SERVICE QUALITY AND ONLINE GAMES: MODERATING EFFECT OF ZONE OF TOLERANCE

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Abstract

Attracting millions of users world-wide, online gaming is perceived as a profitable e-business with great research potentials. This study proposes a behavioral consequence research model linking service quality, service value, satisfaction and behavioral intentions with a central focus on the moderating effect of Zone of Tolerance (ZOT), which serves as a standard for service evaluation by forming a cognitive boundary of satisfactory service, in the context of massively multiplayer online role-playing games. The necessity of customizing conventional e-service quality measures is highlighted in order to reflect the distinctiveness of online game service attributes when undertaking empirical tests. On the basis of solid conceptualization, our research model is expected to explain the variability of online game players’ rating on satisfaction and their subsequent behavioral intentions. Lastly, several implications noted in this study are presented.

Keywords: online game, service quality, zone of tolerance.
1 INTRODUCTION

With the propagation of high-speed Internet and advanced graphic technology installed on PCs, online games have drawn a huge influx of Internet users worldwide. The global online game market is estimated to grow from USD $15.7 billion in 2010 to nearly $29 billion by 2016 and pass retail video game sales in 2013 (DFCIntelligence 2011). These forecasts are plausible with the evidence of what the world is witnessing since 2003 - the commerciality of virtual reality games, e.g., Second Life, and massively multiplayer online role-playing games, e.g., World of Warcraft.

The fast growth of the online games industry, however, does not guarantee the sustainability of every market player and game developer. There are consistent sellers performing well in the market. For instance, World of Warcraft has accumulated 12 million users as of 2011 worldwide since its launch in 1994 (Irvine 2011). In contrast, sharp falls of significant companies are observed. For example, online game revenue of Capcom, the global electronic game publisher, plummeted by 41.3% during 2011 (Nunneley 2012).

In the field of marketing, researchers have long been probing on how to develop loyal but also profitable customers who are the backbone of company’s viability. Coupled with customer satisfaction, service quality is known as a critical parameter of company’s profitability (Anderson et al. 1994; Reidenbach & Sandifer-Smallwood 1990). In line with that, e-commerce literature acknowledged that e-service quality plays a key role in enhancing customer satisfaction and favorable behaviors toward a firm. The causality between service quality and customer satisfaction has gained strong supports from empirical research in e-commerce (Chang & Wang 2011; Cristobal et al. 2007; Lee & Lin 2005).

Despite the significant impacts of service quality on customer satisfaction, there is a lack of scholarly effort investigating online game service quality (Arnason 2011). Yang et al. (2009) have attempted to prove that online gamers’ satisfaction fully mediates the effect of service quality on loyalty; however, more empirical research has not yet followed in online game literature. In particular, two significant gaps are evident in previous research: (1) a lack of service quality studies in online gaming context and (2) the negligence of multiple expectations impacts on the consequences of service quality.

By using a standardized measure, “SERVQUAL”, a well-established consumer behavioral consequence model of linking service quality, customer perceived value, customer satisfaction and behavioral intentions has been widely adopted in marketing research (Parasuraman et al. 1988; Zeithaml et al. 1996). Recently, Information Systems (IS) and marketing literature tend to develop tailored measures for the sake of accurate assessment of service quality (Cook et al. 2001; Loiacono et al. 2007) because unique service features must be engraved in measures to reflect what service quality is in users’ mind. In online game literature, however, application of the consumer behavior research model is scarce; and moreover the validated measurement connoting online game distinctiveness is unfound. Therefore, there is a lack of confirming the behavioral consequence model using service quality measures specifically associated with the online game contexts (Kettinger & Lee 2005).

Second, the notion of expectations is imperative as standards to evaluate perceived service quality (Zeithaml et al. 1993). On the basis of robust conceptualization, Parasuraman et al. (1994) embraced customers’ expectation at two different levels which together create cognitive ‘Zone of Tolerance’ (ZOT) to further determine their emotional satisfaction level on given service. In their IS service quality study, Kettinger and Lee (2005) validated that the use of zone of tolerance concept has a better diagnostic power of service performance than the use of single expectation, followed by empirical tests in e-learning setting (Kim et al. 2010; Wang et al. 2010). This study, therefore, argues that the ZOT can be integrated into the behavioral consequence model (Zeithaml et al. 1996) to moderate the relationships between service quality and satisfaction; however, little research has been conducted in the online game contexts to validate the moderating role of ZOT on the relationships between service quality and consumer satisfaction. This study aims to narrow this gap.

This study is expected to introduce unexplored aspects of the online gaming phenomenon by investigating how online game players perceive the current game services and factors leading them to
satisfy and be loyal. We will focus on the extension and customization of the quality-behavioral intention framework, in online game settings, ultimately discovering the new dynamics of online gaming.

2 ONLINE GAMES AS AN INTERACTIVE ENTERTAINMENT SERVICE

Since the invention of the Internet, new genre of game play apart from videogames and solo playing computer games has emerged (Aleimi 2007; Dickey 2007). Massively multiplayer online role-playing games (MMORPGs) are networked environment where thousands of gamers can play simultaneously through their self-created digital characters or avatars (Dickey 2007; Steinkuehler & Williams 2006). This type of game is persistent allowing resuming/restarting of previous game logs; and interaction with other players, corresponding game communities and forums are associated with the game software. Therefore, the playful game experiences are not identical to individuals as well as invariable to each game playing.

In this regards, MMORPGs can be classified as an interactive entertainment service. Parasuraman et al. (1985) identified that service is considerably different to product in terms of four characteristics - intangibility, perishability, heterogeneity and inseparability. To game players, MMORPGs are more than an entertainment-oriented IT product, a dynamic gaming process which will vary with their game colleges and strategies. Therefore, this study defines online game as a complete service that provides game software, server, sociovirtual place and digital goods, and any relevant services to recover the failure of service delivery.

3 THEORETICAL FOUNDATION AND HYPOTHESES DEVELOPMENT

Academic investigations on MMORPGs primarily concentrated on users’ gaming behaviors/motivation and extended to users’ social activities (Ducheneaut & Moore 2004; Williams et al. 2006; Yee 2006). Previous studies confirmed that strong interactivity with other players is a salient feature of the users’ patronage toward online games.

On the other hand, the fast growth of virtual economy has triggered many researchers to study on commercial activities in the virtual world. A great number of studies have not only modeled purchase intentions of virtual goods but also included branding/marketing strategies of the firm (Animesh et al. 2011; Catterall & Maclaran 2002; Martin 2008; Nah et al. 2011; Wetsch 2008). Previous studies promised that virtual world is another lucrative and effective marketplace for modern companies to expand but the research findings on consumer behaviors are questionable to apply in MMORPGs due to the fact that artifacts of the studies are still very limited to Second Life, where replicating real world-like features and activities rather than gaming as the main purpose.

In the context of MMORPGs, the applications of a solid conceptual framework have not taken place covering various aspects of game player behaviors (Arnason 2011). Few studies addressed service quality as a methodological and conceptual framework in their behavioral consequence research models (Chang et al. 2011; Yang et al. 2009). Therefore, there is a need to widen and deepen the model with more comprehensive and extensive research effort into MMORPGs, which is the goal of this study. We first discuss SERVQUAL, the widely adopted service quality measure, in next section; then we justify why behavioral consequence model can be applied in the online game contexts.

3.1 SERVQUAL: Service Quality Measure

The application of accumulated knowledge from product management into service economies can be ineffective and insufficient because of the distinct natures of service (Parasuraman et al. 1985). Based on focus group interviews and multi-sector surveys, Parasuraman et al. (1988) have conceptualized a framework to quantify the service quality evaluation and generalized cross-field applicable measurement, named SERVQUAL. Service quality (SQ) is a higher level of abstractive assessment on
a product rather than a specific attribute of a product (Zeithaml 1988). The concept of SQ is that consumers perceive a quality as superiority or excellence by comparing their perception with pre-existing expectation of service. Conventionally, the differences between expectations (E) and perceptions (P) judged by consumers are aggregated into a single score representing overall SQ of a given service performance, defined as SQ=P-E.

Therefore, the SERVQUAL is designed to operationalize a set of questionnaires consisting of two parts – P and E comprised of 5 generic scales: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al. 1988). On the basis of same theoretical foundation, the SERVQUAL has branched out into electronic service named E-S-QUAL and .comQ with various new dimensions such as efficiency, system ability, fulfillment and privacy (Parasuraman et al. 2005; Wolfinbarger & Gilly 2003). However, research efforts to apply the conventional or online SERVQUAL has not flooded into online game settings, consequently, the practical usability and validity of existing measures in online game remain doubtable. Therefore, the following research question is formulized:

**RQ1:** What are the underlying dimensions of online game service quality?

### 3.2 Behavioral Consequence Research Model

The early studies on service quality dedicated to strengthening a diagnostic power of SQ measurements; in recent, it is widely investigated to identify the outcomes of SQ and examine its causal connections with its consequences, namely Customer Satisfaction, Customer Perceived Value and Behavioral Intentions. Therefore, the following research question is formulized:

**RQ2:** What is the nature of relationship between online game service quality and its outcomes when accounting customers’ multiple expectations?

#### 3.2.1 Customer Satisfaction

Customer satisfaction as a critical indicator of company’s profitability has a rich body of literature in multiple disciplines. It is generally conceptualized in two ways: (1) transaction-specific satisfaction which is an emotional response by the consumer to specific attributes of service or product, or most recent service encounter (Oliver 1993), and (2) overall satisfaction which reflects customers’ cumulative impression of a firm’s service performance (Yang & Peterson 2004). Overall feeling associated with brand, product or service firm is generally adopted as customer satisfaction in service and consumer behavior literature (Anderson et al. 1994; Chang et al. 2009).

Therefore, customer satisfaction can be defined as the psychological reaction of customer to the statement of fulfillment and customer judgment of the fulfilled state (Oliver 1997). The earliest assessments of the link between service quality and customer satisfaction (Taylor & Baker 1994; Zeithaml et al. 1996) have influenced numerous empirical tests in various industries indicating that service quality is a significant predictor of customer satisfaction. In consistent with that, web-based service quality, e.g., Internet banking, e-commerce and online course, is positively associated with customer satisfaction (Carlson & O’Cass 2010; Chiu et al. 2005; Santouridis et al. 2009). Accordingly, the following hypothesis is proposed:

**H1:** Online game service quality has a positive impact on customer satisfaction.

#### 3.2.2 Customer Perceived Value

In her exploratory study, Zeithaml (1988) defined customer perceived value as the customer’s overall assessment of the utility of a product based on what is received and what is given (p.14). It is based on trade-off between monetary payments, e.g., price of service, and non-payment sacrifice, e.g., time consumption, recognized as a key metric in consumer behavior (Chang et al. 2009; Zeithaml 1988).

Hirschman and Holbrook (1982), however, claimed that the conventional conceptualization of value focused on utilitarian aspects - price and functional utility - too narrowly so that the experiential perspective of consumption on product is neglected. In previous investigations on shopping behavior, therefore, the evolvement of hedonic value during service is considered as another aspect of perceived
value, e.g., shopping without purchase (Babin et al. 1994; Bloch & Richins 1983). Similar to shopping, MMORPGs are playful and provide entertaining experiences when involving in cyber battles against other players, hence it can be said that hedonic and utilitarian values are created from the arousal of fun and festive emotion and work-mentality to win the combat.

Recent study in online service has empirically tested the interplay of perceived value with service quality, as an antecedent of satisfaction (Brady et al. 2005; Chang & Wang 2011). Thus;

H2: Online game service quality has a positive impact on customer perceived value.

H3: Customer perceived value has a positive impact on customer satisfaction.

Figure 1. Research Model

3.2.3 Behavioral Intentions

Customer behavioral intentions are one of most researched topics in previous literature at cognitive and affective levels as an alternative to overcome the hardness and expensive cost of observing actual action (Oliver 1999). Behavioral intentions of e-service customer can be described as willingness of initiating behaviors in future, such as, word-of-mouth, intention to revisit, or purchase intention.

Word-of-mouth (WOM) is an attitudinal form of behavioral intention, defined as informal and non-commercial conversation regarding a brand, a product or a service (Chang et al. 2009). It has been seen as one of the most trusted product/service information sources with a great viral effect on other customers, thus saying positive things about a service provider can attract new customers or deepen existing customer’s commitment at zero cost of marketing. Intention to revisit refers to a likelihood of returning to same MMORPG provider, which is specifically a crucial variable in the competitive online business environment where customers can go away by one click (Gounaris et al. 2010). In proceeding of MMORPG play, customers with a high level of satisfaction will repatronize with a generous attitude on service mishap, and be very likely to impede switching behaviors (Yang & Peterson 2004). Purchase intention is most directly related to increase or decrease in company’s return, referring to the game users’ propensity to buy subscriptions or virtual items over the Internet. Many studies concluded that superior service quality accounts for customers’ purchase intentions and their economic worth directly and indirectly (Gounaris et al. 2010; Zeithami 2000).
Substantial research has empirically validated the positive effects of service quality together with customer satisfaction on behavioral intention (Chang et al. 2009; Cristobal et al. 2007; Woodside et al. 1989), explaining how likely the customers will form a loyal attitude and repeat the favorable behaviors toward a service provider. Thus;

H4: Customer satisfaction has a positive impact on behavioral intentions.

In this study, Bagozzi’s (1992) self-regulation process is adopted as theoretical foundation of modeling the identified constructs as presented in Figure 1. Applying the re-formulization of attitudes, intentions and behavior (Bagozzi 1992), the interrelationships between online game service quality, customer perceived value, customer satisfaction and behavioral intentions can be justified as that the appraisal of the past, present and future service performances leads to an emotional reaction (satisfaction), subsequently leading to coping behaviors. In addition, new construct ‘zone of tolerance’ is inserted as a moderator between service quality and customer satisfaction, which is justified in following section.

4 ZONE OF TOLERANCE

Notwithstanding its widespread applications in numerous studies, SQ framework received major criticism on the weak conceptualization of expectation. The SERVQUAL framework theoretically excluded the hierarchical nature of consumers’ expectations resulting in the use of polysemic term in its operationalization (Cronin & Taylor 1994; Teas 1993). In this regard, the gap between expectations and perceptions can be interpreted in more than one way depending on how the researcher defines expectations.

In response to the challenges on the integrity of expectation conceptualization, Zeithaml et al. (1993) synthesized and categorized expectations used in previous studies. In their reassessment of expectation conceptualization, customers’ expectations can be defined as two different standards to evaluate the perceived service.

4.1 Expectation as Normative Standards

In SQ literature, expectations deemed “desired”, “wanted” or “ideal” service referring to ideal standards (Miller 1977). However, the notion of expectation as a feasible ideal point - best service carried by best provider under perfect circumstance - can be problematic when customer perceptions exceed expectations because theoretically there is no better service than perfect service. Alternatively, normative standards are chosen to consider which refers to what should happen or what is ought to receive in order to make customer completely satisfied (Thompson & Sunol 1995; Zeithaml et al. 1993) - i.e. customers’ beliefs about what a service provider should offer (Parasuraman et al. 1994 p.2).

4.2 Expectation as Prediction Standards

In customer satisfaction/dissatisfaction (CS/D) literature, expectations are defined as an objective calculation of probability of performance (Miller 1977) - i.e., what customers feel a service provider will offer (Parasuraman et al. 1994 p.2). Therefore, customers anticipate outcomes of service reflecting their previous service encounters, other customers’ experience or information collected through media channels.

On the basis of the clarification of expectation, SQ framework has been updated consisting of re-conceptualized dual expectations (Parasuraman et al. 1994).

• Desired Service Expectation (DSE): the level of service representing a blend of what customers believe “can be” and “should be” provided
• Adequate Service Expectation (AS): the minimum level of service customers are willing to accept
The upgraded SQ framework formulized the achievable level of normative expectations and minimum predictive expectation (Thompson & Sunol 1995) covering essentials for an excellent service performance and lowest level of satisfactory service. As a result, the comparison standards form a boundary of satisfactory service dubbed zone of tolerance (ZOT) as presented in Figure 2. ZOT SQ model has been applied in library and e-learning settings, allowing the service providers diagnose causes of service deficits and appropriate solutions (Cook et al. 2003; Wang et al. 2010).

![Zone of Tolerance](image)

**Figure 2. Zone of Tolerance**

### 4.3 Asymmetric Effects of ZOT on the Link between Online Game Service Quality and Customer Satisfaction

The importance of service quality and customer satisfaction as a means to strategic ends, e.g., customer behaviors, cannot be overstated (Mittal & Kamakura 2001). Nonetheless, the use of average score on expectations, which creates a linear relationship with customer satisfaction, may not fully capture the variability of customers and accordingly the variance in satisfaction rating. For instance, two customers with equal gap score between expectations and perceptions may vary in their ratings on satisfaction and vice versa.

In CS/D literature, satisfaction process is grounded in a comparison process of expectation and service delivery which assesses whether the former match, fall or exceed the later, engendering satisfied, dissatisfied or delighted customers response, respectively (Oliver 1981). The expectations, thus, equate to a critical threshold as a point of acceptance or rejection for further behavior (or attitude) with respect to a product or service (Lye 2006; Oliva et al. 1992). The threshold concept in marketing has its root in the opponent-process theory adopted from psychology which argued that the provision of certain stimuli provokes the deviation of constant level of emotion, subsequently exhibiting coping behaviors (Oliver 1981). The notion of satisfaction threshold is later elaborated in investigating the moderating effects of customer’s characteristics on satisfaction-customer retention link, suggesting that age, gender and education do affect the level of individual customer’s threshold and corresponding tolerance toward a product; and yielding a great support to the nonlinearity of satisfaction and behavioral intention (Mittal & Kamakura 2001; Paulsen & Birk 2007).

In this regard, the application of ZOT instead of a single score of P-E appears to inherit the effects of threshold concept on SQ- customer satisfaction link. Zeithaml et al. (1996) ascertained the asymmetric effects of ZOT on the behavioral consequences of SQ using the unequal slopes in three segments: P<ASE, ASE≤P≤DSE, P>DSE as illustrated in Figure 3. Bringing the threshold concept into the context of MMORPGs, to great extent, it is proposed that customers’ difference in ZOT may explain the variability in SQ-satisfaction relationship in a systematic fashion. Investigation on the moderating effect of ZOT can be academically and practically beneficial with the heterogeneous customer group in MMORPGs by systematically segmenting into groups. Thus, the H1 is followed by three narrower hypotheses;
H1a: the slopes of three zones are significantly different from one to another
H1b: one unit increase/decrease in online game service quality below the zone of tolerance has a greater impact on customer satisfaction than within and above the zone of tolerance.
H1c: one unit increase/decrease in online game service quality within the zone of tolerance has a greater impact on customer satisfaction than above the zone of tolerance.

P<ASE  ASE≤P≤ DSE  P>DSE

- P: perceived service quality
- ASE: adequate service expectation
- DSE: desired service expectation
- SQ: service quality
- CS: customer satisfaction

**Figure 3. Asymmetric effect of ZOT**

5 IMPLICATION AND CONCLUSION

The proposed study has several implications. Firstly, service quality framework has received much criticism on the operationalization of expectations which are changing over time in reality (Buttle 1996). We acknowledge that antecedents of expectations, e.g., past experience may influence the size of ZOT that can contract or expand from time to time. Therefore, the research result from this study may differ from one that measures service quality at regular interval in a long period of time which could show a pattern of players’ behavior. Secondly, the ignorance of the ZOT impacts on customer satisfaction can mislead the managerial decision. The future outcome of this study is expected to help the practitioners to improve online games in an effective and efficient manner. Therefore, future study is recommended to be aiming at comprehending how the asymmetric effect of ZOT can be interpreted into a corporate strategy in a cost-wise way.

Online game is on the road to discovery with a great research potential in social science (Bainbridge 2007). This study recognizes specifically MMORPGs as IS service business where users’ perception on service quality and their subsequent behaviors are not yet fully comprehended in a systematic fashion. Thus, the application of the proposed model with a central focus on the moderating effect of ZOT is expected to contribute to add more knowledge in the domain of online gaming from the standpoint of players.
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