Structural Equation Modeling to Determine Passenger Loyalty Toward Intercity Bus Services

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This paper investigates passenger loyalty to intercity bus services and identifies important factors influencing loyalty. The relationships between passenger loyalty and other latent factors, including satisfaction, service value, service quality, sacrifice, switching costs, attractiveness of competitors, and trust are hypothesized and tested. Factor analysis is used to extract the latent service quality factors from a large number of service quality indicators. Structural equation models are then developed to elucidate the causal relationships of passenger loyalty and the latent factors. The empirical results have confirmed the proposed hypotheses. Satisfaction has the most significant influence on passenger loyalty. Service value, switching costs, and trust have direct and positive effects on loyalty, whereas attractiveness of competitors has a direct negative effect. The indirect effect of service quality, via service value and satisfaction, on passenger loyalty is also significant. From the empirical results, managerial implications for the bus carriers are addressed.

In response to the mandates of Agenda 21, the Taiwan government has formulated policies and action plans to make transportation more in line with sustainable development over the past decade. In its first *Transportation Policy White Book*, released by the Ministry of Transportation and Communications (MOTC) in 1995 (*1*), the government proclaimed the pursuit of sustainable development by factoring the environmental, economic, and societal considerations into transportation policy decision making. Development of public transportation was the most prominent policy to break (or even reverse) the direction of the public–private transportation vicious circle. Strategies such as providing exclusive bus lanes in congested areas and a direct subsidy and tax (fee or toll) exemption to the transit operators have been implemented to ameliorate the public transportation service quality and operating efficiency and to relieve the fare increase pressure. Meanwhile, higher charges for private car and motorcycle ownership (e.g., license plate tax) and use (e.g., parking charge) have also been implemented to internalize partial external costs. Such a carrot-and-stick policy planning philosophy was clearly documented in the first White Book (*1*).

Perhaps one of the most pertinent undertakings in line with the sustainable transportation development, however, was the open (deregulation) of the freeway bus transit market. Before 1980, there was only one government-owned bus carrier, which monopolized the freeway market. That monopolist provided insufficient capacity and poor quality and thus stimulated the entry of a number of illegal coaches into the market. Such illegal coaches have provided more frequent and higher quality services than has the monopolist on many busy routes. MOTC has attempted many enforcement measures but failed to solve the illegal coach problem. It thus approved establishing a second carrier, which was formed by combining the existing illegal coaches in 1990. However, that measure still did not fully stop more luxurious illegal coaches from entering the freeway market to capture the most profitable routes. A consensus about the open freeway was reached, after several public hearings and debates, and MOTC eventually opened the freeway market in 1995. By the end of 2001, the Taiwan freeway market already had 33 bus carriers offering 140 routes. The keen competition has brought about higher quantity and quality of intercity transit service and attracted a considerable number of private car users to bus transit; as a result, roadway congestion and environmental impacts have been reduced (*2*).

However, keen competition has also brought about many serious traffic accidents, which have jeopardized the safety of passengers. Most of the previous fatal bus-involved traffic accidents, or those caused by fire, were mainly attributed to aberrant behavior and conditions among drivers. That is, drivers were inadequately monitored or experienced fatigue from overtime driving, or there were expired fire extinguishers or inappropriate interior remodeling, with optional facilities blocking the emergency exits on the buses. Moreover, the high-speed rail system, expected to be in commercial operation by the end of 2005, will certainly usher in a new era of intercity transportation in the Taiwan western corridor. The system will inevitably attract a good number of passengers from the freeway bus market, especially for the long-distance routes. Therefore, how to reposition the freeway passenger services to cope with the new era of high-speed rail is now challenging many freeway bus carriers (*3*).

For intercity bus carriers to maintain a competitive advantage, developing effective marketing strategies has become vital for them to endure in the long-distance transportation market. Customer loyalty is one of the most frequently used indicators to measure the success of a marketing strategy (*4*). The importance of customer loyalty stems from its consequences pertaining to customer retention, repurchase, long-term customer relationships, and profitability. Loyal customers are likely to continue using the service and recommend the service to their friends. Thus, developing and maintaining customer loyalty are the keys to the survival and growth of service firms.

Customer loyalty has received great attention by academicians and practitioners, especially in the marketing field. However, little has been found in the transportation industries, except for the airline industry. The objective of this research is to investigate passenger loyalty in

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a long-distance intercity bus context and to identify the important factors that influence loyalty. This research employs factor analysis to extract latent service quality factors from a large number of service quality indicators. The causal relationships of passenger loyalty and other latent factors are then identified by structural equation modeling. The estimation results of structural equation models can provide bus carriers with important implications for management.

The remainder of this paper is organized as follows. The next section briefly discusses previous literature on customer loyalty. Then hypotheses are proposed for testing the causal relationships of passenger loyalty and other latent service quality variables. The following section presents research methods for modeling passenger loyalty in the intercity bus industry. Following that, empirical results of factor analysis and path analysis are provided. The final section discusses managerial implications for bus carriers and proposes future research directions.

RESEARCH ON CONSUMER LOYALTY

Loyalty is defined as the enduring psychological attachment of a customer to a particular service provider. The attachment is reflected through advocacy of the service to others, tendency to resist changing to different service providers, identification with the service providers, and having relative preference for the service ahead of other competitors (*5*). Customer loyalty can be assessed by either behavioral measures or attitudinal measures. With behavioral measurements, researchers define loyalty by investigating the quantity, proportion, or sequence of repurchase. The degree of loyalty can be measured through the proportion of a buyer's spending in each store and proportion of visits made by a consumer to the same store (*4*). More specifically, customer loyalty is the degree to which the customer has exhibited repurchasing behavior of a particular company service and the significance of that expenditure on that particular type of service (*6*). However, customer loyalty based only on the behavior of repurchasing would be overestimated because repeat purchasing behavior is spurious brand loyalty. True brand loyalty not only repeats purchasing behavior but also commits to brands through the psychological and evaluative decision-making approach (*7*).

With attitudinal measurements, researchers focus on psychology, based on intentions to repurchase, preference of brands, attitudes, or recommendation to others. Customer loyalty expresses an intended behavior related to the service or the company. That includes the likelihood of future renewal of service contracts, how likely it is that the customer changes patronage, or how likely the customer is to provide positive word of mouth (*8*). Customer loyalty also includes a long-term commitment to repurchase, involving both a favorable cognitive attitude toward the selling firm and repeated patronage (*9*).

Most customer loyalty studies in the transportation industries have been done in the airline industry. Ostrowski et al. (*10*) examined service quality and customer loyalty in the airline industry, in which customer loyalty is measured by retained reference—the intention to fly the same air carrier next time. Lee and Cunningham (*11*) developed a framework to describe the formation of service loyalty, which is determined by making a comparison between perceived benefits (in service quality) and perceived costs (in transaction and economic costs), which further determine service value. Customers consider service value along with the switching cost to form the intention to repatronize their current service provider. Zins (*12*) investigated future customer loyalty in the commercial airline industry and confirmed that service quality, satisfaction, and corporate image play important roles in explaining airline customer loyalty. Foote et al. (*13*) adopted overall satisfaction and two loyalty measures to evaluate bus and rail transit performance and to identify actions to increase satisfaction and loyalty. To the best of the present authors' knowledge, no research examines passenger loyalty in the intercity bus context.

HYPOTHESES

From the existing customer loyalty studies, the authors of this study adopted attitudinal measures and identified satisfaction, service value, service quality, sacrifice, switching costs, attractiveness of competitors, and trust as important variables affecting intercity bus passenger loyalty. The meanings of those important variables and the proposed hypotheses to be tested in the empirical study are explained below.

Satisfaction

Satisfaction is an emotion-based feeling, a degree of pleasure and contentment, and a distance between performance and expectations in service (*7, 8, 14–16*). Satisfied customers will be more likely to repurchase, and greater levels of repurchase lead to increased sales and market share for the firm. In addition, satisfied customers have a higher price tolerance for their preference, and they find that switching to competitors becomes less attractive (*16*). Numerous studies have confirmed a direct positive relationship between satisfaction and customer loyalty (*5, 6, 8–10, 14–16*). Thus, the first hypothesis is stated as follows:

H_1: Satisfaction has a direct, positive effect on passenger loyalty.

Service Value

Customers get value from the service provider. Service value is an overall evaluation of the costs and benefits of the transaction (*6, 8, 14, 16–18*). Service value represents the net perceived value between the benefit of service quality and the transaction or economic costs (*19*). If the price is unacceptable, the customer must have little or no net perceived value. If the perceived benefit is high, the perceived value is likely to be high (*18*). The relationship between service value and customer loyalty has been confirmed (*5, 14, 16–18*). In addition, service value may influence customer loyalty through customer satisfaction (*6, 8*). If bus passengers perceive high service value, the intention of loyalty is high. Thus, the second and third hypotheses are stated as follows:

H_2: Perceived service value has a direct, positive effect on satisfaction.
H_3: Perceived service value has a direct, positive effect on passenger loyalty.

Switching Costs

Switching costs are the perceived magnitude of the additional expense and effort that would be required to change the service providers. The domain of switching costs encompasses monetary expenses to end the current relationship and secure the alternative, as well as the costs incurred in the expenditures of time and effort. Such costs may involve search costs resulting from the geographic dispersion of service alternatives as well as learning costs resulting from the customized nature of many service encounters. As switching costs increase, the intention of customer loyalty increases (*8, 15, 19, 20*). Thus, the proposed fourth hypothesis is as follows:

H_4: The cost of switching bus carriers has a direct, positive effect on passenger loyalty.

Attractiveness of Competitors

Attractiveness of competitors refers to customer perceptions about the extent to which viable competitors are available in the market. When the marketplace includes very few competitors, the intention of remaining loyal is high. Attractiveness of competitors is negatively related to customer loyalty. The following is the fifth hypothesis.

H_5: Attractiveness of competitors has a direct, negative effect on passenger loyalty.

Trust

Trust in a person is a feeling of security based on the belief that his or her behavior is guided and motivated by favorable and positive intentions toward the welfare and interests of his or her partner (*21*). When one party has confidence in an exchange partner's reliability and integrity, trust exists and may lead to a higher level of loyalty (*22*). To build up the trust between customers and firms, one can set up the reliability and personalized tendency of brands. Once customers trust that company, they are likely to maintain a long-term relationship with the intention of repurchasing that brand. Therefore, the higher the feeling of trust toward a bus carrier, the more the passenger is loyal to it. Thus, trust is positively related to passenger loyalty. The proposed sixth hypothesis is stated as follows:

H_6: Trust has a direct, positive effect on passenger loyalty.

Service Quality

Parasuraman et al. (*23*) address service quality as expectation and perceptions of service. If customers perceive high service quality, they are likely to increase the intention of repurchasing the brand. Previous studies have confirmed that service quality may affect loyalty directly or influence loyalty indirectly via service value (*17, 18*) or satisfaction (*5, 6, 9, 10, 16*). Thus, the seventh and eighth hypotheses are stated as follows:

H_7: Perceived service quality has a direct, positive effect on satisfaction.
H_8: Perceived service quality has a direct, positive effect on service value.

Sacrifice

Sacrifice refers to what is given up to acquire a service. Perceived sacrifice includes the monetary price and the nonmonetary price, such as time, search, and psychological costs (*17, 18*). Sacrifice is negatively related to service value. High sacrifice may result in low service value. If passengers have to spend a significant amount of time and money to use the bus service, their perceived service value is likely to be low. Thus, the proposed ninth hypothesis is stated as follows:

H_9: Perceived sacrifice has a direct, negative effect on service value.

In summary, when bus passengers perceive high service quality and service value, they would be more satisfied with the bus carrier. High perceived service value and satisfaction would lead to high intention to use the same bus carrier. While passengers trust the bus carrier, they are likely to retain their relationship with the same carrier. If the passengers need to pay high prices to switch carriers, they would prefer to select the same carrier. However, if the attractiveness of competitors is high, the intention for passengers to remain loyal to a specific carrier would be low.

METHODOLOGY

Data and Measurements

A survey was conducted to collect the intercity bus travelers' socioeconomic and trip characteristics, perceived service quality, and loyalty data. The selected route is between Taipei and Kaohsiung (about 350 km) located in the west corridor of Taiwan. This is a major long-distance bus route served by four bus carriers. Effective data from a total of 600 passengers were collected in August 2003. Of the respondents, 55% were male, and 36% of them were students. The majority of the respondents (51%) were young passengers 21 to 30. More than 50% of the respondents had monthly income less than NT$30,000 (1US$ = 33NT$ in 2004).

Service quality, passenger loyalty, and relevant constructs cannot be measured directly. Multiple indicators are normally used to represent the constructs. A standardized service quality instrument for the intercity bus industry is not available in the literature. In this empirical study, the service quality was developed based on previous studies and the SERVQUAL scale, the most widely used measure of service quality (*24*). SERVQUAL is an instrument for measuring service quality as perceived by the customer. The initial 97-item instrument was refined and resulted in a scale with 22 items. Those items were assessed on a 5-point Likert scale ranging from "very unsatisfied" to "very satisfied." Passenger loyalty is measured by indicators such as the likelihood to recommend one's current bus carrier to friends and the likelihood to use the current bus carrier next time. Other scales are developed on the basis of existing literature and modified as necessary to represent characteristics of long-distance intercity bus operations.

Analysis Approaches

This study develops structural equation models to test the aforementioned nine hypotheses, as shown in Figure 1. The approach is a multivariate technique combining multiple regression and factor analysis to estimate a series of interrelated dependence relationships simultaneously. The structural equation models include the measurement and structural models. The measurement model, called confirmatory factor analysis, describes how well the observed indicators measure the unobserved (latent) variables. The structural model, called path analysis, identifies the causal relationships among latent variables.

When all service quality items are included in the measurement model, the model would not fit the data well. To overcome that problem, exploratory factor analysis is employed to reduce the number of service quality items to a few factors and to determine the item-factor assignment. Principal component analysis with oblique rotation is used as the extraction method on the samples. The number of factors is determined by the criterion of an eigenvalue greater than or equal to 1.0. Items are retained in the final result if their factor loading is greater than 0.5. The coefficient alpha is computed to assess the reliability of the factors. Exploratory factor analysis does not allow statistical assessment of prespecified models and explicit testing for construct validity and unidimensionality (*25*). In contrast, confirmatory factor analysis allows one to explicitly posit one or more a priori models and systematically compare the ability of competing models to fit the observed data (*26*).

Testing for construct validity includes convergent validity and discriminant validity. Convergent validity refers to the extent to which each measure correlates with other measures of the same latent construct. Convergent validity can be assessed through *t*-values. If *t*-values are greater than $|2.58|$, the items are significant at the 0.01 level.

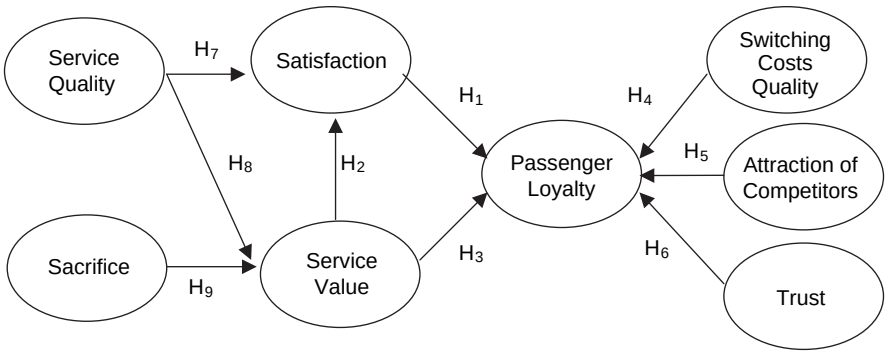

FIGURE 1 Proposed structural model examining passenger loyalty to bus services.

Discriminant validity, in contrast, refers to the extent to which the measure of a conduct does not correlate with measures of other constructs. Discriminant validity can be assessed based on a confidence interval of the correlation between any two constructs. If no correlation includes 1, discriminant validity is reached. Modification indices and standardized residuals can be used to assess the unidimensionality. Several goodness-of-fit measures are used to evaluate the best fit of a hypothesized model to the data. The relative fit indices of the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the nonnormed fit index (NNFI) reach 0.9, indicating that the model fits the data moderately well. Chi-square is a badness-of-fit measure in the sense that a small value indicates a good fit. The root-mean-square error of approximation (RMSEA) is a complement to other fit measures. The acceptable range of RMSEA is 0.08 or less (*27*). As will be indicated later, the normed fit index (NFI) and root-mean-square residual (RMR) are also measured.

RESULTS

Service Quality Model

Exploratory factor analysis is initially applied to half samples to determine the item-factor assignment. Table 1 reports the estimation results. It is found that the 22 service quality items can be represented by four service quality factors, which are identified as onboard amenity, crews' attitude, station performance, and operational performance. Onboard amenity measures service quality on buses, including noise level, cleanliness, comfortable temperature, comfort of seats, adequate luggage space, entertainment facilities, and food and beverage service. Crews' attitude measures perceived service quality associated with crew members (drivers, attendants, and ticketing staff), such as appearance, politeness and friendliness, handling of emergency situations properly, attention to passengers while busy, and active provision of service. Station performance is measured by the stations' being well equipped or well maintained, including environmental cleanliness, clear broadcasting system, and easy-to-understand timetables. Operational performance represents safe driving, ease of purchasing tickets, on-time performance, and frequency of service.

Confirmatory factor analysis is conducted on the remaining half samples to serve as the cross-validation for the exploratory factor analysis. Table 2 reports the final results by SAS software (*28*). It is found that the final model also consistently indicates four latent service quality variables: onboard amenity, crews' attitude, station performance, and operational performance. Modification indices and standardized residuals suggest that three service quality items (XB_{14B}, XB_{19B}, and XB_{22}) should be removed. Each item has significant standardized loadings in its construct. All indicators are highly correlated to their associated constructs. No correlation between any two constructs includes 1, and therefore, discriminant validity is reached. Values of the goodness-of-fit measures suggest a well-fitting model. The chi-square values, RMR, and RMSEA fall within the acceptable range.

Passenger Loyalty Model

Table 3 reports the final results of confirmatory factor analysis of passenger loyalty model. The final model includes eight latent variables:

TABLE 1 Exploratory Factor Analysis of Service Quality: Estimation Results

	Factor Loadings
Factor 1. Onboard amenity (Alpha = 0.873)	
X_1 Noise level on buses	0.672
X_2 Bus interior cleanliness	0.810
X_3 Comfortable temperature	0.786
X_4 Comfort and spaciousness of seats	0.830
X_5 Entertainment facilities	0.782
X_6 Food and beverages services	0.527
X_7 Good broadcast system on buses	0.691
X_8 Cleanliness and convenience of toilet	0.671
X_9 Ride smoothness	0.679
Factor 2. Crews' attitude (Alpha = 0.891)	
X_{10} Clean and neat appearance	0.682
X_{11} Politeness and friendliness	0.785
X_{12} Handling emergency situation properly	0.761
X_{13} Not ignoring passengers while busy	0.812
X_{14} Providing service actively	0.861
Factor 3. Station performance (Alpha = 0.808)	
X_{15} Well-equipped/maintained stations	0.915
X_{16} Cleanliness on stations	0.904
X_{17} Good broadcasting system on stations	0.805
X_{18} Timetable is clear and easy to understand	0.715
Factor 4. Operational performance (Alpha = 0.878)	
X_{19} Safe driving	0.450
X_{20} Ease of purchasing tickets	0.531
X_{21} On-time performance	0.584
X_{22} Frequency of service	0.578

TABLE 2 Confirmatory Factor Analysis of Service Quality: Estimation Results

	Factor Loadings	*t*-Values	Reliability
Factor 1. Onboard amenity			0.898
X_1 Noise level on buses	0.741	19.7	0.549
X_2 Bus interior cleanliness	0.753	26.4	0.566
X_3 Comfortable temperature	0.717	23.0	0.514
X_4 Comfort and spaciousness of seats	0.733	21.7	0.537
X_5 Entertainment facilities	0.715	24.0	0.511
X_7 Good broadcasting system on buses	0.709	23.4	0.503
X_8 Cleanliness and convenience of toilet	0.715	24.3	0.511
X_9 Ride smoothness	0.713	24.5	0.509
Factor 2. Crews' attitude			0.849
X_{10} Clean and neat appearance	0.803	29.3	0.803
X_{11} Politeness and friendliness	0.789	27.4	0.789
X_{12} Handling emergency situation properly	0.750	26.7	0.750
X_{13} Not ignoring passengers while busy	0.712	25.0	0.712
Factor 3. Station performance			0.936
X_{15} Well-equipped/maintained stations	0.905	35.0	0.905
X_{16} Cleanliness of stations	0.908	35.2	0.908
X_{17} Good broadcasting system on stations	0.918	27.7	0.918
Factor 4. Operational performance			0.822
X_{18} Timetable is clear and easy to understand	0.819	23.3	0.819
X_{20} Ease of purchasing tickets	0.755	25.0	0.755
X_{21} On-time performance	0.761	25.3	0.580

NOTE: GFI = 0.977, AGFI = 0.964, CFI = 0.927, NNFI = 0.987, NFI = 0.981, RMR = 0.019, RMSEA = 0.031, χ^2/df = 1.928.

passenger loyalty, satisfaction, service value, service quality, sacrifice, switching costs, attractiveness of competitors, and trust. It is found that factor loadings are statistically significant at a high level of confidence. The GFI suggests that the model fits the data moderately well.

The estimation results of path analysis are shown in Figure 2. All the nine proposed hypotheses are confirmed. The largest path coefficient among direct links to passenger loyalty is satisfaction, which has the most significant direct and positive effect on loyalty. As anticipated, service value, switching costs, and attractiveness of competitors have direct positive effects on passenger loyalty, whereas attractiveness of competitors has a direct negative effect. The indirect effect of service quality on passenger loyalty via service value and satisfaction is also significant. (In Figure 2, GFI = 0.910; AGFI = 0.907; CFI = 0.944; NNFI = 0.937; NFI = 0.922; RMR = 0.0576; RMSEA = 0.0531; and χ^2/df = 2.998, where df is degrees of freedom.)

MANAGERIAL IMPLICATIONS

The empirical results indicate that the structural equation model fits well and confirms the research hypotheses. Satisfaction, service value, and switching costs have direct positive effects on passenger loyalty. This study also supports the ideas that service value, service quality, and sacrifice have indirect effects on passenger loyalty. The significant direct path from service quality to service value and satisfaction and the indirect path from service quality to loyalty reflect the relative importance of service quality. The factor loadings provide useful information for improving the bus service quality. For example, cleanliness of the bus interior has the highest factor loading within the onboard amenity factor; thus, carriers should constantly keep the interior clean to increase perceived service quality. Likewise, noise level on buses has the second highest factor loading; therefore, operators can consider introducing low-noise vehicles to increase perceived service quality.

Bus stations of different carriers at the origin or destination in Taiwan are often close to one another, implying that passengers do not need to spend significantly extra time or money to switch to other carriers. Nonetheless, maintenance of cleanliness and provision of comfortable waiting rooms with clear broadcasting and information systems at stations may be worth consideration. In addition to seeking service quality improvement, the bus carriers can create service value by making the fare, waiting time, and in-vehicle travel time acceptable to passengers. The operators can consider providing a comfortable waiting environment with entertainment and a relaxing atmosphere for the waiting passengers.

More important, when a passenger has confidence in the reliability and integrity of a bus carrier, trust exists and will lead to a higher level of loyalty. Most researchers agree that bus service quality is mainly affected by such factors as driver behaviors, service frequency, fleet conditions, and waiting environment at stations. Among those factors, driving behavior is the most difficult one to measure and monitor. Aberrant behavior by bus drivers, such as errors (e.g., insufficient engine preheating or idling at start-up, improper gear shift in changing speed, breaking too quickly on a slippery road) and traffic violations (e.g., speeding, close following, chasing and risk overtaking, expressing hostility toward other road users, driving in other aggressive manners) not only downgrade passenger safety and comfort; they also increase vehicle wear, increase fuel consumption, and increase emissions. These situations might cause a vicious circle in diminishing passengers' patronage and raising the operating costs. As a consequence, the bus operator might gradually lose its market share to the competitive modes. Compared with well-behaved drivers, bus drivers showing aberrant behavior receive many more complaints from the

TABLE 3 Confirmatory Factor Analysis of Passenger Loyalty Model: Estimation Results

	Factor Loadings	*t*-Values	Reliability
Factor 1. Service quality			0.752
S_1 Onboard amenity	0.903	6.4	0.815
S_2 Crews' attitude	0.769	10.9	0.591
S_3 Station performance	0.739	7.0	0.546
S_4 Operational performance	0.755	6.4	0.570
Factor 2. Satisfaction			0.702
Y_1 I was interested in taking this bus.	0.568	8.2	0.323
Y_2 I was delighted to take this bus.	0.749	9.5	0.561
Y_3 Overall, I was satisfied with this service.	0.840	9.9	0.706
Y_4 The perceived service was better than the expectation.	0.837	10.3	0.701
Y_5 The perceived service was equivalent to my ideal service.	0.777	11.3	0.604
Factor 3. Sacrifice			0.696
Y_6 The bus waiting time was acceptable.	0.791	11.7	0.626
Y_7 The bus travel time was acceptable.	0.713	10.1	0.508
Factor 4. Service value			0.771
Y_8 Compared with time and money I gave, the service was valuable.	0.816	10.0	0.666
Y_9 At the price I paid, the service was acceptable.	0.815	10.4	0.664
Y_{10} It was worth taking this bus carrier rather than the others.	0.788	11.0	0.621
Factor 5. Switching costs			0.814
Y_{11} I would spend a significant amount of time, effort, and money to switch to other bus carriers.	0.956	7.8	0.914
Y_{12} I would pay extra time to look for other bus carriers.	0.718	8.1	0.516
Factor 6. Attractiveness of competitors			0.759
Y_{13} Other bus carriers could satisfy me more.	0.762	10.7	0.581
Y_{14} It would be joyful to switch to other bus carriers.	0.833	9.7	0.694
Factor 7. Trust			0.863
Y_{15} I believed the bus carrier provided the best service.	0.863	11.1	0.745
Y_{16} The bus carrier offered a constant quality of service.	0.895	9.5	0.801
Y_{17} Overall, I trusted this bus carrier.	0.876	9.7	0.767
Factor 8. Passenger loyalty			0.776
Y_{18} The likelihood of taking the same bus carrier is very high.	0.793	6.5	0.629
Y_{19} I would like to recommend this bus carrier to my friends.	0.891	9.9	0.794
Y_{20} I would like to take this bus carrier next time.	0.848	7.2	0.719
Y_{21} At the same price and quality, I would make the same choice.	0.707	11.4	0.500

NOTE: GFI = 0.926, AGFI = 0.909, CFI = 0.964, NNFI = 0.955, NFI = 0.941, RMR = 0.050, RMSEA = 0.046, $\chi^2/df = 2.468$.

passengers. Hence, it is always important for the managers to monitor bus drivers efficiently and effectively by introducing innovative digital tachometers and to modify or correct aberrant behaviors by introducing training programs and incentive schemes as detailed in Lan and Kuo (*29*).

A number of extensions to this research work could be considered. Corporate image might be an important variable affecting passenger loyalty, as demonstrated by Zins (*12*). Future research could examine the relationship between corporate image and passenger loyalty in intercity bus service. This research has achieved encouraging empirical results for the intercity bus service in Taiwan. Similar studies in other countries deserve to be explored so that there can be further examination of the robustness of the passengers loyalty hypotheses with respect to the aforementioned latent factors.

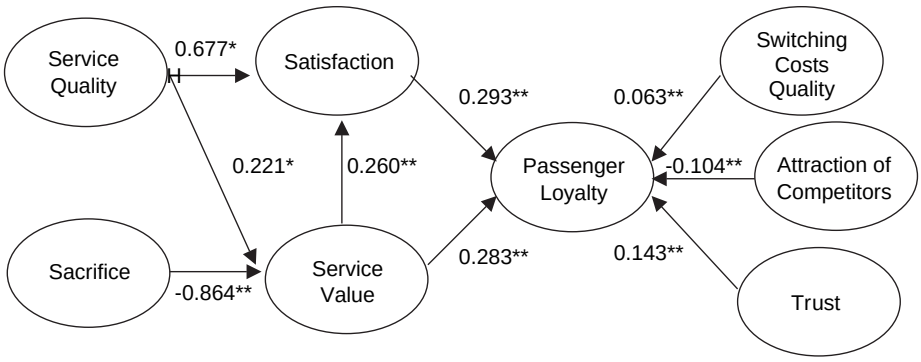

FIGURE 2 Structural equation model: estimation results (*$p < 0.01$, **$p < 0.001$).

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