privacy/Security is positively associated with customer satisfaction.

H1d: Responsiveness is positively associated with customer satisfaction.

H1e: Personalization is positively associated with customer satisfaction.

H1f: Tangibility is positively associated with customer satisfaction.

H1g: Reliability is positively associated with customer satisfaction.

2.4 The Influence of Service Quality of Mobile Shopping Applications and Customer Satisfaction on Customer Loyalty

Kumar et al. (2010) stated that high quality of service will result in increased customer loyalty whereas poor service quality experiences will more likely result in customer defections. Parasuraman et al. (1988) found that customer loyalty is the outcome of service quality. Loyal customers are considered very important for any business' survival (Ganguli and Roy, 2011) due to their relationship with the company's market share and profitability (Tsoukatos and Rand, 2006). Another briefer and more specific definition provided by Anderson and Srinivasan (2003) defined e-loyalty as "the customer's favorable attitude toward an electronic business, resulting in repeat purchasing behavior". Preference and favorable attitudes presume customer satisfaction, which is generally considered a major driver of loyalty (Anderson et al., 1994; Ellinger et al., 1999; Oliver, 1999), also in online settings (Cho et al., 2002; Gummerus et al., 2004). In order for wireless-based applications to be effectively used in the m-commerce environment, mobile service providers must not only attract new customers but also be able to retain them to ensure profitable repeat business. In mobile service industries, the high cost of acquiring customers can render many customer relationships unprofitable in the early years. But, without customer loyalty, even the best mobile business will fall apart (Lin and Wang, 2006). It means that the better e-service will lead to customer loyalty. Based on the above evidence, this study proposes that:

H2a: Efficiency is positively associated with customer loyalty.

H2b: Fulfillment is positively associated with customer loyalty.

H2c: Privacy/Security is positively associated with customer loyalty.

H2d: Responsiveness is positively associated with customer loyalty.

H2e: Personalization is positively associated with customer loyalty.

H2f: Tangibility is positively associated with customer loyalty.

H2g: Reliability is positively associated with customer loyalty.

According to Baumann et al. (2011), loyalty is an attitude as well as a specific behaviour. The behavioural loyalty is extremely important and reflects customers' positive response to repurchase a particular product or service (Amin et al., 2013). The securing of higher levels of consumer satisfaction leads to an improvement in both purchasing intentions and loyalty levels (Anderson and Sullivan, 1990; Yoon and Kim, 2000). Customer satisfaction can create customer loyalty that is long lasting and sustained until there is blunder from services delivery staff (Kaura, 2013). The literature documents customer satisfaction as the most dominant indicator of customer loyalty (Hoq and Amin, 2009). A satisfied customer's opinion of a service provider can stimulate him or her to make repeat purchases from the same service provider and even suggest this service provider to other clients as well (Lam et al., 2004). A study by Mohsan et al. (2011) revealed that customer satisfaction was positively correlated with customer loyalty. Gera (2011) indicated that many authors in different online services contexts concluded the e-satisfaction has a direct, significant and positive impact on e-loyalty. Thus the underlying assumption is that customer satisfaction is positively associated with customer loyalty:

H3: Customer satisfaction positively mediates the relationship between service quality of mobile shopping applications and customer loyalty.

Figure 1 presents the theoretical framework for this study. There are seven main independent variables that may positively affect customer

satisfaction and customer loyalty: efficiency, fulfillment, privacy/security, responsiveness, personalization, tangibility, and reliability. This study includes the mediation effect of customer satisfaction on the relationship between service quality of mobile shopping applications and customer loyalty.
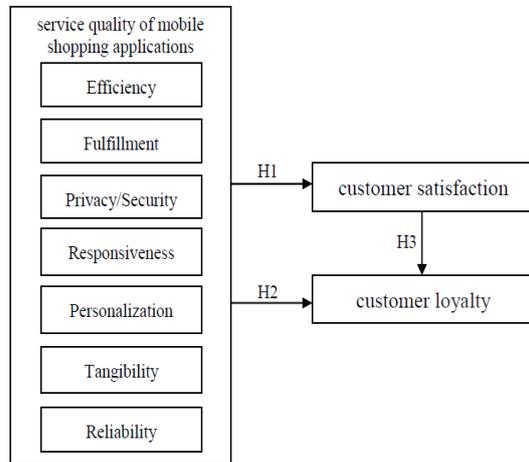

Figure 1. Analytical Framework

3. RESEARCH METHODOLOGY AND MEASUREMENT

We adopted convenience sampling for this study. The online questionnaire platform provided by the website MySurvey was used to distribute online questionnaires and obtain the sample. We established an online questionnaire on the survey platform and used social network websites, such as Facebook and LINE, to ask friends and relatives to help and share the message. We also posted the questionnaire's URL on BBS sites to attract interested people to fill out the questionnaire. A total of 221 questionnaires were collected, 211 of them were valid. The sampled population comprised users of Facebook, LINE and BBS sites. The vast majority had experience using the mobile shopping applications.

Out of the 35 items of our questionnaire, 27 items for service quality of mobile shopping applications were adopted from Kolesar and Wayne Galbraith (2000), Zeithaml et al. (2002), Parasuraman et al. (2005), and Huang et al. (2015). Four items for customer satisfaction were adopted from Anderson and Srinivasan (2003). Four items for customer loyalty were adopted from Oliver (1999), Zeithaml (2000), and Anderson and Srinivasan (2003).

4. ANALYSIS AND RESULTS
4.1. Reliability and Validity Analysis

As a preliminary step in the analysis, bivariate (Pearson-γ) correlations were calculated among the nine composite variables (factor scores). The results of the analysis of variables show a positive correlation. The correlation coefficients among the seven service qualities, customer satisfaction and customer loyalty variables were at a medium level (between .398 and .809). The Cronbach's α and composite reliability values (between .847 and .938) of the constructs all surpassed 0.7 (Hair et al., 1998; Nunnally, 1978). There is no generally accepted standard for adequate values of the composite reliability index (CRI).Diamantopoulos and Siguaw (2000) suggested values above 0.60. The results show that the reliability of each aspect in the present study is excellent. AVE is similar to CRI, with the one exception that standardized loadings are squared before summing them (Hair et al., 1998; Koufteros, 1999). The cutoff value most often used for AVE is 0.50 (Bagozzi and Yi, 1988; Hair et al., 1998), while there are also cases where a milder restriction of 0.40 was employed (Diamantopoulos and Siguaw, 2000). The results in this study showed that the AVE of each construct was greater than the correlation coefficient squared value of all the constructs, and thus each construct has good discriminant validity.

4.2 Effects of Service Quality of Mobile Shopping Applications

To check if multicollinearity is a problem, we examined the significance of the variance inflation factor (VIF). Neter et al. (1996) suggested that a VIF value in excess of 10 is an indication of multicollinearity problems. All the constructs in this study have VIF values lower than 10 (between 1.789 and 4.243), indicating that our research model does not suffer from this issue of multicollinearity.

The regression analysis were used to test the proposed hypotheses. Step 1 shows that part of the independent variables were significantly (ΔR^2=.735, p<.001) related to customer satisfaction (e.g. privacy/security, β=.156, p<.01; personalization, β=.138, p<.01; tangibility, β=.162, p<.05; and reliability, β=.371, p<.001). Step 2 measures the effects of privacy/security, personalization and reliability (β=.330, p<.001; β=.256, p<.001; β=.238, p<.01), as well as the direct effect of customer loyalty (ΔR^2=.544, p<.001). Finally, step 3 the mediator model to test the hypothesized mediation effects. The significant mediation of privacy and personalization (i.e. mediator model) indicates that customer satisfaction mediates the relationship between privacy/security,

personalization (β=.253, p<.001; β=.189, p<.01) and customer loyalty (ΔR^2=.604, p<.001), among the variables efficiency, fulfillment, responsiveness, tangibility and reliability with regard to customer loyalty are negative and do not reach the minimum level of significance (i.e. p<.05), but mediation effects of customer satisfaction (β=.487, p<.001) to contribute to the variability of correlation-coefficient (R^2) of the dependent variable. The significant change in R^2 between Steps 2 and 3 shown (β=.487, ΔR^2 =.060, p<.001) lends support to the assertion that customer satisfaction with service quality of mobile shopping applications will have a mediation effect on customer loyalty. Service quality among efficiency, fulfillment, responsiveness, tangibility and reliability have none mediation effect, privacy/security and personalization have partial mediation effect, but reliability variable has complete mediation effect.

The results presents four of the seven paths from service quality of mobile shopping applications to customer satisfaction are supported. Privacy/Security, personalization, tangibility and reliability have significant effects on customer satisfaction, providing support for H1c, H1e, H1f and H1g, three of the seven paths from service quality of mobile shopping applications to customer loyalty are supported. Privacy/Security, personalization and reliability have significant effects on customer loyalty, providing support for H2c, H2e and H2g. The mediating role of customer satisfaction has significant effects on customer loyalty, providing support for H3.

5. DISCUSSION AND CONCLUSION

This study attempts to address the gap in the literature by conducting a research effort to develop, refine, and psychometrically evaluate a multidimensional scale measuring the service quality of mobile shopping applications. The final scale of 35 items in seven dimensions (efficiency, fulfillment, privacy/security, responsiveness, personalization, tangibility, and reliability) is the result of a refinement process based survey studies and shows satisfactory psychometrical properties. This conceptualization of service quality of mobile shopping applications takes the uniqueness, complexity and futurity of mobile shopping into account. Due to fiercer competition compared with the m-commerce environment years ago, marketers in the mobile commerce era now have fewer chances to make up for mistakes or make amends to consumers for unsatisfactory

dealings. These shifts in the market make factors such as privacy/security, personalization, reliability and tangibility, and not some of the more traditional factors, the most indispensable service features, in evaluating service quality. Interestingly, privacy/security, personalization, reliability and tangibility remain important factor in the measurement of mobile shopping applications. We offer the following possible reasons:

● The location-based capability of mobile services and the app payment practices used in m-commerce may result in customers feeling less in control of their privacy/security in terms of their identity and their payment account details.

● Sellers Personalized service should be provided so customers can more quickly find products or service information through the Apps and complete the shopping process in a more efficient and simple manner.

● From a mobile shopping management point of view, the reliability dimension has to be emphasized due to its utmost importance in predicting customers' perceived value of service, satisfaction and loyalty. The Seller managers should especially concentrate on issues such as accurate order delivery, providing timeliness information and broad service and product offerings.

● Consumers place great importance on the interface design mobile shopping applications use and desire that these APPs provide a comprehensive product display, update product information often, and give users a greater variety of product choices in order to provide customers with the complete service of actual shopping.

This study ascertains the correlation between customer satisfaction and loyalty levels, as loyalty increases when customers are extremely satisfied with products or services. Satisfaction and loyalty are not completely symmetrical, as a satisfied customer will not necessarily become a loyal one. However, most customers who do possess loyalty feel satisfied with the products or services they have received. In turn, customer satisfaction can elicit greater intention to make further purchases. Happy customers may also recommend the company's products and services to friends or online community members, which means the company can cultivate new customers without incurring additional costs. A loyal customer is a marketing force who will take the initiative in extolling the virtues of a product or service they like to others. From the perspective of cost, profit, marketing, etc., customer loyalty is one of the optimal

advertising channels for a company. Therefore, customer loyalty is an important resource for enterprises, as it can act to prevent competitors from entering the market and is an important predictive indicator of market share and profit level.

6. THEORETICAL AND PRACTICAL IMPLICATIONS

One contribution of this study is to detail the dimensions of service quality for mobile shopping applications by furthering a general definition of mobile service quality. Mobile shopping applications, as a mobile commerce businesses model, is different from online shopping websites and mobile services. Mobile shopping applications provide services to both sellers and buyers who engage in complex trading processes that involve a large number of parties. Customers have special concerns because of these characteristics. Mobile shopping applications have to address these concerns in order to succeed.

This paper neither develops new theories nor modifies prior ones, but rather provides a foundation for the development of new ones. Although not a typical empirical research paper that tests relationships among variables, this paper develops a solid measurement scale, which can serve as a foundation for further academic research. This paper makes several theoretical contributions to service quality measurement research. The previous development of this research area can be traced back several decades. However, due to the recent high penetration of mobile services, this paper identifies the need to construct a service quality measurement scale for mobile shopping applications. In the final validated scale, several dimensions of service quality that were identified in previous studies are not present. This shift implies that the traditional notions of service quality do not adequately describe the needs and priorities of mobile shopping users. As the shopping applications environment is increasingly characterized by mobility, the concept of service quality needs to be largely redefined. Thus, this paper marks an important milestone in the understanding of service quality for the emerging mobile shopping applications market.

By testing and validating the proposed model through rigorous psychometric scale development procedures and methodologies at each step, this paper provides empirical evidence that the service quality of mobile shopping applications scale is robust. These results show that the service quality of mobile shopping applications is very stable and demonstrates excellent scale quality. This paper is of both practical and theoretical significance, because businesses can confidently adopt this scale to conduct service quality of mobile shopping applications surveys, and academics can conveniently use it in a broad range of m-commerce research. Although not a typical empirical research paper that tests relationships among variables, this paper develops a solid measurement scale, which will provide a foundation for further academic research.

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