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An analysis of the relationship between service failure, service recovery and loyalty for Low Cost Carrier travelers

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ABSTRACT

The purpose of this study is to analyze the relationship between service failure, service recovery, and loyalty for Low Cost Carrier travelers. This study also examines the mediating effects of service recovery between service failure and loyalty through travelers' perceived satisfaction. The study reveals that service recovery has a positive effect on attitude and behavior loyalty, while service failure has a positive effect on service recovery. The empirical analysis shows that both apology and compensation have only a partial mediating effect between delivery failure, and attitude loyalty and behavior loyalty separately. Practical implications of the findings for Low Cost Carrier services are discussed.

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1. Introduction

Low Cost Carriers (LCCs) have rapidly increased market share and changed the airline industry landscape. The special characteristics of LCCs are that they typically use secondary airports, have standardized fleets and do not offer any frequent flyer programs. The no-frill business model, based on providing affordable services to their customers, might include online booking, self check-in, and limitations on both the weight and the number of checked bags. In addition, LCCs may charge extra for food, priority seating and boarding, and in-flight entertainment. In Taiwan, LCCs are a flourishing segment in the airline industry; at the time of this research, there are 12 LCCs stationed there.

Air travelers understand that LCCs provide cheap airline tickets with limited services and they know there is a possibility that problems might arise due to service failures. According to the Official Gazette Department (2014), there were 579 documented legal cases concerning consumer disputes over service failures brought by visitors traveling to Japan alone in 2014. The majority of these complaints were related to unclear terms and conditions stated on the LCC's websites. Some examples of the complaints were that there was no contact phone number for customer service, ambiguous baggage shipping terms, unclear refund terms, confusing change or cancellation terms in regards to name changes, and travel dates (Consumers' Foundation, Chinese Taipei, 2013). Most travelers choose to deal with issues of service failures

patiently; however, an unsatisfied experience will most likely deter them from flying with that specific LCC or in worst case, LCCs in general.

In reality, not all service failures are avoidable. In such case, service recovery is necessary. The most important procedure is to have LCCs implement the correct service recoveries in order to retain a customer's loyalty (Hart et al., 1990; Chang and Hsiao, 2008; Chang and Chang, 2010; Hu et al., 2013). As Weber and Sparks (2004) indicated, ineffective service recovery may lead to an LCC's negative word-of-mouth. There are few empirical studies dedicated to examining the relationship between service failure, service recovery and LCC loyalty. This study aims to do so. It will also examine the mediating effects of service recovery on service failure and loyalty.

2. Literature review and proposed research hypotheses

The airline industry is a service industry and the product is the complete air travel experience (Lorenzoni and Lewis, 2004). Service failures are defined as times when the organization does not meet the customer's expectations during a service encounter (Steyn et al., 2011), and they are likely to occur in a number of areas influencing customers' service experiences (Coye, 2004). Hu et al. (2013) indicated that the occurrence of a service failure during the process of service delivery is very common in many service industries. Airlines are susceptible to service failures due to the

nature of the service process they apply in service delivery (Steyn et al., 2011).

Airline passengers may hold certain expectations prior to their impending travel (Coye, 2004), but as a result of service failures, their actual experience might be different from their expectation. Previous research has indicated a number of causes leading to service failures in the airline industry, including flight cancellations, diversions or delays, attitudes of ground and cabin staff, strikes, reservation problems and overbooking of flights (Bamford and Xystouri, 2005). Taylor (1994) concluded that flight delays, or any instance of waiting for service, can negatively affect customers in numerous ways. Flight delays can increase a passenger's anger, uncertainty and disappointment with the services provided. Steyn et al. (2011) suggested that the main air service failures attributes were flight delays, poor service, and lost luggage. Bamford and Xystouri (2005) suggested that air service failure variables included flight cancellations, diversion of flights or delays, and the attitude of ground staff. Chang and Chang (2010) observed that air service failure included overbooking or flight delays, and used interactional justice, procedural justice, and distributive justice variables to measure these failures. They also reported that these air service failures can be highly costly for firms, as customers often switch to other airlines after such dissatisfactory experiences. Thus, the airlines can thoroughly and effectively learn how to respond to such events by means of service recovery procedures (Chang and Chang, 2010).

Bejou and Palmer (1998) explained that the airline industry is especially prone to service failures due to the service processes employed in service delivery. Thus, service recovery is the most important strategy used by airlines to recover after service failures. Service recovery is defined as the actions organizations take in response to a service failure (Steyn et al., 2011) or a process of handling mistakes (Hu et al., 2013). The implementation of effective service recovery after service failures does not necessarily lead to negative results (Hu et al., 2013). Steyn et al. (2011) suggested that even if organizations cannot completely eliminate service failures, they can implement service recovery efforts and effectively handle these failures to maintain and possibly even enhance customer satisfaction and loyalty in the future. Magnini et al. (2007) and Ngai et al. (2007) suggested that the potential negative consequences of service failures and effective service recovery can lead to a mutually beneficial situation for both the customer and the organization. Many researchers have indicated that organizations can use a number of strategies to recover from service failures, including communicating with customers to provide feedback, offering to explain their failures (Boshoff and Staude, 2003; La and Kandampully, 2004) and apologizing for their failures (Boshoff and Leong, 1998; Smith et al., 1999; Mattila and Cranage, 2005; Mostert et al., 2009). Thus, service failures have a positive relationship with service recovery.

Service recovery also has a positive relationship with customer loyalty. Vázquez-Casielles et al. (2012) suggested that the growing competitive pressure in many service industries, together with the difficulty of constantly delivering a service that is free of failures, has increased the attention received by service recovery as a means to achieve customer retention. Buttle and Burton (2001) considered that if organizations can use the right service recovery strategy, then 82 percent of customers whose problems are resolved will buy again. Mostert et al. (2009) proposed that the effect of the airline's response (or lack thereof) to the service failure resulted in the majority of respondents (66.2%) indicating that in their view, their relationship with the airline was either weakened or broken. Thus, recovery strategies not only aim to offset the dissatisfaction caused by service failure, but also reinforce positive word-of-mouth (Spreng et al., 1995). Steyn et al. (2011) showed that if the airlines implement service recovery efforts, then travelers will recommend the airline to others. Buttle and Burton (2001) observed that when service failures occur, the service recovery has an impact on customers' attitudinal loyalty. Other researchers have also concluded that well executed service recovery can enhance customer satisfaction and loyalty (Mostert et al., 2009; Steyn et al., 2011; Hu et al., 2013). Effective service recovery can increase customers trust, also enhance customer loyalty and increase their willingness to repurchase in the future (Hu et al., 2013). Therefore, effective service recovery measures will potentially achieve customer satisfaction, positive word-of-mouth, repeat purchase, and loyalty (Blodgett et al., 1997; Boshoff and Leong, 1998; Smith et al., 1999; Weber and Sparks, 2009).

Hoffman et al. (2003) indicated that 55 percent of recovery response strategies involved some forms of compensation. Kelley et al. (1993) identified the top seven recovery strategies to retain customers as discounts, correction, management/employee intervention, correction plus, replacement, apology and refund. Smith et al. (1999) concluded that customers prefer to be recovered in ways that match the failure they experienced, both in the value and the form of recovery. The four attributes of perceived justice proposed by the research are compensation, response speed, apology and recovery initiation. Based on the research of service failure and recovery (Smith et al., 1999; Mattila and Cranage, 2005; Weber and Sparks, 2009), apology and compensation are two key strategies used in service recovery.

Dick and Basu (1994), Buttle and Burton (2001), and Yang and Peterson (2004) state that there is attitude and behavior loyalty. Attitude loyalty is reflected in the willingness to recommend a service provider to other consumers or the commitment to re-patronize a preferred service provider. Behavior loyalty is reflected in the frequencies of a customer choosing the same product or service compared to the total number of that specific product or service consumed. Since not all service failures are avoidable, the airlines should try to minimize the possible damaging effects by implementing effective service recovery strategies. Airlines could possibly retain their customers in their competitive industry through effective service recovery strategies (Mostert et al., 2009). Steyn et al. (2011) pointed out that airlines must build relationships with their customers and retain them, as customer retention leads to lower new customer acquisition costs. Based on the above reasoning, this study proposes the following hypotheses:

H1: Service failure has a significant effect on service recovery in LCC services.
H2: Service recovery has a significant effect on attitude loyalty in LCC services.
H3: Service recovery has a significant effect on behavior loyalty in LCC services.

Any service recovery strategies must consider the effects of customers' perception on the implementation and their after-service satisfaction in order to understand the customer's future loyalty intention. Service failure has the potential to have a significant negative impact on organizations. In tourism, negative word-of-mouth may be a particular cause for concern because of the importance of personal recommendations. Effective service recovery can counteract many of the negative outcomes associated with service failure and indeed some researchers have pointed to the existence of a so-called service recovery paradox, which suggests that excellent service recovery can lead to levels of cumulative satisfaction that are higher than those existing prior to the service failure. Bolton et al. (2007) argued that retailers and service providers must understand the effects of an explanation provided and offered compensation on consumer evaluations. Wang et al. (2011)

discussed how placing immediate and fair recovery strategies will mitigate the damages created by a service failure and create customer loyalty. Thus, service recovery probably played the role of a mediator between service failure and loyalty. Therefore, this study proposes the following hypotheses:

H4-a1: After service failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-a2: After service failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase behavior loyalty.

H4-b1: After service failures occur, if travelers perceive the compensations by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-b2: After service failures occur, if travelers perceive the compensations by the LCC as satisfactory, then it can significantly increase behavior loyalty.

3. Methodology

3.1. Questionnaire design

A questionnaire was used to conduct this study. The eight items used in the questionnaire for service failure were based on previous research of Smith et al. (1999), Mattila and Cranage (2005), Mostert et al. (2009), Weber and Sparks (2009), Wang et al. (2011), Steyn et al. (2011), and Hu et al. (2013). The six items for service recovery were based on the research of Smith et al. (1999), Mattila and Cranage (2005), and Weber and Sparks (2009). The three items for attitude loyalty and two items for behavior loyalty were adopted from the research of Dick and Basu (1994), Buttle and Burton (2001), and Yang and Peterson (2004).

Each item in the above four constructs was rated by the survey participant according to a five-point Likert-type scale from "strongly disagree" (1) to "strongly agree" (5). In order to validate this research, a draft questionnaire was sent to four airline experts for review, and the content of the items were confirmed by the experts in the LCC industry.

3.2. Sampling technique and data collection

Since this study focused on the service recovery effects within the LCC industry, the targets were travelers who had previously experienced service failure and recovery with a LCC. This study used a convenience sampling. Five interviewers spent three weeks, from February 4, 2014 to February 25, 2014, conducting interviews within the departure hall of Taiwan Taoyuan International Airport. A total of 1067 questionnaires were distributed. 761 interviewees did not have a service failure experience, 20 interviewees did have a service failure experience but did not completely fill out the survey, and 286 questionnaires were complete and valid.

4. Results

The data collected were analyzed through factor analysis, reliability and validity testing, and structural equation modeling (SEM) analysis methods. In addition, a hierarchical regression analysis was used to examine the service recovery as a mediating role between service failure and attitude loyalty and behavior loyalty, separately.

4.1. Factor analysis

Factor analysis was used to detect the presence of meaningful

patterns among the original eight service failure items and six service recovery items, and to summarize the important information contained therein by a small set of factors or dimensions. Each factor was extracted by means of principal component analysis (PCA) with VARIMAX rotation to increase interpretability of the factor structure (Nunnally, 1978) (see Table 1). If the eigenvalue, that is, the amount of the total variance explained by the factor, is greater than 1.00, then the extracted factors are evaluated further (Hair et al., 2010). The results of service failure factor analysis were divided into two factors: delivery failure factor, and personal and response failure factor. The two factors of service recovery were also extracted. They are apology and compensation. The three items of attitude loyalty are reduced into a single factor, attitude loyalty. The two items of behavior loyalty are reduced into a single factor, behavior loyalty. With the reduced factors, this study changes the hypotheses H4-a1 to H4-b2 and proposes the following sub-hypotheses:

H4-1a: After delivery failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-1b: After delivery failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase behavior loyalty.

H4-2a: After delivery failures occur, if travelers perceive the compensation by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-2b: After delivery failures occur, if travelers perceive the compensation by the LCC as satisfactory, then it can significantly increase behavior loyalty.

H4-3a: After personal and response failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-3b: After personal and response failures occur, if travelers perceive the apology by the LCC as satisfactory, then it can significantly increase behavior loyalty.

H4-4a: After personal and response failures occur, if travelers perceive the compensation by the LCC as satisfactory, then it can significantly increase attitude loyalty.

H4-4b: After personal and response failures occur, if travelers perceive the compensation by the LCC as satisfactory, then it can significantly increase behavior loyalty.

4.2. Reliability and validity

Reliability for each of the factors was obtained using the calculation of a Cronbach's α coefficient. The Cronbach's α coefficients ranged from 0.903 to 0.765, as shown in Table 1. All the factors' reliability values were above the cut-off criterion of 0.7 recommended by Nunnally (1978). In addition, construct reliability (CR) ranged from 0.705 to 0.875, all exceeding the 0.7 recommended by Hair et al. (2010) and showing that construct reliability was satisfactory. The average variances extracted (AVE) for all the constructs fell between 0.544 and 0.701, and were greater than the value of 0.5 suggested by Hair et al. (2010).

4.3. Structural equation modeling results

Structural equation modeling (SEM) was used to test the hypothesized relationships in the proposed model as indicated in Fig. 1. To assess the fit of the model, Chi-square to degrees of freedom, a goodness of fit index (GFI), adjusted goodness-of-fit-index (AGFI), comparative fit index (CFI), root mean square residual (RMR), and root mean square error of approximation (RMSEA)

Table 1
Factor loading, Cronbach's α reliability, construct reliability, and average variances extracted analysis.

	Loading	Cronbach's α	CR	AVE
Service failure		0.901	0.731	0.583
Delivery failure		0.858		
New flight information was not immediately updated	0.912			
Published flight information was not clear	0.872			
Personal and response failure		0.903		
Airline lacked the capabilities to respond to passenger's complaints	0.863			
Airline lacked the capabilities to deal with passenger's lost baggage claims	0.857			
Airline lacked the capabilities to address passenger's concerns	0.794			
Airline lacked the capabilities to respond to sudden changes; such as flight delay	0.749			
Customer service personnel were not trained to respond to customer's concerns	0.709			
Flight staff lacked the professional aviation-related expertise	0.695			
Service recovery		0.860	0.705	0.544
Apology		0.834		
After a service failure, you were satisfied with the airline's immediate apology	0.894			
After a service failure, you were satisfied with the airline's immediate explanation and response to address the situation	0.855			
After a service failure, you were satisfied with the airline's immediate resolution or a promise of a resolution	0.711			
Compensation		0.847		
After a service failure, you were satisfied with the airline's material compensation, such as, ticket vouchers, refunds, or coupons, etc.	0.869			
After a service failure, you were satisfied with the airline's psychological compensation, such as, a phone call, or mail, etc.	0.829			
After a service failure, you were satisfied with the airline's promise to offer compensation	0.826			
Attitude loyalty		0.875	0.875	0.701
Recommendation: You will continue to recommend travel on this LCC to others				
Word-of-mouth: You will continue to say positive things about the LCC to others				
Commendation: You will continue to encourage others to use the LCC's services				
Behavior loyalty		0.765	0.766	0.620
First choice: To travel on this LCC is your first choice				
Reuse service: You will travel on this LCC in the future				

were used. The goodness of fit indices standardized parameter estimates and their t-values for the structural model. The chi-square statistics was significant (X^2/df = 3.122 p < 0.001), and other goodness of fit indices were also within the acceptable ranges (GFI = 0.948, AGFI = 0.898, CFI = 0.958, RMR = 0.022, RMSEA = 0.080). All of the fit indices indicated that the proposed model exhibited a reasonably good fit to the data.
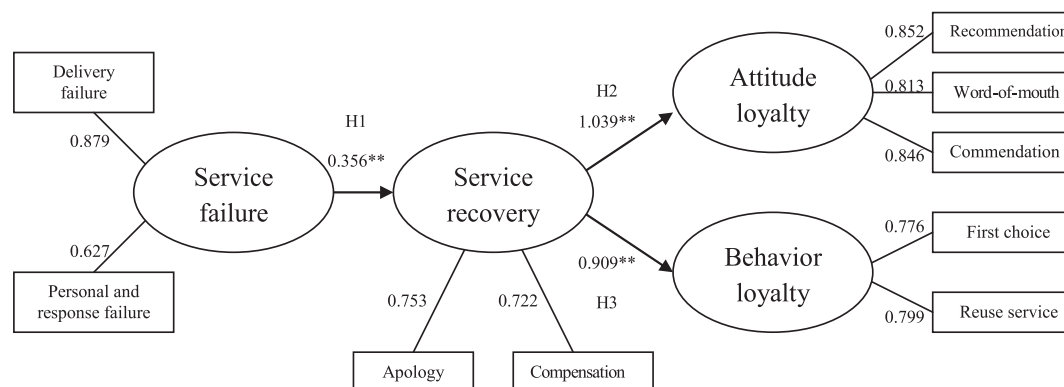
The results of the parameter estimates indicated that service failure had a positive influence on service recovery ($\beta = 0.356$, p < 0.001) as shown in Fig. 1, therefore, the hypothesis H1 is supported. The results also indicated that service recovery significantly and positively affected attitude loyalty ($\beta = 1.039$, p < 0.001), therefore, the hypothesis H2 is supported. The result further

showed that service recovery had a positive significant influence on behavior loyalty ($\beta = 0.909$, p < 0.001). Thus, the hypothesis H3 is supported as well.

4.4. The relationships and mediating effects of service recovery on service failure and loyalty

The hierarchical moderated regression was utilized to test the mediator effect of service recovery; the eight hypotheses were tested following the analysis steps laid out in the study by Baron and Kenny (1986).

The complete mediating effects of variable X (delivery, and personal and response failures) and variable Y (attitudinal loyalty

χ^2/df =3.122, GFI= 0.948, AGFI= 0.898, CFI= 0.958, RMR= 0.022, RMSEA= 0.080

Fig. 1. Research construct model.

and behavior loyalty) were tested through two regressions (1) and (2). In each case, X was the independent variable, while Y was the dependent variable in the first and M in the second regression analysis:

$$Y = \beta_{01} + \beta_{11}\chi \tag{1}$$

$$M = \beta_{02} + \beta_{12}\chi \tag{2}$$

The first and second conditions were that X must significantly determine Y, and M (β_{11} and β_{12}) must be significantly higher than zero. In order to check the third and fourth conditions, a third regression analysis (3) was performed, in which the dependent variable is Y and the independent variables are X and M. The regression coefficient of M (β_{23}) had to be significant (third condition), whereas that of X must not (fourth condition) show a complete mediating effect:

$$Y = \beta_{03} + \beta_{13}\chi + \beta_{23}M \tag{3}$$

First, the analysis of the mediating effect for apology between delivery failure and attitude loyalty was performed. The results are shown in Table 2. The p-values for the four models, Model 1a-1 to Model 1a-4, are significant; however, the adjusted R^2 of Model 1a-4 was higher than Model 1a-1's (0.231 > 0.099). This means that apology had a partial mediating effect on delivery failure and attitude loyalty. Therefore, H4-1a is supported.

The four models, Model 1b-1 to Model 1b-4, were tested for the mediating effect for apology between delivery failure and behavior loyalty. The p-values in all of the four models were also significant, but the adjusted R^2 of Model 1b-4 was higher than Model 1b-1's (0.133 > 0.023), indicating that apology had a partial mediating effect on delivery failure and behavior loyalty. H4-1b is also supported.

The mediating effect for compensation between delivery failure and attitude loyalty was also tested. The p-values for all four models were significant, the adjusted R^2 of Model 2a-4 was higher than Model 2a-1's (0.205 > 0.099). This means that compensation had a partial mediating effect on delivery failure and attitude loyalty; therefore, H4-2a is supported. Hypotheses H4-2b was tested for the mediating effect of compensation between delivery failure and behavior loyalty. Results show that compensation had a partial mediating effect on delivery failure and behavior loyalty, which is the same as H4-2a's; therefore, H4-2b is also supported.

The analysis of mediating effect for apology between personal and response failure and attitude loyalty and behavior loyalty were performed, respectively. The results are shown in Table 3. The p-value of Model 3a-2 is not significant, which did not meet the criteria to perform step two. This means that apology did not have a mediating effect between personal and response failure and attitude loyalty. Therefore, H4-3a is not supported. The p-value of Model 3b-2 is also not significant; thus, H4-3b is also not supported. This means that apology did not have a mediating effect between personal and response failure and behavior loyalty.

Table 2
Analysis of mediating effects of service recovery between delivery failure and loyalty.

Delivery failure— apology—attitude loyalty	Model 1a-1 attitude loyalty		Model 1a-2 apology		Model 1a-3 attitude loyalty		Model 1a-4 attitude loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Delivery failure	0.315	3.936[a]	0.185	2.236[a]			0.243	3.251[a]
Apology					0.430	5.648[a]	0.384	5.134[a]
Adjusted R^2 (AR^2)	0.099		0.027		0.179		0.231	
$\triangle AR^2$							0.132	
F-value	15.489		4.998		31.898		22.317	
P-value	0.000		0.000		0.000		0.000	
Delivery failure— apology—behavior loyalty	Model 1b-1 behavior loyalty		Model 1b-2 apology		Model 1b-3 behavior loyalty		Model 1b-4 behavior loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Delivery failure	0.174	2.101[a]	0.185	2.236[a]			0.110	1.389[a]
Apology					0.365	4.659[a]	0.384	4.336[a]
Adjusted R^2	0.023		0.027		0.127		0.133	
$\triangle AR^2$							0.110	
F-value	4.413		4.998		21.702		11.889	
P-value	0.000		0.000		0.000		0.000	
Delivery failure— compensation—attitude loyalty	Model 2a- 1 attitude loyalty		Model 2a-2 compensation		Model 2a-3 attitude loyalty		Model 2a-4 attitude loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Delivery failure	0.315	3.936[a]	0.171	2.059[a]			0.255	3.360[a]
Compensation					0.392	5.057[a]	0.348	4.587[a]
Adjusted R^2	0.099		0.022		0.147		0.205	
$\triangle AR^2$							0.196	
F-value	15.489		4.240		25.568		19.364	
P-value	0.000		0.000		0.000		0.000	
Delivery failure— compensation—behavior loyalty	Model 2b-1 behavior loyalty		Model 2b-2 compensation		Model 2b-3 behavior loyalty		Model 2b-4 behavior loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Delivery failure	0.174	2.101[a]	0.171	2.059[a]			0.111	1.416[a]
Compensation					0.388	5.004[a]	0.369	4.706[a]
Adjusted R^2	0.023		0.022		0.145		0.151	
$\triangle AR^2$							0.128	
F-value	4.413		4.240		25.040		16.611	
P-value	0.000		0.000		0.000		0.000	

Standardized beta-coefficients are reported with p-value in parentheses.
[a] The level of significance is less than 0.001.

Table 3
Analysis of mediating effects of service recovery between personal and response failure and loyalty.

Personal and response failure—apology—attitude loyalty	Model 3a-1 attitude loyalty		Model 3a-2 apology		Model 3a-3 attitude loyalty		Model 3a-4 attitude loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Personal and response failure	0.224	2.735[a]	0.027	0.326			0.213	2.869[a]
Apology					0.430	5.648[a]	0.424	5.710[a]
Adjusted R²	0.044		0.006		0.179		0.219	
△AR²							0.175	
F-value	7.483		0.106		31.898		20.885	
P-value	0.000		0.745		0.000		0.000	

Personal and response failure—apology—behavior loyalty	Model 3b-1 behavior loyalty		Model 3b-2 apology		Model 3b-3 behavior loyalty		Model 3b-4 behavior loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Personal and response failure	0.135	1.622	0.027	0.326			0.125	1.608[a]
Apology					0.365	4.659[a]	0.362	4.639[a]
Adjusted R²	0.011		0.006		0.127		0.137	
△AR²							0.126	
F-value	2.631		0.106		21.702		12.267	
P-value	0.107		0.745		0.000		0.000	

Personal and response failure— compensation—attitude loyalty	Model 4a-1 attitude loyalty		Model 4a-2 compensation		Model 4a-3 attitude loyalty		Model 4a-4 attitude loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Personal and response failure	0.224	2.735[a]	0.117	1.404			0.274	3.667[a]
Compensation					0.392	5.057[a]	0.424	5.669[a]
Adjusted R²	0.044		0.007		0.147		0.217	
△AR²							0.173	
F-value	7.483		1.972		25.568		20.638	
P-value	0.000		0.162		0.000		0.000	

Delivery failure— compensation—behavior loyalty	Model 4b-1 behavior loyalty		Model 4b-2 compensation		Model 4b-3 behavior loyalty		Model 4b-4 behavior loyalty	
	β	t-value	β	t-value	β	t-value	β	t-value
Independent variables								
Personal and response failure	0.135	1.622	0.117	1.404			0.183	2.387[a]
Compensation					0.388	5.004[a]	0.410	5.332[a]
Adjusted R²	0.011		0.007		0.145		0.192	
△AR²							0.181	
F-value	2.631		1.972		25.040		15.786	
P-value	0.107		0.162		0.000		0.000	

Standardized beta-coefficients are reported with p-value in parentheses.
[a] The level of significance is less than 0.001.

The analysis of the mediating effects for compensation between personal and response failure and attitude loyalty and behavior loyalty were also performed, respectively. The p-value of Model 4a-2 is not significant, which did not meet the criteria to perform step two. Therefore, the factor of compensation did not have a mediating effect among personal and response failure and attitude loyalty, H4-4a is not supported. The p-value of Model 4b-2 is also not significant, which means that compensation did not have a mediating effect among personal and response failure and behavior loyalty. Thus, H4-4b is also not supported.

5. Conclusions and implications

The study contributes to the extant literature as the instrument employed was effective in assessing service failure and can therefore be confidently used again in LCC services-related studies.

The SEM analysis showed that service failure had a significant and positive effect on the service recovery. This indicates that when service failures occur, LCCs need to implement effective service recovery strategies to remedy customers' confidence. The delivery failure is the more significant of the two constructs for service failure. LCCs need to update flight information constantly, and notify the travelers immediately of the changes.

Service recovery had a significant positive effect on attitude loyalty and behavior loyalty, respectively. This means that service recovery strategies are very important in determining the traveler's satisfaction. This will affect the traveler's decisions whether to recommend to others to fly with the LCC in the future or not.

The mediating effects of apology and compensation between the delivery failure and attitude loyalty and behavior loyalty means that travelers accept the common recovery practices, namely apology and compensation, to remedy delivery failure. In the case of flight information delivery failure, travelers expect an immediate apology, and want clear updated flight information posted, or to be provided with discounts or vouchers for future trips. If a traveler is satisfied with the remedy, he or she will recommend to others, and fly with the LCC in the future. Although apology and compensation did not have a significant mediating effect between personal and response failure, and attitude loyalty and behavioral loyalty, most of the travelers had low perceived satisfaction. Therefore, LCCs will need to continue to address these failures and evaluate their remedies.

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