臺鐵乘客服務價值、滿意度、移轉障礙與行為意向之研究

Service Value, Customer Satisfaction, Perceived Switching Barriers and Behavioral Intention of the TRA Services

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摘要

　　本研究旨在建立鐵路乘客行為意向區隔分析模式，並以臺鐵城際旅客為例，進行模式驗證。按事前區隔原則，研究以乘客年齡與旅次目的作為兩大類別市場區隔變數，將城際旅客市場進行六大區隔，透過結構方程模組，分析並比較各區隔市場乘客之服務價值、滿意度與移轉障礙對消費行為意向的影響效果差異。按面對面訪談所得之 803 份城際乘客問卷，進行實證分析，研究歸納出各區隔市場之消費行為意向差異：年輕與中壯年乘客在進行上學與工作旅次消費時，其意向主要受服務價值驅使，但在進行休閒消費時，則改為以滿意度為主導之行為意向，退休乘客族群則不分旅次目的，將移轉障礙作為其主要的消費行為意向元素，最後，研究並驗證所假設之乘客滿意度對服務價值與移轉障礙的交互影響效果。

關鍵詞：鐵路乘客、行為意向、市場區隔、結構方程模組

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Abstract

This study constructs an analytical model to examine customer behavioural intentions in a railway service market by segment. An intercity railway service in Taiwan is selected as the case study. Structural equation modelling is used to compare the simultaneous and interactive effects of service value, satisfaction, and switching barriers of six market segments categorized using two variables, traveller age and travel purpose. The total size of samples collected through face-to-face interviews was 803. The study concluded that traveller behavioural intentions vary with segment. Young and middle-aged users travelling to school and work are value-driven. However, when travelling for leisure, they become satisfaction-prone. The mature group is driven by switching barriers, irrespective of travel purposes. Finally, traveller satisfaction is statistically associated with service value and switching barriers.

Keywords: Rail service, Market segmentation, Behavioural intention, Structural equation modelling

1. Introduction

Railway services are a key mode of travel in many countries, generating large potential markets. It is generally regarded as a typical mass market service in service classifications (Dotchin and Oakland, 1994; Silvestro *et al.*, 1992). Market segmentation is thus necessary to identify and appreciate different traveller preferences for service differentiation (Bock and Uncles, 2002; Daley and Martin, 1988; Hahm *et al.*, 1997). However, investigation of traveller behavioural intention (BI) by market segment has rarely been undertaken in previous studies.

A complete understanding of traveller BI is basic yet necessary information for the successful implementation of marketing practices. In the marketing literature Customer BI are viewed as important indicators of whether customers will remain with, or defect from, their service providers (Engel *et al.*, 1995; Kumar *et al.*, 1999; Zeithaml *et al.*, 1996). Given current competition between modes, railway operators globally face a similar dilemma of markets. To ensure their survival, organisations have been transformed into market-oriented institutions. Assessments of the elements of customer BI have become essential in justifying marketing strategy choices.

With the foregoing in mind, this study constructs an analytical model to examine customer BI in a railway service market by customer segment. The western line of the arterial route of Taiwan railway system (a corridor roughly 400 km in length) was selected as the case study for demonstration purposes. The railway system is state-owned under the Ministry of Transportation and Communications (MOTC). Budgeting, staffing, and project planning and implementation are strictly regulated by the government. Regrettably, political interference in the operations of the company has had a disruptive effect on the

railway's organisational and services reengineering. A new but powerful competitor of high speed rail system emerged in 2007 and further worsened the situation. Thus railway operations in Taiwan have gradually become more marketing-oriented. Surveys on customer satisfaction have become a regular feature of railway marketing. However, customer information has not been systematically analysed and marketing strategies lack a solid empirical basis. In the mass railway service market, the need to segment the market by customer behavioural intention has been broadly recognized by management, but has not been achieved in practice.

In antecedent factor analysis, previous BI studies have focused largely the service value or/and satisfaction effects (Cronin *et al.*, 2000). Competition effects have been neglected. Recently, the link between perceived switching barriers and customer retention has received increasing attention. But in most cases, it was justified alone (Colgate and Lang, 2001; Keaveney, 1995). Rare study to date has investigated these constructs in a single framework. The examination of only a limited subset of the effects may confound our understanding of consumer behaviour (Cronin *et al.*, 2000; Ostrom and Iacobucci, 1995). Thus, we construct a BI model made up of the three antecedent factors of service value, satisfaction and perceived switching barriers, and their mutual associations in order to assist in predicting traveller's intentions between different segments.

To address these issues, we use structural equation modelling (SEM) to compare the simultaneous and interactive effects of three constructs, service value, satisfaction and perceived switching barriers, on traveller BI. Factors associated with the constructs were first tested using confirmatory factor analysis. This was followed by evaluation of the causal relationships by segment using regression analysis. Based on the SEM analysis and the model fit, we are able to compare the effects of the three constructs across the segments identified in the travel service market.

2. Theory and Research Hypotheses

In this study we used four latent variables, the three constructs of service value, satisfaction, and perceived switching barrier, and the dependent variable of behavioural intention, in the established model. Constructs used in other BI models; such as service quality and costs, can be implied from the corresponding constructs to simplify the analytical structure (Brady *et al.*, 2001; Oh, 1999). Based on previous study, five hypotheses were constructed to express possible relationships. The framework was originally established by Chang (2004). But some doubts are raised from his definitions over the constructs and thus the associated items measured. Besides, the results are suspicious from his sample size that is evidently very insufficient to support a

segmentation practice. To address these weaknesses, we first identified the four constructs based on the literature survey. Thereby, we tested the face validity of the items proposed using a focus-group style meeting, consisting of 5 professionals, including 3 practitioners in charge of customer service from railway authority, and 2 academics from related fields. The experts were asked to write down the important variables from their own perspectives, based on the references provided. After discussion, the group members reached a consensus and a general perspective on the items was found. Accordingly, we identified 23 factors associated with the four constructs, as shown in Fig. 1 below. They are illustrated in the following sections.
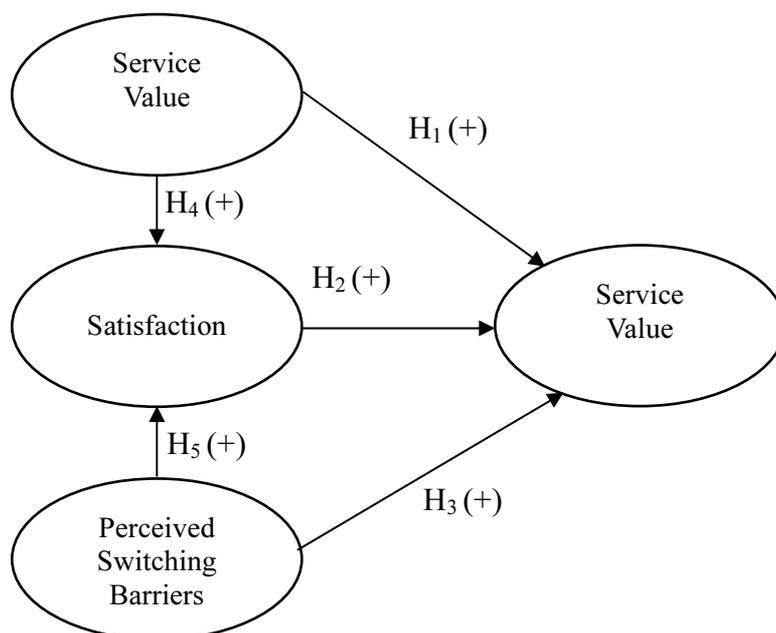

Fig. 1 Framework and hypotheses

2.1 Effects of Service Value

Service value represents a cognitive tradeoff between the benefits and costs that customers perceive in the service (Monroe, 1990). Service value is conceptualized as the consumers' evaluation of the utility of perceived benefits and perceived sacrifices (Zeithaml, 1988). That is, consumers may cognitively integrate their perceptions of what they get (*i.e*., benefits) versus what they have to give up (*i.e*., sacrifices) in order to receive services. Service value thus varies due to the subjective perceptions and assessments of customers (Bolton and Drew, 1991; Lovelock, 1996). Many studies have concluded that a consumer decision to maintain an existing relationship with a service provider is based on the value he/she acquired (Bolton, 1998; Sirdeshmukh *et al.*, 2002). Accordingly, we hypothesize that travellers indicate positive intentions towards the service provider

as long as such relational exchanges provide superior value, yielding H1:

H_1: Service value has a positive influence on behavioural intentions.

In essence, rail service consumption is a derived demand (Coyle *et al.*, 2002; Kanafani, 1983; Manheim, 1979; Ortuzar and Willumsen, 1994). In other words, a traveller who requires rail service seeks benefits from the events that occur secondarily to the rail service, such as a job, a visit, or leisure activity. However, these benefits are subjective and dynamic depending on the individuals and scenarios. Unlike derived benefits, the costs of travel services are tangible and measurable. In the general choice model, they can be classified into two categories: out-of-pocket costs, and travel time. Note that feeder costs are inevitable for an intercity service in which trains stop every 40 kilometres on average. Feeder costs thus can be significant.

We identified five service values that compare the travellers' derived benefits from consuming the rail service with the costs of consumption, including two out-of-pocket costs of using the rail service (V1) and feeder services (V2), and three time costs, waiting for the rail service (V3), using the rail service (V4), and using the feeders before and after the rail service (V5).

2.2 Effects of Satisfaction

Satisfaction was the customer's fulfillment response and it was a judgment that a product or service feature, or the product or service itself, provided a pleasurable level of consumption-related fulfillment (Oliver, 1997). Satisfaction is broadly defined as the consumer's response to the evaluation of the perceived discrepancy between prior expectations and the actual product performance as perceived after its consumption (Ganesh *et al.*, 2000; Lemon *et al.*, 2002; Oliver, 1999). Generally, satisfaction occurs whenever the difference between expected and experienced tends to be small. Studies have found that stated repurchase intention is positively related to stated satisfaction across service categories (Anderson and Sullivan, 1993; Gerpott *et al.*, 2001; Söderlund, 1998). We hypothesized this causal relationship as H_2.

H_2: Satisfaction has a positive influence on behavioural intentions.

Rail services are constantly being developed in response to strict modal competition. Improvements in customer satisfaction have thus expanded from conventional features of availability, convenience, punctuality, and safety/ security, to more individualized services (Drea and Hanna, 2000; Friman *et al.*, 2001; Hanna and Drea, 1998; Tripp and Drea, 2002). Given this evolution, we have identified eight satisfaction factors for analysis. They include the

frequency of scheduled trains indicating service availability (S1); convenience in accessing travel information (S2), and reserving ticketing/seats (S3); service punctuality (S4); passenger pleasure relating to the cleanliness and decorations in the station and coach sections (S5) and to the general courtesy and service manner of the service staff (S6); passenger physical comfort from the seat design and leg room (S7); and finally, passenger concerns about safety and security (S8).

2.3 Composition of Perceived Switching Barriers

The idea of switching barriers refers to factors that make it more difficult or costly for consumers to change service providers (Fornell, 1992). When switching barriers are substantial or the switching processes especially painful, dissatisfied customers are likely to maintain business relationships with existing service providers and resist the dissolution of the relationship (Jackson, 1985). Earlier studies have implied that switching barriers should encompass the perceived switching barriers (Aydin *et al.*, 2005; Jones *et al.*, 2000; Ranaweera and Prabhu, 2003). Academic evidence indicates a positive relationship between perceived switching barriers and behavioural intentions (Bitner, 1990; Colgate and Lang, 2001; Jen and Hu, 2003; Jones *et al.*, 2000; Keaveney, 1995; La and Kadampully, 2004; Patterson and Smith, 2003). That is, the greater the perceived switching barriers, the greater the chance the passengers will remain. Thus, we construct hypothesis H_3.

H_3: Perceived switching barriers have a positive influence for rail on behavioural intentions.

Based on the literature and on the specifics of our research, we categorized the perceived switching barriers into four dimensions: traveller psychological factors, service failure recovery, customer switching costs, and the attractiveness of service alternatives. Railroads have a long history and the vast majority of individuals are familiar with them. Given this, we thus constructed two items, including passenger habit of using rail service (B1) and passenger risk perception in switching travel mode (B2) as the psychological factors. In addition, service failure recovery is a strategic issue. It is important because mistakes and failures are unavoidable in service sectors. Customer delight with service failure recovery will create positive word of mouth and higher repurchase intentions than is the case for dissatisfied, non-complaining customers (Andreassen, 2001). Good service failure recovery can lead to customers changing their mind about switching from their service provider (Colgate and Lang, 2001). Compared with the private service sector, service at the state-run railway authority is often perceived to be inflexible. Service failure recovery (B3) is thus an important item for consideration.

In the switching cost dimension, we identified three switching costs after consideration of the competitive environment. They include additional out-of-pocket costs (B4); additional travel time (B5); and additional physical and mental hassle (B6) required for a service switch to rail's main competitors, the intercity bus system. The national railway service is the only rail service on the island, but there is strong competition from the intercity bus companies that have emerged following the completion of the comprehensive highway network in the 1990s. Coach service is generally cheap, easily accessible, and relatively luxurious in its on-board seating and services, offering movies, video games, snacks, and blankets. However, travel time is unreliable due to unpredictable road traffic conditions. Meanwhile, because of high land prices in Taiwan, highway coach terminals are poorly located and improperly organized, leading to customer inconvenience. Finally, as the highway coach services frequently carry out promotions, attractiveness of the service alternative (B7) is also noted as a component in switching barriers.

2.4 Composition of BI

In a number of studies, repurchase intention and word-of-mouth were often justified as appropriate indicators of BI in many studies (Dawn and Powers, 2004; Oh, 1999). These indicators can be expressed in either a positive or negative manner (Morgan and Hunt, 1994; Ranaweera and Prabhu, 2003; Zeithaml *et al.*, 1996). But Effects of these two items are different and they are not mutually included. Past research suggests using both measures simultaneously for comparison (Ennew *et al.*, 2000; Mangold *et al.*, 1999; Richins, 1983). Thus, we identified three indicators, including repurchase intention (namely I1), positive word-of-mouth (I2), and negative word-of-mouth (I3).

2.5 Interactions of the Three Independent Variables

In addition to the effects of the three constructs of customer BI, we also investigated the possible relationships between the three constructs. Two hypotheses, H_4 and H_5, were constructed to correlate service value and perceived switching barriers with satisfaction:

H_4: Service value has a positive effect on satisfaction

H_5: Perceived switching barriers have a positive effect on satisfaction.

These two hypotheses have often been individually tested in earlier studies. However, a simultaneous effect in a structured model has yet to be found in a

mass market service case. Empirical studies of the service industry have found a strong relationship between customer value and satisfaction (Andreassen and Lidestad, 1998; Fornell *et al.*, 1996; Park *et al.*, 2004). The service literature argues that customer satisfaction is the result of a customer's perception of the value received (Athanassopoulos, 2000; Hallowell, 1996). When customers perceive services to have a high degree of value, they feel satisfied with the service provider (Cronin *et al.*, 2000; Eggert and Ulaga, 2002). On the other hand, relationships between satisfaction and perceived switching barriers have been found in different studies (Burnham *et al.*, 2003; Jones *et al.*, 2000; Ranaweera and Prabhu, 2003). Further, researchers conclude that switching barriers exhibit a moderating effect on satisfaction for behavioural intentions (*e.g.* Balabanis *et al.*, 2006; Chatura and Jaideep, 2003; Fornell, 1992). In other words, customer satisfaction is higher when facing higher perceived switching barriers, and *vice versa*. Besides, given the high correlation between perceived value and customer satisfaction, it may be assumed that a switching barrier may impose a similar impact on customer perceived value (Yang and Peterson, 2004). A core proposition is that satisfaction should play a minor role in repurchase intentions when barriers are high and a great role when barriers are low.

3. Segments and Methodology

3.1 Travel Market Segmentation by BI

To examine the potential BI differences for rail travellers, we categorized the service market into segments. Market segmentation clusters customers with similar preferences. For the purposes of marketing, a market segment should be: sufficient in size, identifiable, stable, and accessible in terms of marketing costs (Schiffman and Kanuk, 1994). A sufficient segment size may increase recognition of market differences, and may also increase marketing costs. As the railway is presently operating in the red, heavy marketing costs are not feasible.

To avoid creating large market segments, two important categorical variables, customer age and trip purpose, were used in the segmentation method. These demographical and behavioural variables were considered to be stable and identifiable in earlier work. Between them, the demographical age is macro-segmentation based, whereas trip purpose is attributed to micro-segmentation (as behavioural variables) (Hofstede *et al.*, 1999; Luqmani *et al.*, 1994; Smit *et al.*, 2000). In the beginning of TRA's marketing segmentation, the combination of these two variables signifies a complete segmentation design contributing to future references.

Age is an important customer demographic that is often used in calibrating consumption behaviours (Andreassen, 1995; Drea and Hanna, 2000). It signifies

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the physical and social status of travellers that reflects generational differences in consumption behaviour (Auty, 1992; Muller, 1989). Age has been used in most service industries in formulating segmentation strategy (Auty, 1992; Holbrook and Schindler, 1996). In accordance with the local social structure, the age variable is categorized into three levels, the young (under 25 years of age, indicating a possible student status), the middle-aged (between 25 and 55 years of age, probably in the work force), and the mature (over 55 years of age, the legal age for retirement in Taiwan).

Trip purpose is often selected as the effective segmentation variable (Daley and Martin, 1988; Drea and Hanna, 2000). Studies on transport demand have found that traveller consumption behaviours are often associated with their trip purposes (Aksoy *et al.*, 2003; Krizek, 2003). As stated earlier, consumption of transport service is a derived demand. Travel is desirable not in itself but because passengers want to go somewhere. Passenger consumption behaviour may thus differ by trip purpose. Based on the customer analysis of the intercity service studied, customer trip purposes were broadly divided into two categories: social activity (including trips for school, work, and visiting others), and leisure. One is very different from the other, although subtle difference might exist within the dimension of social activity. We simplify it to avoid creating a large size of market segments. Interacting with the level of age category, six segments are identified for study, as indicated in Fig. 2 The segments identified are considered to be stable, effectively applicable to railway passenger characteristics, sufficient and, more important accessible, considering the marketing cost for future practices.
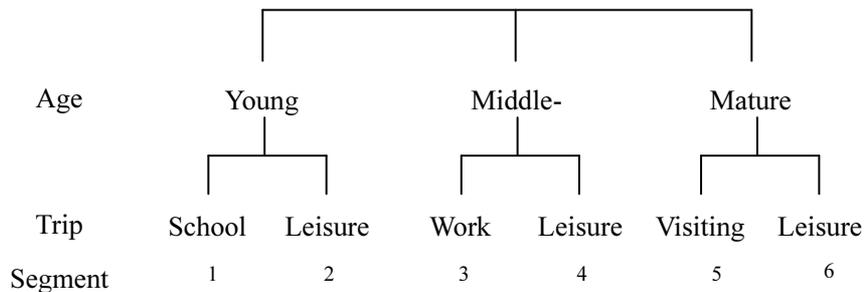
Age	Young		Middle-		Mature	
Trip	School	Leisure	Work	Leisure	Visiting	Leisure
Segment	1	2	3	4	5	6

Fig. 2 Segments of the travel market

3.2 Survey and Calibrations

We carried out a survey to obtain data. The survey questions are based on the 23 items previously identified (see Appendix for questionnaire). A five-point Likert scale was used on each questionnaire item, indicating the level of agreement scaled from 1 (strongly disagree) to 5 (strongly agree). To reduce response bias, we also arranged a pilot study lasting for two weeks prior to the formal survey.

The survey was conducted at the intercity train stations (with official permission of TRA) to gain easy access to the respondents and to enjoy sufficient time for the answers. Respondents were selected based on their travel distance (over 150 kilometres) to avoid metropolitan customers. Using face-to-face interviews, each item was carefully explained to the participants. Each interview was completed in approximately 15 to 20 minutes. Although there is no correct rule for estimating sample size for SEM, a size ranging between 100 and 200 is recommended (Hair *et al.*, 1995). Together, the total size of the valid sample was 803, of which the size for each segment ranged from 125 to 140.

A number of studies have used choice models to analyze traveller behaviour towards public transport service. However, conventional models have ignored psychological and social factors and have encountered difficulty in providing an accurate representation of consumer preferences (Friman *et al.*, 2001; Jen and Hu, 2003). Alternatively, structural equation modelling (SEM) has been increasingly applied to investigate the causal relationships among the various constructs that comprise travel behaviour. Many of these studies have found a significant relationship between socio-demographics, service activity and travel behaviour (Kuppam and Pendyala, 2001). Structural equation modelling was used to assess the hypothesized causal relationships. SEM provides a highly flexible and powerful means to simultaneously assess the measurement and predicted relationships. It has been widely applied in market research to compare relationships between constructs across different markets or market segments (Hair *et al.*, 1995; Kuppam and Pendyala, 2001).

Our model calibrations follow the two-step procedure recommended to achieve a better model fit (Anderson and Gerbing, 1988; Hulland *et al.*, 1996). In the first step, we performed confirmatory factor analysis by testing construct reliability and convergent validity. The purpose is to verify the measurement model and describe how well the observed indicators serve as a measurement instrument for the latent variables. Once the measurement model is validated, we conducted the second step, estimating the structural relationships (path analysis) between latent variables. STATISTICA 8.0 software was utilized for computations. The analysis process and corresponding results are detailed as follows.

4. Results

4.1 Confirmatory factor analysis

Confirmatory factor analysis (CFA) is used to justify a measurement model that achieves an acceptable fit to the data. Instead of explore factor analysis, this research applied CFA with the situation of a priori hypothesized factor structure

defined (Marsh and Richards, 1987). CFA could uniquely estimate relations between observed variables and the latent factors, examine the fit of models to data, and compare the ability of alternative models in fitting the same data. It starts with the reliability test, followed by validity tests. The reliability test examines the internal consistency of the items that are used to measure a latent construct. The coefficient of Cronbach's α is the most commonly used evaluation index. The results of the reliability test conclude that the sampling data has achieved an acceptable level, as the Cronbach's α coefficients of the four latent variables are measured as ranging from 0.81 to 0.91, which are all over 0.6 - the critical value recommended by Nunnally (1978).

Validity tests were conducted to examine the accuracy of the measurements. In most cases, convergent validity is tested. Convergent validity is the extent to which the latent variable correlates to items designed to measure the same latent variable (Garver and Mentzer, 1999). To test the convergent validity of the measurement model, we calculated the fit indices, including χ^2/df (chi-square value divided by degree of freedom), GFI (goodness-of-fit), AGFI (adjusted goodness-of-fit), CFI (comparative fit index) and RMSEA (root mean square error of approximation). In these tests, the manifests were sequentially eliminated as their normalized residuals exceed 2.0 (Hatcher, 2002). Models are stepwise modified to improve the fit indices. Tab. 1 indicates the result of a good fit by segment.

Tab. 1 Results of convergent validity tests by segments

Segment	Manifests sequentially dropped	χ^2/df*	GFI**	AGFI**	CFI**	RMSEA***
1	$V_1+V_4+S_1+S_6+B_1+B_3$	2.379	0.920	0.912	0.910	0.044
2	$V_1+V_2+S_4+S_8+B_4+B_3$	2.241	0.911	0.904	0.901	0.048
3	$V_3+V_5+S_1+S_6+B_1+B_3$	1.879	0.925	0.914	0.917	0.049
4	$V_3+V_4+S_1+S_2+B_7+B_3$	2.296	0.941	0.938	0.924	0.053
5	$V_1+V_3+S_1+S_8+B_1+B_3$	1.482	0.944	0.932	0.918	0.056
6	$V_1+V_5+S_7+S_8+B_1+B_7$	2.967	0.929	0.915	0.906	0.054

Values indicate a good fit: (Jöreskog and Sörbom, 1993; Hoyle, 1995)
*Value of χ^2/df below 5
**Values of GFI, AGFI and CFI values close to 1
***Values of RMSEA below 0.06

4.2 Structural regression analysis

Structural regression analysis using the generalized least squares (GLS) method was used to examine the causal relationships. The STATISTICA 8.0 software carries out the work in an iterative manner that selects values for model parameters in such a way that at each step, the distance between the covariance matrix and the observed covariance matrix is reduced until no further improvement in the fit function can be achieved. The iteration process

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converges if at some step the fit function does not change by more than 0.000001 (Raykov and Marcoulides, 2000).

The results associated with the six market segments are summarized in Tab. 2. There is a fairly good fit in general for each of the six segments according to the values of test indices presented in the lower section of the Tab. 1. Significance tests of the standardized parameters reported in the upper section of Tab. 1 show the effects of the three constructs by segment. It was found that service value (H_1) and satisfaction (H_2) all affected customer behavioural intentions across the six segments, whereas, the effects of perceived switching barriers (H_3) were selectively present in four segments (except for leisure trips of young and middle-aged users). In addition, between the three independent constructs, the effects of service value and perceived switching barriers upon satisfaction (H_4 and H_5) were both significant in this service market.

Tab. 2 Results of path analysis by segment

Segments	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
HypothesesStandardized parameter estimate						
SV→BI(H_1)	0.499**	0.362*	0.553*	0.276*	0.308**	0.371*
SAT→BI(H_2)	0.324*	0.462*	0.488**	0.470**	0.238*	0.319*
PSB→BI(H_3)	0.297*	ns	0.352*	ns	0.457**	0.446**
SV→SAT(H_4)	0.492*	0.229*	0.711**	0.256*	0.425**	0.404**
PSB→SAT(H_5)	0.481*	0.217*	0.419**	0.231*	0.298*	0.331*
*p<0.05　　**p<0.01						
Test indices						
$\chi^2/df*$	2.437	1.674	2.446	2.826	1.324	2.560
GFI**	0.928	0.930	0.923	0.920	0.948	0.910
AGFI**	0.917	0.921	0.917	0.916	0.926	0.892
CFI**	0.884	0.928	0.909	0.903	0.917	0.886
RMSEA***	0.059	0.049	0.058	0.055	0.051	0.050
Test Results	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied	Satisfied

The effects of the three constructs on customer BI vary with segment. The results of Fig. 3 are a summary of Tab. 2 that presents a fairly good fit in general for each of the six segments according to the values of test indices presented in the lower section of the Tab. 2. Based on the estimates of the standardized parameters relative to each segment, we regrouped the six segments into (service) value-driven, satisfaction-driven and (perceived switching) barrier-driven, as indicated in Fig. 3 Between the three constructs accounting for customer BI, service value is the most effective factor in the Segments 1 and 3, which are defined as value-driven segments. On the other hand, satisfaction is the most concerned by Segments 2 and 4, whereas perceived switching barrier by Segments 5 and 6.

	Young users	Middle-aged users	Mature users
Social activity	S1 Value-driven (schooling)	S3 Value-driven (jobbing)	S5 Barrier-driven (visiting)
Leisure	S2 Satisfaction driven	S4 Satisfaction driven	S6 Barrier-driven

Fig. 3 Drivers of traveller BI by segments

Between the segments, young users travelling for school purposes (Segment 1) and middle-aged users on business (Segment 2) are found to be driven by service cost/value, followed in sequence by satisfaction and perceived switching barrier. Conversely, when they consumed the service for leisure purposes (Segment 2 and 4), satisfaction became more important than service value, and the perceived switching barriers exerted no statistical effects. Mature customers (Segments 5 and 6) were assessed to be barrier-driven, regardless of trip purpose. Following the switching barriers, service value was slightly more effective than satisfaction in affecting mature customer BI. In the analysis of the two interactive effects, service value was found to produce a similar effect to perceived switching barriers upon customer satisfaction in general, except for two segments, Segments 3 and 5 (middle-aged passengers travelling for business and mature passengers travelling for visiting others) in which customer satisfaction is more associated with service value than perceived switching barriers.

5. Discussion and Managerial Implications

Rail service is provided to serve a mass market. Recently, following the move towards global privatization, mass travel services have been opened to new entrants. These service organisations have been transformed by competition. Studies on traveller behavioural intentions have thus become increasingly important. In this changing service environment, traveller BI analysis must be carefully undertaken to avoid information bias. In the railway service case, traditional choice models justified service cost as the only factor that affects rail passenger behaviour. However, models using service cost may lack comprehensiveness and accuracy. The results of our empirical study indicate

that, in addition to the service value, satisfaction and switching barriers were both statistically significant in affecting traveller BI.

Our results showed that traveller behavioural intentions may vary from segment to segment. Of the six segments identified, young customers travelling for school and middle-aged passengers travelling for business were found to be value-driven. As travel services have become more widely available in Taiwan, living patterns changed and economic activities have intensified. More young and middle-aged users regularly travel between home and school/job. Frequent travellers are conservative in their service expenditures. This is apparent for students who are financially dependent and middle-class workers who use the railway instead of expensive air services. To target potential frequent users, pricing can be an effective marketing practice. Further, as the feeder costs for using intercity services become more noticeable to travellers, modal integrations such as timetable coordination, free transferring and joint promotions, could be considered to further mitigate passenger travel costs.

Interestingly, when young and middle-aged users travel for leisure, they become satisfaction-driven. In the changing consumer culture, people are willing to pay more for the quality of leisure activity. At the same time, the analysis indicates that passenger expectations towards the rail service were growing. The services preferred have statistically moved away from conventional categories (on-time service, and safety/security performance) to those that focus on customer psychological and physical needs (courtesy of staff, service manner upon requests, and physical comfort). In competitive markets, rail service is becoming more individual-oriented.

To improve customer satisfaction, differentiation in service products, notably modular and customized services, should be considered. The practices have been broadly seen in airline service industry (Aksoy *et al.*, 2003; Park *et al.*, 2004).

Switching barriers are found to generally appear, except in the leisure groups of young and middle-aged customers (travellers on casual leisure trips tend to avoid the bother of searching for service alternatives and information). Analysis of switching barrier variables shows that psychological factors are less effective in general. Customer habits, in particular, are statistically invalidated in building switching barriers. The import of this finding is profound: in a rapidly developing society, people may become used to switching, even from a provider they have long used. Conversely, service failure recovery may have effects on customer service switching, in particular for frequent travellers who have used the service for a long time. In most cases, switching costs are perceived as a barrier. Mature travellers are in particular strongly driven by the cost barrier. Culturally, the mature generation is more frugal, given that their formative years were in a time when Taiwan was much poorer. They tend to shop more diligently to economize their consumptions for a future unexpected

expense. Similar evidence has been seen in previous consumer studies (Holbrook and Schindler, 1996; Laroche *et al.*, 2004; Moschis, 1991).

To make cost barriers robust, pricing, promotion and service augmentation should be explored. For users who frequently travel with intercity services, rail operators should establish favourable ticketing systems, such as a rail pass or multiple ticket passports. Travellers subscribing to such ticketing systems for their cheaper travelling cost incur an expensive out-of-pocket cost when they switch. Meanwhile, to safeguard the market for mature users, fares can be discriminated by time periods as they are comparatively time-insensitive. In addition, rail operators should intensify the promotion of their services. As time is economically valuable, this may effectively increase the customers' perceptions of the benefits of a switch. Apart from the travel time, passengers are also concerned with the additional inconvenience and hassle required to switch transportation services. In a busy, congested society, public transport passengers often experience stress when catching scheduled services. Rail terminals in Taiwan are spacious and located in good business locations (having been constructed in downtowns). They can be used to better react to customer complex needs before and after their journey and create a hassle-free service environment. The range of services can be broadened to include business services, public utilities, shopping, and recreation. Such service augmentations may prevent customers from defecting and increase revenue (Gaby *et al.*, 2003; Storey and Easingwood, 1998).

6. Conclusion and Future Research

Based on the analysis of the three constructs of BI, we conclude that service value is positively associated with customer satisfaction, whereas perceived switching barriers are negatively associated with satisfaction. These results are consistent with those seen in other service markets (Brady *et al.*, 2001; Jones *et al.*, 2000). Our sensitivity analysis indicates that the inclusion of the two interactions of the three constructs into the SEM analysis greatly improves the model fit. The effects of the three constructs on customer BI were thus better interpreted. Future study should explore the link between service value and perceived switching barriers. Meanwhile, the moderating effects of perceived switching barriers should be further investigated.

Finally, the main study limits lie with the insufficient customer and market information provided by the rail authority. Important information, such as passenger demographics, trip purpose, and consumption intensity, are absent. Due to budget and human resource constraints, we used only age and purpose as stable and identifiable measures. However, this reduced our ability to more finely segment the market and examine the differences in BI. Where the market data is sufficiently available, segmentation variables can be further tested to

produce more implication on strategy. But again, a sufficient segment size may increase recognition of market differences, and may also increase marketing costs.

Acknowledgements

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Appendix

編號：　　　　　　　　　　　調查時間：　　　　調查員：

各位先生、女士您好：

　　這是一份有關台鐵**旅客行為意向**研究之問卷，目的在於瞭解您對台鐵服務之實際知覺感受，煩請撥冗填寫。本調查結果僅供學術研究使用，您寶貴的意見與所填寫的資料將不對外公開，敬請安心作答，在此向您致上由衷的感謝。敬祝

旅途愉快

第一部份：旅客知覺及行為意向資料

說明：請依照**本趟旅行**，針對題目的敘述勾選您的同意程度。

	非常不同意	不同意	普通	同意	非常同意
1. 我認為臺鐵的票價是可以接受的	☐	☐	☐	☐	☐
2. 我認為從出發地到車站所需花費的「金錢」是可以接受的	☐	☐	☐	☐	☐
3. 我認為搭乘臺鐵所需的車內時間是可以接受的	☐	☐	☐	☐	☐
4. 我認為從出發地到車站所需花費的「時間」是可以接受的	☐	☐	☐	☐	☐
5. 我認為在搭乘臺鐵前所需的等車時間是可以接受的	☐	☐	☐	☐	☐
6. 我對於臺鐵的班次密集程度感到滿意	☐	☐	☐	☐	☐
7. 我對於取得臺鐵時刻表資訊的容易程度感到滿意	☐	☐	☐	☐	☐
8. 我對於購買臺鐵車票的容易程度感到滿意(包括站票及座票)	☐	☐	☐	☐	☐
9. 我對於臺鐵的準點程度感到滿意	☐	☐	☐	☐	☐
10. 我對於臺鐵整體的清潔程度感到滿意	☐	☐	☐	☐	☐
11. 我對於臺鐵人員服務的禮貌程度感到滿意	☐	☐	☐	☐	☐
12. 我對於臺鐵車廂內座椅的舒適程度感到滿意	☐	☐	☐	☐	☐
13. 從臺鐵行使安全性的觀點來看，我認為臺鐵的服務是值得的	☐	☐	☐	☐	☐
14. 我習慣搭乘臺鐵	☐	☐	☐	☐	☐
15. 我擔心改搭其他交通工具(如國道客運、飛機、小汽車)的風險	☐	☐	☐	☐	☐
16. 臺鐵的服務人員能夠快速處理抱怨	☐	☐	☐	☐	☐

	非常不同意	不同意	普通	同意	非常同意
17. 改搭其他交通工具需要付出額外的金錢(優先考量的替代工具)…	☐	☐	☐	☐	☐
18. 尋找其他交通工具的服務資訊需要花很多時間………………	☐	☐	☐	☐	☐
19. 重新適應其他交通工具所提供的服務項目是很麻煩的一件事……	☐	☐	☐	☐	☐
20. 其他的交通工具可以讓我獲得更滿意的服務(如國道客運、飛機)	☐	☐	☐	☐	☐
21. 下次若有需要,我願意再次搭乘臺鐵………………………	☐	☐	☐	☐	☐
22. 我會推薦其他親朋好友來搭乘臺鐵…………………………	☐	☐	☐	☐	☐
23. 我會傳播關於搭乘臺鐵的負面資訊…………………………	☐	☐	☐	☐	☐

第二部份:旅次資料

說明:請依照您本趟旅行之旅運特性,回答下列問題。

1. 本次搭乘臺鐵的目的:
   ☐返家 ☐探訪親友 ☐旅遊 ☐公務 ☐返回工作地點(或學校) ☐其他(請說明)
2. 本次旅行的費用來源:☐公費 ☐自費 ☐部份公費,部份自費
3. 一個月平均搭乘臺鐵的次數(相同目的地):
   ☐1 次(含)以下 ☐2 次 ☐3 次 ☐4 次 ☐5 次(含)以上
4. 本次旅行搭乘車種為:☐自強號 ☐莒光號
5. 本次旅行目的地為:＿＿＿＿＿＿

第三部份:個人基本資料

1. 性別:☐男 ☐女
2. 年齡:☐18 歲以下 ☐19~29 歲 ☐30~39 歲 ☐40~49 歲 ☐50~59 歲 ☐60 歲以上
3. 教育程度:☐小學以下 ☐國中 ☐高中(職) ☐專科、大學 ☐研究所以上
4. 職業:☐學生 ☐軍人 ☐公教人員 ☐農林漁牧 ☐工 ☐商 ☐服務業 ☐自由業
   ☐家管 ☐待業 ☐退休 ☐其他(請說明＿＿＿＿＿＿)
5. 個人每月平均可支配所得:
   ☐ 1 萬元以下 ☐1 萬~3 萬元 ☐3 萬~5 萬元 ☐5 萬~7 萬元 ☐7 萬~10 萬元
   ☐ 10 萬元以上

~~問卷到此全部結束!感謝您的合作!~~

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National Chung Hsing University

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