Applying loss aversion to investigate service quality in logistics
A moderating effect of service convenience

Chia-Lin Hsu
*Department of Business Administration,
National Taiwan University of Science and Technology,
Taipei, Taiwan, Republic of China*

Mu-Chen Chen
*Institute of Traffic and Transportation, National Chiao Tung University,
Taipei, Taiwan, Republic of China*

Kuo-Chien Chang
*Department of Sports, Health and Leisure, Chihlee Institute of Technology,
Banciao City, Taiwan, Republic of China, and*

Chuang-Min Chao
*Department of Business Management,
National Taipei University of Technology, Taipei, Taiwan, Republic of China*

Abstract

Purpose – Using the concept of loss aversion, this paper aims to investigate the relationship between service quality and customer loyalty in the home delivery industry. The second purpose of this paper is to investigate the moderating effect of service convenience in the relationship between service quality and customer loyalty. Furthermore, this paper attempts to demonstrate the existence of a moderating effect either on the service quality loss (SQLOSS)-customer loyalty link, or on the service quality gain (SQGAIN)-customer loyalty link, or on both.

Design/methodology/approach – In this paper, the research model and hypotheses are constructed through a literature review. Data are collected by a questionnaire survey, and the adapted SERVQUAL scale is taken as the measurement instrument. Structural equation modeling is adopted to confirm the above relationships.

Findings – From the results come the finding that a loss in service quality has a greater effect on customer loyalty than that of a SQGAIN in the home delivery industry. This paper also proves that the relationship between service quality and customer loyalty is moderated by service convenience.

Originality/value – This paper demonstrates the effect of asymmetric response of service quality on customer loyalty.

Keywords Loss, Customer services quality, Distribution management, Delivery services, Customer loyalty

Paper type Research paper

1. Introduction

In general, enterprises agree that a competitive advantage can be derived from an excellent logistics service which accurately meets customers' requirements and responds to them in a consistent manner (Esper *et al.*, 2007). Home delivery is becoming increasingly popular for several reasons:

- sellers can provide additional advantages to customers; for example, in the case of stock being sold out, home delivery service (HDS) avoids customers making visits to other stores;
- the size or weight of goods may make it difficult for customers to carry by themselves; and
- the speed and convenience of internet and TV shopping.

Owing to the convenience of such services, the need for HDSs is increasing, and HDS can be a value-added service additionally provided by sellers.

Mentzer and Williams (2001) found that logistics excellence has a significant impact on revenue and profitability from case studies such as Dell. The survey results in Green *et al.* (2008) indicated that neither the supply chain management strategy nor logistics performance directly impact financial performance, but both of them positively impact marketing performance, which in turn positively impacts financial performance. In summary, HDSs could be expanded to become one of the principal customized sorts of logistics services.

Up to now, the issues of service quality, customer satisfaction, and customer loyalty have received much attention in the research on service management (Parasuraman *et al.*, 1985; Cronin *et al.*, 2000; Chandrashekaran *et al.*, 2007). These researchers assumed that the relationships investigated in their studies are linear, by using smooth or differentiable curves. Specifically, the "sudden change" in the slopes of functions representing the relationships between the above dimensions and the asymmetric response were not considered. Additionally, the core of these studies has been relevant to the relationships among and between the above dimensions. Even if these authors' efforts have empowered us to better understand the interrelationships and have led to implications of great value to the industry, the interest in probing into customers' minds thoroughly has continued to grow over time, due to the competitive circumstances and changing needs of customers.

Suzuki and Tyworth (1998) showed that a linear relationship may not be valid, and it can be improved by using non-smooth functions to represent the relationship. According to the contrast theory, when a gap between product received and product expected exists, customers magnify the difference (Cardozo, 1965). Provided that the gap is positive (i.e. product received is more valuable than product expected), customers are satisfied and obtain a gain. On the contrary, customers sense a loss in the case of a negative gap. In addition, humans are generally loss averse.

Loss aversion may be conceived of as an explanatory construct when examining behavioral decisions. Regarding the analysis of decision-making under risk, loss aversion is viewed as an ingredient of prospect theory (Kahneman and Tversky, 1979; Tversky and Kahneman, 1992). Further, loss aversion has been used to interpret how and why riskless choices may rely on consumers' original psychological status. Loss aversion may play an essential role in behavioral intentions. Until now, relatively

few studies (Lin *et al.*, 2008; Suzuki *et al.*, 2001) have applied loss aversion to assess the asymmetric response effect of behavioral intention on service quality.

Owing to the greater value now placed on time, customers are pursuing products and services which can save time and provide increased comfort (Brown, 1990). The demand for HDS is also motivated by the desire for a more comfortable lifestyle, reflected in the growth of foodservices, groceries and convenience stores. Convenience of services is acknowledged to be quite critical to customers. Berry *et al.* (2002) indicated that perception of service convenience will impact the customers' overall evaluation of services, including satisfaction, perceived service quality, and fairness. Similarly, Colwell *et al.* (2008) proved that service convenience positively and significantly influences overall satisfaction. Keaveney (1995) also demonstrated that convenience has positive implications for perceived value to customers, and customer loyalty. Consequently, the greater the time saving associated with a service that marketers can provide, the greater the satisfaction and loyalty that customers will have. As described above, the evidence that service convenience is an antecedent of satisfaction and loyalty has been verified. However, service convenience can also have a moderating effect on the relationship between service quality and customer loyalty.

In short, this paper attempts to uncover and analyse the service quality of home delivery by introducing the concept of loss aversion, and to examine the relationship between service quality and customer loyalty if it is moderated by service convenience. Furthermore, this paper also provides insights into the moderating effect of service convenience, whether in the service quality loss (SQLOSS)-customer loyalty link, or the service quality gain (SQGAIN)-customer loyalty link, or both.

The remainder of the paper is structured as follows. Section 2 reviews and discusses the literature and theoretical background. The research model (research framework) and hypotheses of this paper are proposed as an outcome of the literature review and as an extension of it. The research methodology is presented in Section 3. Section 4 analyses and presents the survey results. The main findings and managerial implications are, respectively, presented in Sections 5 and 6. Finally, Section 7 draws conclusions and points out the limitations of this study, with proposed future research directions.

2. Theoretical background and hypotheses
2.1 The effect of asymmetric service quality response on customer loyalty
Parasuraman *et al.* (1985) regarded service quality as the gap between customers' expectation and their perception of the actual experienced services. Understanding and achieving service quality have become a priority in industry and academia.

If customers' perception is higher than their expectation, then this situation would be viewed as a gain. On the other hand, failing to meet a customer's expectation would be viewed as a loss. This paper therefore uses customer expectation as the reference point for obtaining the gain and loss of service quality. Based on the gain and loss, the occurrence of an asymmetric response effect on behavioral intention to service quality indeed requires further exploration in service management. According to the asymmetric effect, service providers may realize how to adjust their service strategy goals in order to fit customers' requirements, taking the psychological factor into consideration.

The loss aversion trait implies that service quality can be divided into loss and gain regions, and the response function depicting the relationship between service quality and behavioral intention should be steeper in the loss region than that in the gain

region, as shown in Figure 1. Schmidt and Zank (2005) proposed that loss aversion is a crucial psychological notion in economic analysis, and the concept of loss aversion is prevalent in some issues such as the endowment effect (Thaler, 1980), and the equity premium puzzle (Benartzi and Thaler, 1995).
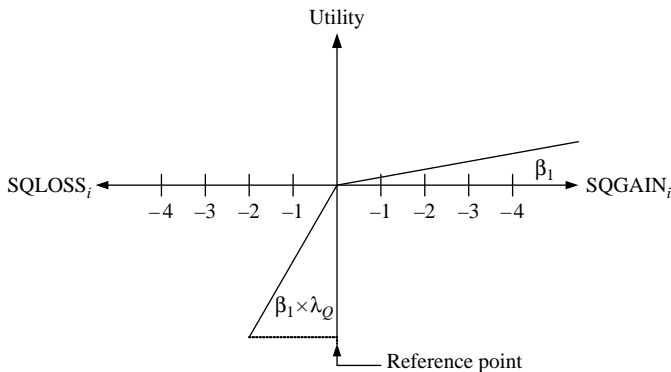
The relationship between service quality and customer loyalty has been extensively researched in the literature (Cronin *et al.*, 2000; Olsen, 2002). Zeithaml (2000) interpreted the connections between service quality, behavioral intentions, behavior, and financial consequences to the company. As a result, four hypotheses are constructed as follows:

H1. Service quality is positively and directly related to customer loyalty.

H2. Perceived SQLOSS is positively and directly related to customer loyalty.

H3. Perceived SQGAIN is positively and directly related to customer loyalty.

H4. The slope of perceived SQLOSS to customer loyalty is steeper than that of perceived SQGAIN to customer loyalty.

2.2 The moderating effect of service convenience

In the dynamic and competitive service market of today, providing service convenience to consumers is imperative for service providers. The present study contributes to the existing literature by proposing that service convenience, in addition to its antecedent role suggested in prior studies (Colwell *et al.*, 2008; Berry *et al.*, 2002), also plays a critical role in the service quality-customer loyalty relationship. Because service convenience really influences customers' decision-making as to whether to continue to use the services of the same service providers, service convenience can play a critically influential role in companies' profits and market share.

Berry *et al.* (2002) proposed a model of service convenience conceptualized as "the consumers' time and effort perceptions related to buying or using a service." Colwell *et al.* (2008) put forward service convenience as a critical part of the non-monetary value of customer service. Service providers can provide more convenient services to secure a competitive advantage. They are very conscious of the positive implications of convenience to consumer value and loyalty (Berry *et al.*, 2002; Keaveney, 1995). However, almost no research until now has been directly conducted to test and verify

Source: Suzuki and Tyworth (1998)

Figure 1.
Slopes reflecting loss
aversion ($\lambda \hat{Q} > 1$)

the moderating role of service convenience in the relationship between service quality and customer loyalty. The relationship between service convenience and customer satisfaction has often been demonstrated (Berry *et al.*, 2002; Colwell *et al.*, 2008). Keaveney (1995) found that service inconvenience will lead to customers' switching behavior. Based on the above discussion, we intend to directly explore and prove the moderating role of service convenience in the service quality-customer loyalty link. The purpose of the investigation is to explore the magnitude of the service quality-customer loyalty link, as well as whether it is in fact moderated by the variable of service convenience. Furthermore, we also prove, respectively, the moderating magnitude of service convenience which occurs in the SQLOSS-customer loyalty relationship and SQGAIN-customer loyalty relationship. In other words, the greater the service convenience, the stronger the relationship between SQLOSS and SQGAIN, respectively, and customer loyalty. Thus, three hypotheses are constructed as follows:

H5. The greater the service convenience, the stronger the relationship between service quality and customer loyalty.

H6. The greater the service convenience, the stronger the relationship between SQLOSS and customer loyalty.

H7. The greater the service convenience, the stronger the relationship between SQGAIN and customer loyalty.

In summary, according to the literature review and theoretical background, a research model (framework) consisting of seven hypotheses is constructed in this paper, and it is shown in Figure 2.

3. Research methodology
3.1 Data collection
The survey is designed as a self-administered questionnaire, and the SERVQUAL scale is modified and adapted in this study to measure the respondents' expectations and perceptions of service offered by HDS providers. The questionnaire is divided into four parts. The first part contains the demographic statistics of respondents and information on utilization of HDS. The second part is designed to measure the respondents' expectations and perceptions of HDS. The third part is used to measure service convenience. The final part involves the items related to the measurement of
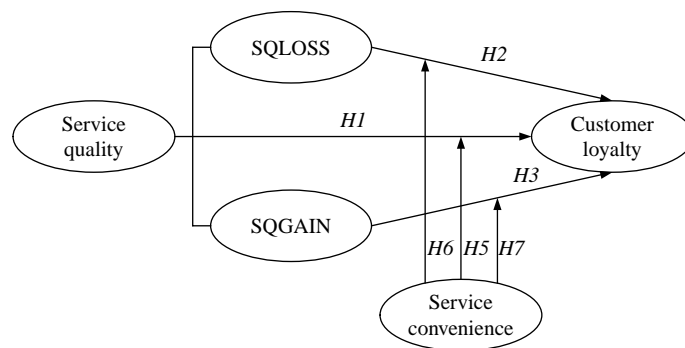

Figure 2.
The research model

customer loyalty. In summary, the measurements of service quality, service convenience, and customer loyalty are listed in detail in the Appendices. Prospective respondents were randomly approached from among those customers who had used HDS within a one-year time frame in Taiwan. A total of 537 questionnaires were distributed to respondents for convenience sampling via interview face to face and e-mail transmission. After completing the questionnaires, respondents were provided with a free gift such as ball-point pen serving as gratefulness. The number of effective questionnaires returned was 426, with the valid response rate being 89 percent.

This study asked respondents how often they had used HDS within a one-year period. Respondents who had used HDS at least once within a one-year period were chosen as the objects of this study. To investigate respondents' perception of service quality in the home delivery industry, selecting only the respondents who had used HDS within the one-year period is reasonable, because such respondents would likely have a clearer recall of their experience with home delivery. The measurement is designed to obtain customers' overall perception of service quality based on their experience of use within that year.

3.2 Measurements and coding

The Likert five-point scale (1 = very unimportant and 5 = very important; 1 = very unsatisfied and 5 = very satisfied) is used to measure the expectation of services offered by HDS providers and customers' perceptions. The measurement scale of manifest variables of service convenience and customer loyalty also use a Likert five-point (1 = strongly disagree and 5 = strongly agree) scale.

Each aspect of service quality is then further transformed to SQGAIN and SQLOSS. The method of coding is derived from the work of Lin *et al.* (2008) as illustrated below:

If $SQ_{real} \geq SQ_{expect}$, then $SQGAIN_i = SQ_{real} - SQ_{expect}$ and $SQLOSS_i = 0$;
Else if $SQ_{real} < SQ_{expect}$, then $SQGAIN_i = 0$ and $SQLOSS_i = SQ_{real} - SQ_{expect}$

where SQ_{real} represents the customers' perception of performance, SQ_{expect} represents the customers' expectation of the services offered by providers (reference point), and i represents an index of service items. If customers' perception exceeds the reference point, then a "gain" would occur. In contrast, if customers' perception is below the reference point, then a "loss" would occur. Therefore, the service quality construct is further separated into two constructs, namely: SQGAIN and SQLOSS. Similar to the construct of service quality, both SQGAIN and SQLOSS, respectively, have five dimensions. In SQGAIN, there are five manifest variables, V1, V2, V3, V4, and V5, and SQLOSS includes V6, V7, V8, V9, and V10 (Appendix 1, Table AI).

The research model as shown in Figure 2 is formed based on the relationships hypothesized. To validate the research model proposed in this paper, the test of the hypothesized relationships presented in the research model is conducted by using the structural equation modeling (SEM). The application of SEM enables provision of parameter estimates for relationships among unobserved variables or latent constructs (Sroufe *et al.*, 1999) which are measured using indicators or manifest variables, and provides researchers with a comprehensive means for assessing the research model. These variables again are acquired from respondents in response to the questionnaire.

4. Empirical analysis and results
This study uses LISREL 8.54 as the SEM tool to test the research model, and SPSS 14.0 to analyze the data including descriptive statistics and reliability.

4.1 Test for non-response bias
We utilize the extrapolation technique equating late responses to non-respondents (Armstrong and Overton, 1977) to test the non-response bias. Responses are separated into two groups, specifically, those responding within fourteen days, and those responding after fourteen days, according to the return date of questionnaires. A χ^2 difference test is conducted on demographic variables which included gender, marital status, age, education, and occupation. No statistically significant differences are identified at $p < 0.05$, leading us to conclude that respondents are not different to non-respondents.

4.2 Demographic profile of respondents
The demographic profile of respondents is summarized as follows. Most of the respondents were male (55.0 percent), unmarried (83.0 percent), and in the 21-39 (76.0 percent) age group, had at least a college degree (93.0 percent), and were students (45.0 percent) or employed in commerce (22.0 percent). The information on utilization of HDS of respondents is summarized as follows. The source of the information for most respondents is an HDS station (e.g. convenience store) (79.0 percent). Most respondents used HDS less than three times (46.0 percent) or four-six times (35.0 percent) within one year. The products delivered were mainly documents/books (35.0 percent) or daily essentials (32.0 percent), and respondents generally either had an appropriate service price perception (54.0 percent) or had an overly expensive service price perception (45.0 percent).

The emergence of internet shopping is one of the major reasons for the increasing need for HDSs. Eastern Integrated Consumer Profile reported that the users of the internet are mainly male, adolescent, and young people in Taiwan. Moreover, a survey of the Research, Development and Evaluation Commission, Executive Yuan, Taiwan indicated that the computer use by males is approximately 3-5 percent higher than that by females, and the utilization by young people is higher than that by middle-aged people. As stated above, we also found that adolescents and young people have a higher technology acceptance than senior people. Furthermore, because HDSs were introduced less than ten years ago in Taiwan, the adopters are more likely to be adolescents and young people because they have higher technology acceptance. Moreover, in Taiwan, young students who live in a dorm room often use HDSs to deliver their appliances to home or school or to another designated site when the winter or summer vacation is starting or ending. Therefore, the subjects of this study are a really representative sample of Taiwan's home delivery users.

4.3 Reliability, validity analysis, and model assessment
The reliability (measured by coefficient of α) of each construct exceeds 0.6, being considered consistently high across all constructs. The values of Cronbach alpha for all the SQGAIN, SQLOSS, service convenience, and customer loyalty dimensions range between 0.72 and 0.90. This result indicates that the constructs for these scales have a high reliability value. Additionally, in this study, in order to gain insight into the relationships among these constructs, two conditions of convergent validity and discriminant validity have to be fitted. Owing to each indicator's factor loading being more than 0.5, the result of the test for convergent validity is confirmed (Nunnally,

1978). Next, discriminant validity is measured by using two methods. The results find that all χ^2 differences show significance, and the confidence intervals do not include the value of 1.0 (Torkzadeh *et al.*, 2003). Hence, the results provide evidence for discriminant validity among these constructs.

The relationships hypothesized in this paper are tested by using SEM. A variety of fit statistics are utilized to assess the "goodness of fit" of the model. The fit indices such as goodness-of-fit index (0.86), comparative fit index (0.93), incremental fit index (0.93), and normalized fit index (0.91) are all close to or exceed the suggested level of 0.9 that indicates a good model fit (Broome *et al.*, 1997). Furthermore, Browne and Cudeck (1993) suggested that root mean square error of approximation (0.077) $<$ 0.08 represents a reasonable error of approximation. Root mean square residual (0.025) below 0.05 is regarded as evidence of good fit (Byrne, 1989). Standardized root mean square residual (0.061) is close to the suggested level of 0.08 that indicates a good model fit (Hu and Bentler, 1999). In short, the above statistics of SEM indicate a good fit for the research model.

4.4 The analysis of asymmetric effect of behavioral intention to service quality
According to the results of SEM, the effect of asymmetric response of service quality on customer loyalty is shown in Figure 3. The estimated path coefficients indicate that the effects of SQ on customer loyalty in the loss and gain areas are both positive and significant as hypothesized. This phenomenon means that the slope of SQLOSS (0.41, *t*-value = 4.25) is larger than the slope of SQGAIN (0.08, *t*-value = 3.41).

To verify the inequality between SQLOSS and SQGAIN, we use a χ^2 difference test. From the result, we reject the possibility that SQLOSS slope is equal to SQGAIN slope ($p < 0.000$). This provides evidence indicating that *H4* is supported. Therefore, the loss aversion effect exists in customers' decision-making process model.

4.5 Expectation and perception of service quality
The results of service quality for HDS are presented in Table I. From this table, we can identify the most and least important items of customers' expectation as well as the most and least satisfactory items according to customers' perceptions. Note that the most important items for customers in terms of expectation are Rel6, "there is a reasonable compensation provided that the package is damaged," Rel7, "the company can fulfill commitments to customers and accomplish service delivery in time," and Emp20, "when there is a delivery problem, the company can promptly inform the
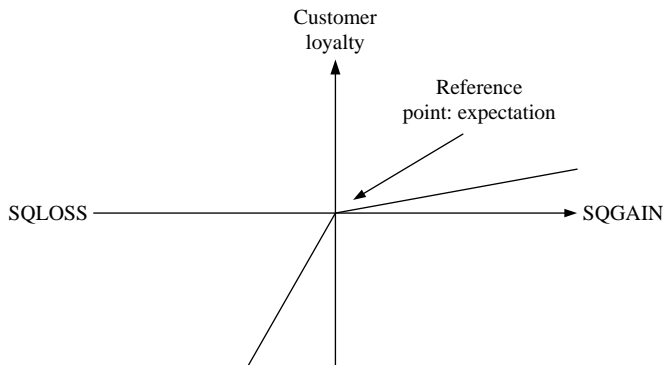
Figure 3.
Slopes of loss aversion
(SQLOSS and SQGAIN)

Items	Expectation of consumers		Perception of consumers		Gap of service quality[a]	
	Mean	SD[b]	Mean	SD[b]	Mean	SD[b]
Tangibles						
Tan1	4.27	1.057	3.87	0.806	− 0.42	1.20
Tan2	4.12	0.938	3.84	0.781	− 0.30	1.01
Tan3	4.12	0.940	3.82	0.850	− 0.32	1.04
Tan4	4.44	0.899	3.81	0.796	− 0.64	1.06
Reliability						
Rel5	4.58	0.763	3.69	0.800	− 0.90	1.01
Rel6	4.72	0.747	3.55	0.903	− 1.18	1.09
Rel7	4.66	0.669	3.68	0.883	− 0.98	0.99
Rel8	4.50	0.780	3.90	0.784	− 0.61	0.97
Responsiveness						
Res9	4.47	0.768	3.68	0.843	− 0.80	0.96
Res10	4.24	0.838	3.71	0.879	− 0.53	1.03
Res11	4.54	0.755	3.60	0.880	− 0.95	1.03
Res12	4.46	0.715	3.55	0.945	− 0.90	1.05
Res13	4.04	0.901	3.51	0.933	− 0.57	1.22
Assurance						
Ass14	4.42	0.745	3.67	0.908	− 0.76	1.02
Ass15	4.44	0.770	3.65	0.934	− 0.80	1.07
Ass16	4.52	0.727	3.68	0.909	− 0.82	1.02
Ass17	4.21	0.822	3.71	0.857	− 0.50	1.00
Ass18	4.09	0.822	3.62	0.848	− 0.49	1.00
Ass19	4.64	0.701	3.84	0.840	− 0.80	0.96
Empathy						
Emp20	4.67	0.702	3.57	0.884	− 1.10	0.99
Emp21	4.55	0.685	3.62	0.842	− 0.94	0.97
Emp22	4.18	0.865	3.49	0.869	− 0.74	1.11

Table I.
The measurement of service quality

Notes: [a]Gap = perception − expectation; [b]SD, standard deviation

package senders." The expectation values of these three items are significantly greater than other items, but there exists no significant difference among these three items ($p > 0.01$). From the result, again, we observe that customers are loss averse. Once customers encounter a loss, they hope to acquire reasonable compensation from the service providers. For example, if damage to a parcel cannot be remedied by delivering it again, service providers have to provide satisfactory compensation, such as money, a discount or a coupon. More importantly, these compensations have to match the customers' perceptions of the loss so that the customers will again use the service or other services provided by the same provider.

In Table I, we also find that the mean values of expectations are higher than those of perceptions. The gap for service quality is negative; that is, on average, customers are not satisfied with the services provided by the HD companies. Consequently, if HD companies want to reduce customers' loss (i.e. failing to meet customers' expectations), then they need to be keenly aware of customer sentiments. Furthermore, note that items Rel6 and Emp20 have significantly larger gap mean values than other items, but there exists no significant difference between these two items ($p > 0.01$). That is, the perceived performance of these two items is much lower than the expectation

of customers. The result also gives us an insight into customers' loss aversion, since these two items are related to service failure, which may result in customers' sentiment of loss.

4.6 The moderating effect of service convenience

Indeed, we find that service quality is positively related to customer loyalty, whether or not we consider the moderating effect from service convenience. Furthermore, in order to confirm the existence of a moderating effect, we investigate whether service convenience positively moderates the link between service quality and customer loyalty. From the results, if the moderating role of service convenience is not eliminated, the correlation coefficient of service quality and customer loyalty is 0.302 ($p < 0.000$), but if the moderating role of service convenience is eliminated, the partial correlation coefficient of service quality and customer loyalty is 0.320 ($p < 0.000$). This result clearly shows that service convenience moderates the link between service quality and customer loyalty.

This study attempts to prove the moderating effect of service convenience which occurs, respectively, on the SQLOSS-customer loyalty link and SQGAIN-customer loyalty link. The results indicate that if the moderating role of service convenience is not eliminated, the correlation coefficient of SQLOSS and customer loyalty is 0.341 ($p < 0.000$), but if the moderating role of service convenience is eliminated, the partial correlation coefficient of service quality and customer loyalty is 0.353 ($p < 0.000$). Clearly, the results prove that service convenience indeed has a significant influence on the relationship between SQLOSS and customer loyalty. However, the results indicate that if the moderating role of service convenience is not eliminated, the correlation coefficient of SQGAIN and customer loyalty is 0.042 ($p = 0.390$), but if the moderating role of service convenience is eliminated, the partial correlation coefficient of SQGAIN and customer loyalty is 0.060 ($p = 0.219$). Thus, we confirm that service convenience has no significant influence on the relationship between SQGAIN and customer loyalty ($p = 0.219$).

As discussed above, the fit measures from SEM show a good model fit. To summarize, this study shows that service quality is positively and directly related to customer loyalty (*H1*), perceived SQLOSS is positively and directly related to customer loyalty (*H2*), perceived SQGAIN is positively and directly related to customer loyalty (*H3*), and the slope of perceived SQLOSS to customer loyalty is steeper than that of perceived SQGAIN to customer loyalty (*H4*). For the moderating effect of service convenience, the results provide statistical evidence that the greater the service convenience, the stronger the relationships between service quality and customer loyalty (*H5*) as well as between SQLOSS and customer loyalty (*H6*). However, *H7* is not supported, i.e. the greater service convenience does not result in a stronger relationship between SQGAIN and customer loyalty.

5. Findings

5.1 Findings for asymmetric response effect of service quality

The results indicate that loss aversion applies to the quality of HDS. In line with the finding of Fogel *et al.* (2004), consumers are loss averse for quality. Meanwhile, this paper presents evidence that a model which incorporates customers' expectations about the services offered by providers (reference point) can effectively interpret the customers' decision-making process. Specifically, we demonstrate that the influence of SQLOSS on customer loyalty is higher than SQGAIN, i.e. the extent to which SQLOSS

significantly reduces customer loyalty is greater than the extent to which SQGAIN significantly increases customer loyalty.

For service providers, if customers' perception falls below customers' service expectation, customer loyalty will decrease. Under the condition of customers' perception falling below customers' service expectation, to avoid customers' loss, service providers should make every effort to improve their services to meet the level of customers' psychological expectation. Although service expectation may differ among customers, if service providers want to retain their customers then they should satisfy their demands to the greatest extent possible.

5.2 Findings for influence of service quality on customer loyalty

The results confirm that service quality is crucial to acquiring loyal customers, and also confirm the influence of service convenience on customer loyalty. In addition, several implications for HDS providers can be seen from our analysis. Of the SERVQUAL considered, tangibles, responsiveness, reliability, assurance, and empathy all positively impact service quality. Dick and Basu (1994) indicated that intangible attributes such as reliability and confidence may play a main role in building or maintaining loyalty. Parasuraman *et al.* (1988) argued that reliability was considered the most important dimension in regards to customer loyalty, regardless of the service setting. Perhaps, most interestingly, we find that service convenience has a positive impact on customer loyalty. The results indicate that the improved service convenience is successful in turning customers into loyal customers. Service providers realize well the positive influence of convenience on customer value and loyalty (Berry *et al.*, 2002; Keaveney, 1995). Moreover, Colwell *et al.* (2008) mentioned that in homogeneous markets, where service provision was not the main competitive source, once service providers offer greater service convenience, they would benefit more and earn a competitive advantage.

In summary, we provide several implications for HDS providers resulting from the above analysis and discussion. First, we acknowledge that most customers are loss averse, but service failure is difficult to avoid in a service industry. Service failure is conducive to customer dissatisfaction, so when competitive services are provided by other HD companies, customers may transfer their loyalty to others. Hence, in order to avoid customers' loss, service providers should take the full responsibility for delivery damage if it is due to a fault in the service process. In addition, service providers can also offer discounts, money, coupons, and so on to compensate for the customers' loss. Thus, for service providers, successful service recovery is a strategic means to transform dissatisfied customers into loyal ones.

Second, service providers can improve their service quality by inculcating the right service philosophy to their employees, particularly to the frontline operators. Service providers can partially execute their marketing concepts through the employees who have direct contact with customers, as these employees play an important role in the formation of customers' experience (Babbar and Koufteros, 2008). For service firms, customer experience is one of the most valuable assets. Third, advanced technologies such as global positioning systems and radio frequency identification can be adopted to increase the information visibility, speediness and accuracy of the delivery tracking system. Particularly, in e-commerce, logistics services are based on information systems, including main business transactions among trading partners, such as access to shipment status or delivery service databases, and access to secure transaction services (Yang *et al.*, 2006).

Finally, customers' complaints should be carefully and sincerely responded to by the call center, and the complaint data can be used for designing failure-prevention mechanisms or Poka Yoke (fool-proof) mechanisms. By doing so, service providers can ensure functional service quality and thereby gain customers' trust and loyalty. Additionally, from the survey in Forslund (2007), the customers' expected logistics performance is affected by a logistics contact person, and managing expectations is one of the tasks of achieving customers' expectations.

5.3 Findings for moderating effect of service convenience

The findings of the present paper complement the extant literature by demonstrating that service convenience has a significant moderating effect on the service quality-customer loyalty relationship. Furthermore, this study gives us an insight into the moderating effect which occurs in the SQLOSS-customer loyalty link rather than on the SQGAIN-customer loyalty link. The findings also provide managerial insights. For instance, service providers can improve customers' satisfaction through increasing the convenience of services. By doing so, convenience can increase customers' value and loyalty (Berry *et al.*, 2002; Keaveney, 1995). Then, when customers are satisfied with the services, they will be more willing to continue using the services, and even recommend the services to other potential customers. Besides, in competitive homogeneous markets, providing convenient services will enable service providers to enhance profits and customer share.

From the results, we can see that service providers should ensure that customers can easily and quickly use the benefits of the service they pursue. When service providers establish specific attributes for new or existing service provisions, they should consider how easily these attributes can be used by customers. Berry *et al.* (2002) proposed that customers' perceptions of service convenience influence their perceptions of service quality and satisfaction. Simply put, when customers can conveniently and easily experience the benefits of the services, they are more likely to be satisfied and use them again.

As stated above, service providers with less capability in other areas should particularly stress the provision of convenience to stimulate profits and market share. Especially, in the HD industry investigated in this paper. This is an opportunity to gain a competitive advantage for companies focusing on providing service convenience.

6. Managerial implications

If HDS providers want to improve customer loyalty, then they have to further ameliorate service quality. We also realize that loss aversion is a common psychological trait, which has implications for various facets of our daily life. This phenomenon is well established, and has been studied extensively in different domains (Kahneman and Tversky, 2000). Besides, when customers' knowledge of and involvement in the provided services are high, loss aversion will be more likely to occur, because they will be more conscious of the benefit which is derived from the provided services (Fogel *et al.*, 2004). In addition, we also emphasize that the level of loss aversion can vary across contexts and levels of customers' experience. Hence, for HDS providers, it is critical to frequently manage and supervise the process of service delivery in order to avoid service failure as much as possible.

Although the occurrence of service failure is difficult to avoid in the service industry, implementation of service recovery is quite important to HDS providers, as it turns dissatisfied customers into loyal ones. We realize that service failure happens in service

encounters, which results in customer dissatisfaction (Colgate and Norris, 2001). Service failure may occur at any part of the service process, since the consumption and production of services take place at the same time. Types of perceived service failure include slow service, unavailable services, and errors in delivery (Bitner *et al.*, 1990). The goal of "zero defects" is not attainable in the service industry because mistakes in services are unavoidable (Hart *et al.*, 1990). By failing to implement its promises, the relationship of trust of service providers and customers will be undermined (Gronroos, 1990). Therefore, it would be better to train employees to have the skills, motivation, and authority for service recovery. A good failure recovery can convert angry, dissatisfied, and disappointed customers to loyal ones. Additionally, service failure recovery is an activity of quality improvement to regain unhappy customers. The service recovery may increase costs; however, it can be viewed as an opportunity to improve service quality and make more customers satisfied (Firnstahl, 1989). Thus, this paper also suggests that HDS providers should make serious efforts in service failure recovery.

What is more, this paper has proved that service convenience has a positive and significant moderating effect on the relationship between service quality and customer loyalty. Consequently, customers' perception of time and effort spent can have a noteworthy impact on what they consider convenient (Berry *et al.*, 2002). The more time and effort customers spend in securing the provision of services or dealing with errors in service delivery, the more their intention to switch to other service providers. This leads to the lowering of customer loyalty. To avoid wasting customers' time spent waiting, HDS providers should clearly specify closing time and delivery time, and identify for customers the most convenient service stations. Additionally, in order to help customers quickly and easily complete order forms (delivery documents), in addition to frontline employees offering clear instructions, the documents can explicitly show required fields in advance. For internet shopping, HDS services providers can improve transaction convenience by offering prompt pickup and delivery, and various payment options such as online payment and credit card payment. E-commerce poses special challenges for businesses, as it makes it more difficult for enterprises to maintain proprietary services, and switching costs in e-commerce are likely to lower those of traditional business (Yang *et al.*, 2006). Therefore, service quality is an even more critical success factor in e-commerce.

In Taiwan's HD industry, because there are many service stations, including self-owned stations and joint convenience stores, the brand identification and the customers' perception of convenience are extremely high. Consequently, customers rarely transfer from the most frequently picked service provider from year to year, and also recommend their favorites to others on their own initiative. Berry *et al.* (2002) mentioned that not only does convenience influence service quality, but service quality also influences convenience. This means customers have confidence in companies' service quality because they have experienced easy decisions in the past. That is, when customers experience convenient service, they are more likely to perceive the service as being more excellent than competitors', such that their loyalty will increase. However, because many services necessitate participation by customers, access convenience is critical to service providers. Service providers can improve access convenience by providing self-service technologies or allowing customers to pay online. Next, because customers have to assign additional time and effort resources to restart contact with companies after a service encounter, post-benefit convenience is also crucial (Berry *et al.*, 2002). For example, in the case of service failure, this is not expected for HDS providers. Post-benefit inconvenience

may result in more time and cost spent by customers to make contact with HDS providers. In addition, customers have an aversion to delivery uncertainty. Therefore, a convenient and accurate delivery tracking system is of importance to them. Service convenience increases customer satisfaction and loyalty as well as the profits of the HDS providers through the effect of word-of-mouth.

In summary, service convenience can be regarded as a successful policy for maintaining present customers and appealing to potential customers. Also, in order to enhance customer loyalty, the foremost thing that HD managers should do is to train their employees to fully satisfy the customers' needs and wants, and thereby to earn customers' trust. Additionally, according to Table I, HDS providers can improve their services based on the five dimensions of the SERVQUAL scale, respectively.

7. Limitations and future research

We have made our best efforts to minimize limitations in the study, but some still need to be addressed. To begin with, providers have different service attributes in service industries. Additionally, customers may have different preferences in the decision-making process. Hence, the asymmetric response of behavioral intention to service quality may be different among various service industries, and this could limit the generality of our findings. Consequently, future empirical studies on other service industries would be useful to further validate the loss aversion effect of customers in the area of service quality.

Next, because of the difficulties in establishing contact between the package deliverers and recipients in the study sample, the execution of the questionnaire does not follow a before-and-after approach. That is, this study has measured the expectations and overall perceptions of the respondents at the same time. Carman (1990) indicated that expectation and perception measures could not both be administered at the same time; however, it is difficult to do that. The measurement in this paper is designed to obtain the overall perceived service quality of customers based on the usage experience within a one-year period, but not on one usage. Thus, future studies can try to utilize a two-phase approach to collect the data from the service users, in which the expectation section is performed in advance of their using HDSs, and then with the perception phase following their receipt of services.

The results of this paper may not fully represent the expectations, perceptions and behaviors of the whole population in Taiwan or other countries. Future research can look at whether the findings of this paper hold for middle-aged and elderly people or in different countries.

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Appendix 1

SQGAIN	SQLOSS	
V1	V6	*Tangibles*
		Tan1: there are enough package receiving locations and with clear signs
		Tan2: there are tidy distributing vehicles and with a recognizable company mark
		Tan3: the sales drivers have a neat appearance
		Tan4: the documents are clear and easily filled
V2	V7	*Reliability*
		Rel5: the company can keep the contents of order forms confidential
		Rel6: there is reasonable compensation provided if the package is damaged
		Rel7: the company can fulfill commitments to customers and accomplish service delivery in time
		Rel8: the company has good word-of-mouth, brand image, credibility, and well-known reputation
V3	V8	*Responsiveness*
		Res9: the company can provide services with politeness, kindness, and speed to customers (package senders)
		Res10: the company provides services with no restrictions on location of package delivery
		Res11: the company can provide prompt and appropriate solutions to solve customer's complaints
		Res12: the company provides customers with an inquiry measure to know the current status package delivery
		Res13: there is no restriction on the time for receiving customer's packages
V4	V9	*Assurance*
		Ass14: the company can provide a proper time for delivering the package in accordance with deliverer's or receiver's special requests
		Ass15: the company can contact and inform the package receiver in advance before package arrives
		Ass16: the company can provide services in accordance with its agreement
		Ass17: the company can provide different delivery services with normal, cold, or refrigerated temperature storage
		Ass18: the service providers can help customers to fill out the order forms
		Ass19: the sales driver delivers the package with a safe manner and on schedule
V5	V10	*Empathy*
		Emp20: when there is a delivery problem, the company can promptly inform the package senders
		Emp21: the company provides its customers a channel for complaints
		Emp22: the company can provide a temporary location to receive packages when there are special events or holidays

Table AI.
The measures of service quality

Appendix 2. The measures of service convenience

C1. It is important to receive the package conveniently and the service outlet of the company is near to customers.

C2. It is important to have a service to track the current status of the package.

C3. It is important to provide business hours which are convenient for customers.

C4. It is important to provide customers with multiple methods for payment.

C5. It is important to provide complete and accurate service information.

C6. It is important to provide an attractive and recognizable sign of the service outlet of the
     company.

Appendix 3. The measures of customer loyalty

L1. You rarely choose to utilize other HDS companies.

L2. You will actively recommend using this company's service to others.

L3. You will use the services from this HDS company again in the future.

L4. You are willing to mention this HDS company to acquaintances.

L5. When you have the need to deliver a package, this HDS company will be your first
     choice.

L6. You will defend this HDS company if you hear criticism of it.

Corresponding author
Mu-Chen Chen can be contacted at: ittchen@mail.nctu.edu.tw