

# Managing passenger behavioral intention: an integrated framework for service quality, satisfaction, perceived value, and switching barriers

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**Abstract** This paper seeks to improve our understanding of passengers' behavioral intention by proposing an integrated framework from the attitudinal perspective. According to the literature in marketing research, we establish a causal relationship model that considers “service quality-satisfaction-behavioral intentions” paradigm, perceived value theory, and switching barrier theory. Exploring passengers' behavioral intention from satisfaction and perceived value help to understand how passengers are attracted by the company, while switching barriers assist in realizing how passengers are “locked” into a relationship with the current company. Furthermore, in order to capture the nature of service quality, we adopt a hierarchical factor structure which serves service quality as the higher-order factor. In this study, coach industry is selected as our research subject. The empirical results, as hypothesized, show that all causal relationships are statistically significant, and perceived value is the most important predictor of satisfaction and passengers' behavioral intention. In conclusion, the managerial implications and suggestions for future research are discussed.

**Keywords** Passenger behavioral intention · Service quality · Satisfaction · Perceived value · Switching barrier

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## Introduction

Understanding passenger behavioral intentions has always been a crucial issue to transportation practitioners as well as to academics. In the field of transportations management, researchers have indicated that studies focus mainly on passengers' choice behavior by using objective and quantifiable variables (Jen and Hu 2003; Lin et al. 2008). Although previous research has identified variables which can successfully explain passenger choice behavioral, little information about passengers' underlying behavioral intentions and motivations exists. This drawback may be due to the neglect of adopting cognitive factors in the model, and research from the attitudinal perspective should be a more efficient way to understand consumer behavior (Zins 2001). Thus, it is necessary for researchers to establish an attitudinal framework in order to have a better and clearer awareness of passenger behavioral intentions.

Recently, transportation researchers began to induce some cognitive factors in discussing passengers' behavioral intentions. Among these studies, service quality is one of the most important constructs in their models, and has been found to be a major determinant of passengers' behavioral intentions (e.g., Jen and Hu 2003; Joewono and Kubota 2007; Lin et al. 2008; Park et al. 2006). However, these studies usually measure the service quality by using a single-item (Jen and Hu 2003) or average score for each dimension. This treatment does not conform to the property of service quality, which previous research has indicated to be complex and multidimensional (Grönroos 1984; Parasuraman et al. 1988). Therefore, it may not accurately reflect the concept of service quality (Dabholkar et al. 1996). In order to capture the nature of service quality, we adopt a hierarchical factor structure which served service quality as the high-order factor and the dimension as the second-order factor (Brady and Cronin 2001; Dabholkar et al. 1996; Hansen 2004; Woo and Ennew 2005). The dimensions are seen as reflective indicators of service quality, and they share a common theme represented by service quality. Constructing service quality in this way may more fully explains the complexity of human perception.

Furthermore, since the last two decades, research in marketing has shown that customer behavioral intention can be explored from three attitudinal aspects: customer satisfaction, perceived value and switching barriers. The first stream is often called the "service quality-satisfaction-behavioral intentions" paradigm (Lapierre et al. 1999; Dabholkar et al. 2000). Previous studies suggest that customers' positive behavioral intentions come from their satisfaction, while satisfaction is the result of good service quality. Specifically, satisfaction is a strong mediator of the effect of service quality on behavioral intentions (Dabholkar et al. 2000). However, this research stream primarily discusses consumer behavioral intentions from the benefit aspect.

Thus, researchers have also proposed the concept of perceived value, which simultaneously combines the benefit and cost aspects to explain customer behavioral intentions (Monroe 1991; Zeithaml 1988). In general, perceived benefits have most often been operationalized in terms of service quality (Jen and Hu 2003; Lapierre et al. 1999; Zeithaml 1988), and perceived costs have been divided into monetary prices and non-monetary prices (Choi et al. 2004; Wang et al. 2004). Existing literature also provides significant empirical evidence in support of the positive relation between service quality and perceived value, while the relation between perceived costs and perceived value is negative (Choi et al. 2004; Cronin et al. 2000; Jen and Hu 2003; Lapierre et al. 1999; Liu et al. 2005; Wang et al. 2004). Moreover, researchers show that perceived value is not only an important antecedent of behavioral intentions, but also a new paradigm that offers a more comprehensive approach than simple focus on service quality or satisfaction

(Ruiz et al. 2008). Comprehensively, the first two streams, customer satisfaction and perceived value, can help induce customers' positive behavioral intentions and minimize customers' attraction to other competitors.

However, companies can also encourage desirable consumer behavioral intentions by raising switching barriers so that customers are unlikely to change to an alternative provider. Research suggests that with the exception of customer satisfaction and service quality, switching barriers also play an important role in explaining customer behavioral intentions (Burnham et al. 2003; Huang et al. 2007; Jones et al. 2000; Liu et al. 2005; Yim et al. 2007). Furthermore, when switching barriers are high, customers find it difficult or costly to defect even if they are not very satisfied or when short-term fluctuations in service quality occur (Ranaweera and Prabhu 2003; Wathne et al. 2001). The construct of switching barrier is a crucial factor in framing a passenger behavioral intention model because public authorities usually own the infrastructure (e.g., the public road network, railroad, and airport). Thus, the transportation industry, in almost all cases, is subjected to some form of regulation or franchise authorization. Passengers encounter a monopoly or an oligopoly market under these circumstances (Quinet and Vickerman 2004), which means that they may have difficulty changing service providers as they wish. Transportation practitioners have also adopted certain marketing programs, such as frequent flier programs or other loyalty programs, to “lock” passengers into a relationship with the current provider. Therefore, the inclusion of switching barriers in our research model should assist in realizing passenger behavioral intention.

In sum, the main purpose of this study is to explore passenger behavioral intentions from cognitive viewpoint, while most transportation studies focus on passengers' choice behavior. More specifically, our study is to construct an integrated framework that combines the three major research streams from marketing literature, including customer satisfaction, perceived value, and switching barriers. Although some transportation researchers have done in this manner (e.g., Jakobsson et al. 2000; Jen and Hu 2003; Lin et al. 2008; Park et al. 2006), their studies contain one or two of the major theories. Our research model carries the relationships among service quality, perceived costs, customer satisfaction, perceived value, and switching barriers in their prediction of passenger behavioral intentions. Moreover, a hierarchical structure is adopted to frame the relationship between service quality and its sub-dimension, which may be more applicable to explaining human perception processes. Thus, we believe that our model provides a more complete framework to explain passengers' cognitive process. Broadly speaking, for a better and clearer awareness of passenger behavioral intentions, we establish a passenger behavioral intention model from an attitudinal perspective, which helps to extend existing passenger behavioral intention models that mostly use objective and quantifiable variables.

## Conceptual background and research hypotheses

### Conceptualization of service quality

Reflecting upon the three properties of service—intangibility, heterogeneity, and inseparability (Parasuraman et al. 1985)—service quality is specified as a complex, abstract, and multidimensional nature construct (Grönroos 1984; Parasuraman et al. 1988, Zeithaml 1988). The identification of the dimensions of service quality is a critical topic in marketing literature. However, there is still no consistent agreement on the dimension of service quality. According to Brady and Cronin (2001), the specification of service quality

can generally be categorized into two approaches. The first is the “Nordic” perspective (Grönroos 1984), which emphasizes the interactive nature of services, and uses functional and technical quality as the dimensions of service quality. The functional quality focuses on how consumers receive the service (process dimension), whereas the technical quality focuses on what consumers receive (outcome dimension).

The second, the “American” perspective (Parasuraman et al. 1985; 1988), dominates the literature and uses terms that describe service encounter characteristics. Parasuraman et al. (1985) model was founded on the expectancy disconfirmation theory, which defines service quality as the gap between the expected level of service and customer perceptions of the level received. In order to measure service quality, Parasuraman et al. (1988) designed the most widely known and discussed scale, SERVQUAL, which consists of 22 items representing five dimensions: tangibles, reliability, responsiveness, assurances, and empathy. Although subsequent researchers have attempted to test and adopt the SERVQUAL instrument in various industries, these studies do not generally support the factor structure posited by Parasuraman et al. (1988) (Dabholkar et al. 1996). The generalization of SERVQUAL’s five dimensions may explain why its utility is limited in certain service contexts (Woo and Ennew 2005). Researchers further indicated that service quality evaluations are likely to be context dependent. Therefore, researchers should develop context-specific service quality models (Dabholkar et al. 1996; Dagger et al. 2007).

In order to appropriately represent some important elements of transportation service, the identification of service quality dimensions also arouses attention to transportation research. Thus, transportation researchers have recently developed various scales to measure passengers’ service quality perception (Hu and Jen 2006; Joewono and Kubota 2007; Park et al. 2006). For example, Hu and Jen (2006) adopted a multistage scale development procedure to develop a passengers’ perceived service quality scale of bus service. Their scale contains four dimensions and 20 items. Furthermore, Park et al. 2006 constructed an airline service quality scale based on in-depth interviews and focus groups with airline staff and passengers. After that, they proceeded to an exploratory factor analysis and confirmatory factor analysis. Their final proposed scale included three dimensions and 22 items.

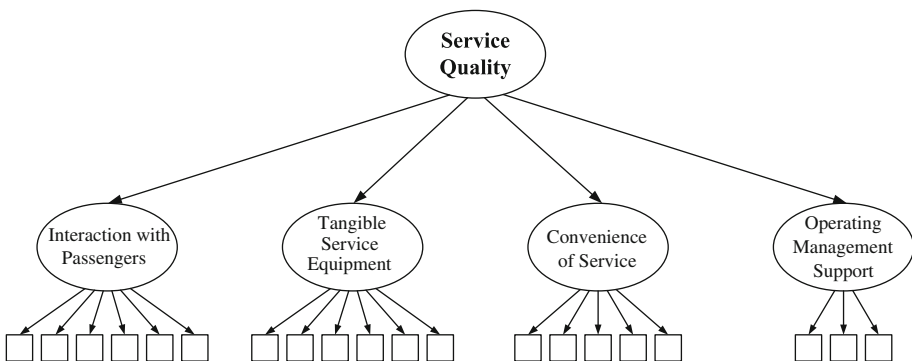
However, when researchers further explored the effects of service quality on other variables (such as satisfaction, perceived value, or behavioral intentions), they usually treated the measurement of service quality in the form of an average score of each dimensions. More specifically, each of the dimensions was calculated as the mean score of each item in each dimension (e.g., Jen and Hu 2003; Joewono and Kubota 2007; Lin et al. 2008; Park et al. 2006). Researchers indicated that measuring service quality in this way may not accurately reflect the concept of service quality (Dabholkar et al. 1996). Because using mean scores to represent each dimension may fail to capture customers’ evaluations of service quality as a separate, multi-item construct, the reliability of each dimension is impossible to ascertain. Moreover, it is possible that customers could focus on certain aspects of the services in their mind while responding to these questions. Consequently, these measures may not exactly express service quality.

Furthermore, both the “Nordic” and “American” perspectives have treated relative dimensions as components of service quality (Dabholkar et al. 2000). The first is “Nordic” perspective (Grönroos 1982; 1984), which defines the dimensions of service quality in global terms as consisting of functional and technical quality. The second, the “American” perspective (Parasuraman et al. 1988), use terms that describe service encounter characteristics (i.e., reliability, responsiveness, empathy, assurances, and tangibles). Thus, service quality is conceptualized as a formative construct which means the dimensions of service

quality cause the overall service quality perception. However, recently, service quality has been described as a higher-order factor which means the structural of service quality is a hierarchical conceptualization (Brady and Cronin 2001; Dabholkar et al. 1996; Hansen 2004; Woo and Ennew 2005). This is because that previous research in service quality found high inter-correlations among indicators across dimensions (i.e., the indicators across dimensions may influence to each other), and several studies have found only one factor (Dabholkar et al. 1996). These latter instances are suggestive of the presence of a higher order factor. Thus, researchers proposed a hierarchical conceptualization of service quality, which suggest that service quality perceptions are not only multidimensional but multilevel (Dabholkar et al. 1996; Hansen 2004; Woo and Ennew 2005). In their models, the relevant dimensions are central to service quality, thus service quality is served as a higher-order factor. Furthermore, this structure suggests that service quality comprises several primary dimensions (e.g., reliability, responsiveness), which in turn share a common theme which means concept represented by the higher order global perceived by service quality constructs. Therefore, the dimensions are seen as reflective indicators of service quality.

Modeling service quality in this way may have two advantages. First, the hierarchical factor structure can capture dimensions important to the customer because the higher-order factor extracts the underlying commonality among the dimensions (Dabholkar et al. 1996). Secondly, the hierarchical structure recognizes that the evaluation of service quality may be more complex than previously conceptualized (Dagger et al. 2007). Hence, such a structure may more fully account for the complexity of human perception. Empirical evidence is also provided to support the hierarchical factor structure in different settings, such as retail stores (Dabholkar et al. 1996), trade shows (Hansen 2004), and business-to-business professional services (Woo and Ennew 2005).

Considering our research subject, coach service, and the dimension-specific nature of service quality, we adopt Hu and Jen’s (2006) passenger service quality scale as our measurement items. Their final scale contained four dimensions: interaction with passengers (with six items), tangible service equipment (with six items), convenience of service (with five items), and operating management support (with three items). Furthermore, owing to the mean score defect and the virtue of hierarchical factor structure, our model served service quality as a higher-order factor, which reflects on the four dimensions. We use the evaluations of each item to form the perceptions on each if the four dimensions (see Fig. 1). Thus, we propose that:



**Fig. 1** Hierarchical factor structure for passenger service quality

**H<sub>1</sub>** Passenger service quality is a higher-order construct that represents (a) interaction with passengers, (b) tangible service equipment, (c) convenience of service, and (d) operating management support.

### Service quality-satisfaction-behavioral intentions paradigm

In the relative literature, service quality usually accompanies satisfaction. This may be due to the similar nature of the two variables, which both derive from the expectancy disconfirmation theory (Parasuraman et al. 1988; Oliver 1993). Hence, confusion arises when researchers regard the use of both service quality and satisfaction in their models. In order to distinguish between service quality and satisfaction, Boulding et al. (1993) indicated that service quality conceptualizes on an “ideal” or “should” expectation, while satisfaction concept is based on a “desired” or “will” expectation. Furthermore, emerging conceptual and operational definitions make the distinction clearer: service quality assessments emphasize the relatively specific dimensions, whereas satisfaction evaluations have a broader range of dimensions, and require customer experience (Oliver 1993; Parasuraman et al. 1988).

These efforts to distinguish service quality and satisfaction further contribute to explorations of the relationships among service quality, satisfaction, and behavioral intentions. In the literature, the “service quality-satisfaction-behavioral intentions” paradigm is mostly conducted to discuss the effect of service quality on behavioral intentions (Choi et al. 2004; Cronin et al. 2000; Dabholkar et al. 2000; González et al. 2007; Ledden et al. 2007). This paradigm suggests that satisfaction strongly mediates the link between service quality and behavioral intentions. This is because service quality is primarily a cognitive judgment, while customer satisfaction is an affect-laden evaluation (Cronin et al. 2000; Oliver 1993). Therefore, based on the cognition → affect → conation model (Wilkie 1986), customers’ positive behavioral intentions come from their satisfaction, while satisfaction is the result of a good service quality. Furthermore, a theoretical justification from the appraisal → emotional response → coping framework (Bagozzi 1992) also suggests that the initial service evaluation (i.e., appraisal) leads to an emotional reaction that, in turn, derives behavioral intentions. Abundant research also provides empirical support for the “service quality-satisfaction-behavioral intentions” paradigm (Choi et al. 2004; Cronin et al. 2000; Dabholkar et al. 2000; González et al. 2007; Ledden et al. 2007). Building upon these findings, we propose that:

**H<sub>2</sub>** Service quality is positively related to satisfaction.

**H<sub>3</sub>** Satisfaction is positively related to passenger behavioral intentions.

### Perceived value model

In addition to the “service quality-satisfaction-behavioral intentions” paradigm, the perceived value model also helps to explain customer behavioral intentions (e.g., Choi et al. 2004; Cronin et al. 2000; Jen and Hu 2003; Lapierre et al. 1999; Lin et al. 2008; Liu et al. 2005). These studies also indicate that perceived value plays a very important role in determining customer behavioral intentions. This may be because perceived value is a concept which simultaneously integrates customers’ perception of benefits and costs (Monroe 1991; Zeithaml 1988), while satisfaction research only focuses on the benefit aspect. Thus, perceived value model represents a new paradigm that creates and sustains a

competitive advantage and requires a more comprehensive approach than a simple focus on service quality or customer satisfaction (Ruiz et al. 2008).

Prevailing literature agrees that perceived benefits and perceived costs are two major antecedents to perceived value, and that perceived value is the trade-off between benefits and costs (Monroe 1991; Zeithaml 1988). Specifically, enhancing perceived benefits and/or decreasing perceived costs can be used to improve customers' perceived value. For example, Zeithaml (1988) defines perceived value as "customer's overall assessment of the utility of a product based in perceptions of what is received (i.e., benefits) and what is given (i.e., costs)". Furthermore, Monroe (1991) defined perceived value as the relationship between perceived benefits and perceived costs. That is, perceived value evaluation results from consumers cognitively integrate their perceived benefits with perceived costs.

According to previous research, perceived benefits is defined as what customers can get or received from a service provider, and has most often been operationalized in terms of service quality (Jen and Hu 2003; Lapierre et al. 1999; Zeithaml 1988). Zeithaml (1988) showed that perceived value is influenced by service quality, and Lapierre et al. (1999) also suggested that perceived value in a service results in part from service quality. Moreover, Jen and Hu (2003) indicated that perceived benefits usually involve product or service elements, such as functions, quality, form, and brand, among which quality is most commonly discussed. Plenty of empirical evidences are provided to show the positive relationship between service quality and perceived value (Choi et al. 2004; Cronin et al. 2000; Liu et al. 2005; Ruiz et al. 2008). Therefore, we can infer that the better service quality a customer can get from a firm, the more value he or she will perceive. Thus,

**H<sub>4</sub>** Service quality is positively related to perceived value.

Perceived costs, another important element of perceived value, refers to what is given up or sacrificed to acquire a service (Zeithaml 1988). Most research has only focused on actual price (Jen and Hu 2003). However, customers also have to spend time and effort to gain a service. In certain conditions or for some customers, these intangible costs are more important than actual price (Ruiz et al. 2008). Therefore, research further suggests that perceived costs can be divided into monetary prices and non-monetary prices (Choi et al. 2004; Wang et al. 2004). Monetary prices refer to the actual sum of money consumers must pay to acquire a service, while non-monetary prices refer to the time, search and psychological costs associated with a purchase (Jen and Hu 2003). Furthermore, previous studies have confirmed the relationship between perceived costs and perceived value, which suggests that the more costs associated with monetary prices and non-monetary prices can increase the perceived costs and, consequently, decrease the perceived value (Cronin et al. 2000; Jen and Hu 2003; Lapierre et al. 1999; Wang et al. 2004). Hence, we posit:

**H<sub>5</sub>** Perceived costs are negatively related to perceived value.

Furthermore, the basic framework of the perceived value model, proposed by Zeithaml (1988), suggests that perceived value positively affects consumers' purchase intentions. Subsequent researchers also provide empirical evidence to support the link between perceived value and behavioral intentions (e.g., Jen and Hu 2003; Lin et al. 2008). However, other researchers further propose the relationship between perceived value and customer satisfaction. For example, Rust and Oliver (1994) note that value, like quality, is an encounter-specific input to satisfaction, which implicate the positive link between perceived value and satisfaction. Lapierre et al. (1999) also find empirical support for the positive effect of perceived value on customer satisfaction. Comprehensively, most studies

combine both the two causal relations (perceived value → behavioral intentions, and perceived value → satisfaction) to understand the influence of perceived value (Cronin et al. 2000; Choi et al. 2004; Liu et al. 2005; Wang et al. 2004; Ruiz et al. 2008). Based upon these research results, we propose that:

**H<sub>6</sub>** Perceived value is positively related to satisfaction.

**H<sub>7</sub>** Perceived value is positively related to passenger behavioral intentions.

### Switching barriers

Recently, marketing research began to pay more attention to the influence of switching barriers which refer to any factor, making it difficult or costly for customers to change service providers (e.g., Burnham et al. 2003; Huang et al. 2007; Jones et al. 2000; Liu et al. 2005; Ranaweera and Prabhu 2003; Yim et al. 2007). These studies found that with the exception of customer satisfaction and service quality, switching barriers also play a key role in explaining customer behavioral intentions. Furthermore, some researchers even indicate the superiority of switching barriers over satisfaction and service quality. For example, Jones et al. (2000) notes the role that switching barriers plays in potentially fostering greater customer retention and helping companies to weather short-term fluctuations in service quality that might otherwise result in defection. Research also finds that switching barriers explain more of the variation in repurchasing behavior than satisfaction (Burnham et al. 2003; Patterson and Smith 2003). This may be because customers often face a considerable risk in switching to an alternate service provider because it is difficult to evaluate a service before actually purchasing it (Sharma and Patterson 2000). Therefore, no matter how dissatisfied a customer is, he/she would still maintain a relationship with the service provider to avoid exit costs (Huang et al. 2007). Comprehensively, switching barriers should be taken to form a more complete framework for studying customers' behavioral intentions.

When switching barriers was studied in previous research, switching costs (e.g., Burnham et al. 2003; Jones et al. 2000; Liu et al. 2005; Patterson and Smith 2003) and alternative attractiveness (e.g., Huang et al. 2007; Sharma and Patterson 2000; Wathne et al. 2001; Yim et al. 2007) were two elements that were the most adopted. Switching costs refer to customers' perceived costs of switching from the existing provider to a new provider (Wathne et al. 2001). When customers wish to switch to other service providers, they may need to terminate a current relationship with the current provider while also searching for a feasible new provider. Thus, customers will lose some sunk costs, which represent the customers' perception of the non-recoupable money, time, and emotional effort involved in establishing and maintaining a friendly, quasi-social relationship with a service provider (Burnham et al. 2003; Patterson and Smith 2003). Customers will also incur additional costs—such as “search costs”—in searching for an alternative service provider. These costs refer to the effort, time, and money that would be involved in searching for an acceptable, alternative service provider (Burnham et al. 2003; Jones et al. 2000; Sharma and Patterson 2000). Abundant research results show that as the switching costs of an activity increase, the likelihood of customers engaging in such behavior diminishes while the likelihood that they are “locked” into a relationship with the incumbent service provider increases (Burnham et al. 2003; Jones et al. 2000; Liu et al. 2005; Patterson and Smith 2003). On the basis of the foregoing evidence, we propose:



**H<sub>8</sub>** Switching costs are positively related to passenger behavioral intentions.

Researchers also emphasize that the relative attractiveness of alternative products and services is an important factor when the customer is considering switching providers (Burnham et al. 2003; Jones et al. 2000; Liu et al. 2005; Yim et al. 2007). Past research defines alternative attractiveness as customers' perceptions regarding the extent to which viable competing alternatives are available in the marketplace (Jones et al. 2000), or conceptualizes it as the customers' estimate of the likely satisfaction available in an alternative relationship (Patterson and Smith 2003; Sharma and Patterson 2000). Empirical evidence shows the negative effect of alternative attractiveness on customers' behavioral intentions. More specifically, customers may decide to terminate the current relationship and go to a new provider if they perceive the alternative to be attractive due to the availability of better service, the proximity of location, the availability of a full range of service, and lower fees or the promise of high financial returns (Sharma and Patterson 2000; Wathne et al. 2001). However, if a customer is either unaware of attractive alternatives or simply does not perceive them as any more attractive than the current relationship, then they are likely to stay in their current relationship (Patterson and Smith 2003). Thus,

**H<sub>9</sub>** Alternative attractiveness is negatively related to passenger behavioral intentions.

## Methods

### Data collection

In order to realize passengers' behavioral intentions, we selected the coach industry in Taiwan as our research subject. After considering the geographic distribution and the population, we selected four large cities (Taipei, Taichung, Tainan, and Kaohsiung) as the investigation areas. We further considered the popular routes and transfer distances, and chose the passengers of a long distant route (Taipei–Tainan) and a middle distant route (Taichung–Kaohsiung) as our investigation subject. Both routes contain three coach companies, and 300 questionnaires were given to each company of both routes, for a total of 1800 questionnaires. The questionnaire was distributed randomly in the waiting area of each company. Respondents were asked to fill out the questionnaire after they finished their trip, and to base their answers on the actual experience of the trip. Afterwards, we requested that they mail the completed questionnaires back to us. This helped to avoid responses from non-users, and to avert responses based on recollections of a remote consumption experience. 747 passengers returned valid questionnaires. Among the respondents, 380 (50.9%) passengers were male, 468 passengers were between the ages of 20–29 (62.7%), 314 (42.0%) passengers had traveled by coach more than five times per season, and 341 (45.6%) passengers' purpose of traveling by the coach were to return to their hometown.

### Measurements

Following the literature, we employed 34 measurement variables ( $V_1$ – $V_{34}$ ) as multiple indicators for seven latent variables including service quality, perceived costs, perceived value, satisfaction, switching costs, alternative attractiveness, and behavioral intentions

(See Table 5 in Appendix). These measurement variables are further modified to fit for the coach service.

In order to measure service quality, and in consideration of the dimension-specific nature of service quality, we adopted a well development passenger service quality scale from Hu and Jen's (2006) study. However, two items were deleted from the original scale in the "interaction with passengers" dimension, including "the company deals with accidents quickly and reasonably" and "the company deals with passengers' opinions and complaints." Because most of the passengers indicated that they did not have any experience with these two situations in this trip. Therefore, the final measurement of service quality (SQ) applied to the following analysis includes "interaction with passengers (IP)" with four questions ( $V_1$ – $V_4$ ); "tangible service equipment (TSE)" with six questions ( $V_5$ – $V_{10}$ ); "convenience of service (CS)" with five questions ( $V_{11}$ – $V_{15}$ ); and "operating management support (OMS)" with three questions ( $V_{16}$ – $V_{18}$ ). Since previous research defined service quality as the comparison results of expected and perceived service (Grönroos 1984; Parasuraman et al. 1988; Oliver 1993), we follow these studies and measure both perceived and expected performance of all items. And the values of  $V_1$ – $V_{18}$  come from the value of perceived performance minus the value of expected performance.

Previous researchers defined perceived costs (PC) as what is given up or sacrificed to acquire a service (Zeithaml 1988), and divided perceived costs into categories of monetary prices and non-monetary prices (Choi et al. 2004; Wang et al. 2004). Therefore, as relative literature had used to evaluate PC, we adopted the dollar price of the coach service to measure monetary price ( $V_{19}$ ), whereas time spent associated with the coach service is measured to represent the non-monetary price ( $V_{20}$ – $V_{21}$ ) (Jen and Hu 2003; Lin et al. 2008).

Furthermore, literature consistently agrees that perceived value (PV) is the comparison between what is received and what is given (Monroe 1991; Zeithaml 1988). Specifically, perceived value is the trade-off between the perceived benefits and perceived costs. Basing on the relative studies, we use three items to evaluate PV ( $V_{22}$ – $V_{24}$ ) (Cronin et al. 2000; Jen and Hu 2003; Liu et al. 2005). According to the research on satisfaction (SA), suggesting that satisfaction reflects the degree to which consumers believe that possession of a service evokes positive feelings (Bagozzi 1992; Wilkie 1986), and the evaluation of satisfaction should be an emotion-based response (Oliver 1993). Thus, we adopt three emotion descriptions to measure SA ( $V_{25}$ – $V_{27}$ ). Moreover, customer behavioral intentions (BI) are usually discussed from their repurchase intentions and recommendation intentions (Jen and Hu 2003; Lin et al. 2008). Following these studies, BI is measured by two items ( $V_{33}$ – $V_{34}$ ).

In this study, switching barriers consisted of two elements that were the most adopted in relative literature: switching costs (SWC) and alternative attractiveness (AA). Basing on previous studies, we define SWC as passenger perceptions regarding the time, money and effort associated with changing coach service providers (Burnham et al. 2003; Jones et al. 2000; Sharma and Patterson 2000), and AA as passenger perceptions regarding the extent to which competitors offer equal or superior coach services (Patterson and Smith 2003; Sharma and Patterson 2000). Following these definitions, we adopt three items to measure SWC ( $V_{28}$ – $V_{30}$ ), and another two items to assess AA ( $V_{31}$ – $V_{32}$ ) (Jen and Hu 2003; Jones et al. 2000). These measurement variables are modified to fit for the coach service. To measure all the items in our study, we used a five-point, Likert-type response format, ranging from "strongly agree" to "strongly disagree." The relationships between the constructs and the indicators, and our research hypotheses are shown in Fig. 2.

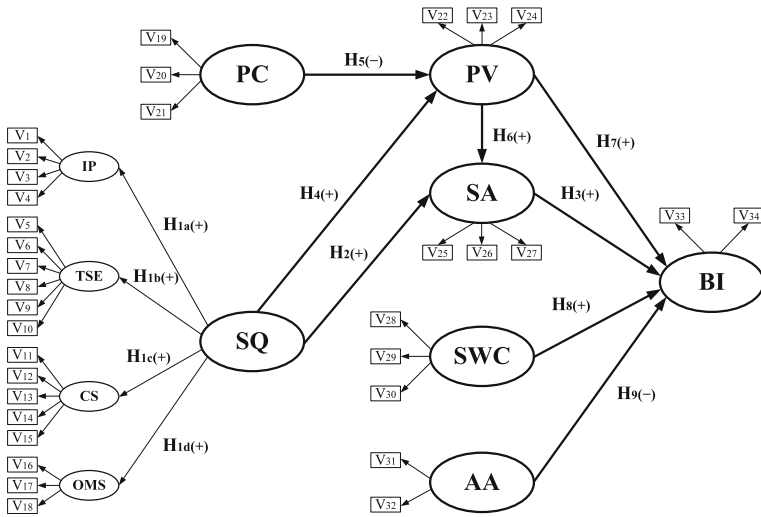


Fig. 2 Research model

### Research results

Our research model consists of two components: a measurement model and a causal structural model. The former specifies links between the latent constructs and their corresponding indicator variables, while the latter specifies causal relationships between the latent constructs themselves. Thus, the Structural Equation Modeling (SEM) is one of the most applicable methods to examine our theoretical model. Previous researchers proposed different machineries conducting SEM analysis including one-step approach (Fornell and Yi 1992) and two-step approach (Anderson and Gerbing 1988). One-step approach can simultaneously estimate the measurement model and a causal structural model, thus it is treated as a more efficient way. However, the two-step approach can provide a superior diagnosis for the specific sources of the fallibility. This is because that the constructs are allowed to freely intercorrelate in a measurement model, and the lack of model fit must be due to fallibility in a researcher’s theory of how one or more of the measures are related to the constructs (Anderson and Gerbing 1992). Therefore, the two-step approach had been widely applied in the literature during last two decades (e.g., Choi et al. 2004; Cronin et al. 2000; Jen and Hu 2003; Jones et al. 2000; Lapierre et al. 1999; Lin et al. 2008; Wang et al. 2004).

Basing on the above-mentioned discussion, we utilized a two-step SEM approach, and the maximum-likelihood parameter estimation was used to assess our research model. The first step involves using confirmatory factor analysis to develop an acceptable measurement model. When a measurement model is tested, we look for evidence that all indicator variables are measuring the underlying constructs, and that our measurement model demonstrates an acceptance fit to the data. The second involves using path analysis to test the predicted causal relationships between the latent constructs. It also reviews a number of indices that can be used to determine whether our research model provides an acceptable fit to the data. This study applies AMOS to estimate our research model.

**Table 1** The property of CFA results

| Constructs | Items           | Mean   | S.D   | Skewness | Kurtosis | $\lambda$ ( <i>t</i> value) | $\alpha^a$ | CR <sup>b</sup> | AVE <sup>c</sup> |
|------------|-----------------|--------|-------|----------|----------|-----------------------------|------------|-----------------|------------------|
| SQ         | IP              |        |       |          |          | 0.752 (13.513)              | 0.851      | 0.963           | 0.868            |
|            | TSE             |        |       |          |          | 0.914 (15.949)              |            |                 |                  |
|            | CS              |        |       |          |          | 0.876 (15.454)              |            |                 |                  |
|            | OMS             |        |       |          |          | 0.927 (15.122)              |            |                 |                  |
| IP         | V <sub>1</sub>  | -0.925 | 0.836 | -0.555   | 0.448    | 0.626 (14.221)              | 0.762      | 0.807           | 0.512            |
|            | V <sub>2</sub>  | -0.920 | 0.910 | -0.502   | 0.148    | 0.636 (14.416)              |            |                 |                  |
|            | V <sub>3</sub>  | -0.922 | 0.898 | -0.320   | 0.384    | 0.734 (16.020)              |            |                 |                  |
|            | V <sub>4</sub>  | -0.818 | 0.887 | -0.884   | 1.386    | 0.679 (14.731)              |            |                 |                  |
| TSE        | V <sub>5</sub>  | -0.711 | 0.771 | -0.442   | 0.737    | 0.626 (15.570)              | 0.831      | 0.844           | 0.475            |
|            | V <sub>6</sub>  | -0.744 | 0.894 | -0.637   | 0.209    | 0.619 (15.327)              |            |                 |                  |
|            | V <sub>7</sub>  | -0.849 | 0.935 | -0.660   | 0.523    | 0.602(15.002)               |            |                 |                  |
|            | V <sub>8</sub>  | -0.869 | 0.972 | -0.563   | 0.084    | 0.718(17.732)               |            |                 |                  |
|            | V <sub>9</sub>  | -0.846 | 0.957 | -0.652   | 0.566    | 0.715 (17.677)              |            |                 |                  |
|            | V <sub>10</sub> | -1.158 | 1.113 | -0.417   | -0.245   | 0.702 (16.832)              |            |                 |                  |
| CS         | V <sub>11</sub> | -0.901 | 1.015 | -0.639   | 0.505    | 0.675 (17.746)              | 0.848      | 0.844           | 0.520            |
|            | V <sub>12</sub> | -0.969 | 1.002 | -0.696   | 0.153    | 0.698 (17.296)              |            |                 |                  |
|            | V <sub>13</sub> | -0.914 | 0.955 | -0.598   | 0.295    | 0.754(19.810)               |            |                 |                  |
|            | V <sub>14</sub> | -1.091 | 1.087 | -0.591   | -0.015   | 0.721 (22.303)              |            |                 |                  |
|            | V <sub>15</sub> | -1.017 | 0.988 | -0.708   | 0.330    | 0.769(20.168)               |            |                 |                  |
| OMS        | V <sub>16</sub> | -0.934 | 0.948 | -0.397   | 0.129    | 0.734 (15.006)              | 0.749      | 0.743           | 0.491            |
|            | V <sub>17</sub> | -0.865 | 0.966 | -0.558   | 0.710    | 0.679 (17.290)              |            |                 |                  |
|            | V <sub>18</sub> | -1.015 | 1.039 | -0.668   | 0.292    | 0.673 (16.618)              |            |                 |                  |
| PC         | V <sub>19</sub> | 3.740  | 0.835 | -0.335   | -0.040   | 0.672 (15.051)              | 0.757      | 0.796           | 0.566            |
|            | V <sub>20</sub> | 3.648  | 0.929 | -0.549   | 0.124    | 0.767 (16.259)              |            |                 |                  |
|            | V <sub>21</sub> | 3.621  | 0.959 | -0.599   | 0.153    | 0.712 (15.583)              |            |                 |                  |
| PV         | V <sub>22</sub> | 3.509  | 0.876 | -0.263   | -0.074   | 0.824 (24.926)              | 0.823      | 0.848           | 0.652            |
|            | V <sub>23</sub> | 3.592  | 0.946 | -0.543   | 0.087    | 0.840 (25.361)              |            |                 |                  |
|            | V <sub>24</sub> | 3.587  | 0.996 | -0.439   | -0.124   | 0.707 (20.509)              |            |                 |                  |
| SA         | V <sub>25</sub> | 2.976  | 0.942 | 0.125    | -0.010   | 0.908 (35.314)              | 0.899      | 0.909           | 0.769            |
|            | V <sub>26</sub> | 3.163  | 0.935 | 0.065    | -0.059   | 0.895 (35.182)              |            |                 |                  |
|            | V <sub>27</sub> | 2.692  | 0.979 | 0.296    | 0.079    | 0.796 (28.435)              |            |                 |                  |
| SWC        | V <sub>28</sub> | 2.410  | 1.143 | 0.420    | -0.586   | 0.655 (14.962)              | 0.760      | 0.767           | 0.526            |
|            | V <sub>29</sub> | 3.064  | 1.093 | -0.159   | -0.568   | 0.684 (15.331)              |            |                 |                  |
|            | V <sub>30</sub> | 2.568  | 1.026 | 0.269    | -0.369   | 0.825 (18.758)              |            |                 |                  |
| AA         | V <sub>31</sub> | 3.380  | 0.916 | -0.131   | 0.031    | 0.640 (12.028)              | 0.749      | 0.803           | 0.678            |
|            | V <sub>32</sub> | 3.236  | 0.958 | 0.083    | -0.334   | 0.935 (13.900)              |            |                 |                  |
| BI         | V <sub>33</sub> | 3.762  | 0.877 | -0.486   | 0.402    | 0.900 (31.018)              | 0.904      | 0.920           | 0.851            |
|            | V <sub>34</sub> | 3.562  | 0.975 | -0.406   | -0.005   | 0.921 (31.660)              |            |                 |                  |

<sup>a</sup>  $\alpha$  Cronbach's alpha; <sup>b</sup> CR composite reliability; <sup>c</sup> AVE average variance extracted

Table 1 provides a summary of descriptive statistics for the measurement items, all of which display the distributional properties required for a SEM analysis. Specifically, the data are normally distributed with all skewness and kurtosis values falling within the acceptance range.

Measurement model

The measurement model was tested by confirmatory factor analysis (CFA), and the quality of the measurement model was assessed according to the relative model fit index, reliability, convergent validity, and discriminant validity. Table 1 demonstrates measurement reliability using Conbach’s alpha and composite reliability. The estimations of Conbach’s alpha of all constructs were above 0.7, ranging from 0.749 (operating management support and alternative attractiveness) to 0.904 (behavioral intention). The results of composite reliability assessment in each construct also suggested an acceptable reliability with composite reliability estimates ranging from 0.743 (operating management support) to 0.963 (service quality). Hatcher (1998) suggests that the minimal acceptance level of composite reliability should exceed 0.6. Consequently, these results reflect the internal consistency of the indicators.

The  $\chi^2$  of our measurement model is 1238.081 ( $p$ -value < 0.001), and its degree of freedom ( $df$ ) is 495. Since the  $\chi^2$  is extremely sensitive to sample size, a recommended method is to calculate the ratio of  $\chi^2$  and  $df$  to evaluate the goodness of model fit. According to our research results, the  $\chi^2/df$  ratio is 2.501. And, as Jen and Hu (2003), suggest, a value of less than 3 is better. Other indices also indicate an acceptable fit in our measurement model: CFI = 0.941, GFI = 0.911, AGFI = 0.893; NFI = 0.905, and RMSEA = 0.045. Furthermore, all indicators’ factor loadings are statistically significant, and above the threshold of 0.5 (see Table 1). All these results provide evidence supporting the convergent validity of our measurement model, which indicates that all indicators effectively measure a specific construct and one construct only.

Moreover, to assess discriminant validity, we contrasted the average variance extracted (AVE) and the variance shared between the construct (Fornell and Lacker 1981). This comparison can be incorporated into a correlation matrix (see Table 2), and the results suggest that our measurement model has adequate discriminant validity. Because the average variance extracted by each of the scales was greater than the share variance between the construct and all other constructs. Therefore, considering all these constructs, we can infer that our measurement model performs fairly well.

Based on the results of CFA, the evidence supports  $H_1$ . The model fit indices indicate the acceptable fit in our measurement mode, but also suggest the appropriateness of our adoption of a hierarchical factor structure which served service quality as the high-order factor and the dimension as the second the second-order factor. Moreover, the AVE estimate for service quality is 0.868, meaning that 86.8% of the variance is captured by our passenger service quality construct. This result further shows the fitness to form service

**Table 2** Discriminant validity

|     | SQ           | PC           | PV           | SA           | SWC          | AA           | BI           |
|-----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| SQ  | <b>0.932</b> |              |              |              |              |              |              |
| PC  | −0.504       | <b>0.752</b> |              |              |              |              |              |
| PV  | 0.566        | −0.734       | <b>0.808</b> |              |              |              |              |
| SA  | 0.535        | −0.559       | 0.751        | <b>0.877</b> |              |              |              |
| SWC | 0.181        | −0.157       | 0.304        | 0.417        | <b>0.725</b> |              |              |
| AA  | −0.205       | 0.082        | −0.274       | −0.234       | −0.055       | <b>0.824</b> |              |
| BI  | 0.530        | −0.523       | 0.708        | 0.679        | 0.381        | −0.398       | <b>0.923</b> |

The **bold** numbers on the diagonal are the square root of the AVE. Off-diagonal elements are correlations among constructs

quality in a hierarchical factor structure. The factor loading estimations from the results showed that passengers perceived service quality reflected on IP ( $\lambda = 0.752$ ,  $t = 13.513$ ,  $p < 0.001$ ), TSE ( $\lambda = 0.914$ ,  $t = 15.949$ ,  $p < 0.001$ ), CS ( $\lambda = 0.876$ ,  $t = 15.454$ ,  $p < 0.001$ ), and OMS ( $\lambda = 0.927$ ,  $t = 15.122$ ,  $p < 0.001$ ). Hence,  $H_{1a \sim 1d}$  were supported.

### Causal structural model

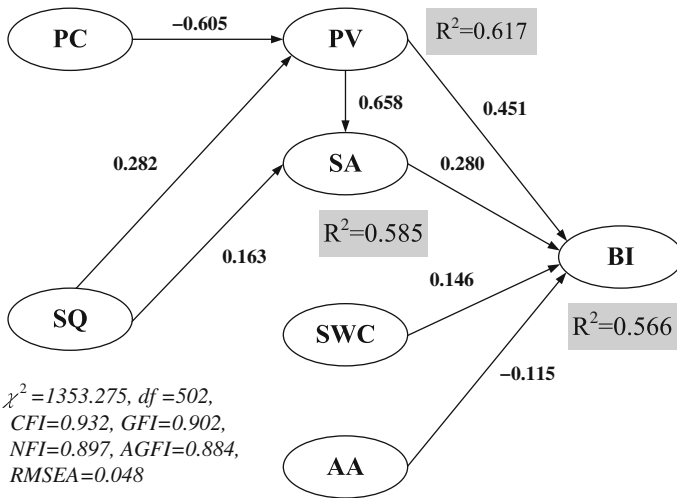
We used path analysis was used to test our casual structural model with 8 hypotheses ( $H_2 \sim H_9$ ). Table 3 reveals the property of path results. The  $\chi^2/df$  ratio is 2.696 (1353.275/502), and the goodness of fit for our causal relationship model also shows an acceptable performance: CFI = 0.932, GFI = 0.902, AGFI = 0.884; NFI = 0.897, and RMSEA = 0.048 (see Fig. 3). As predicted in  $H_2$  and  $H_3$ , the path estimates showed that passenger service quality had a positive impact in satisfaction ( $\gamma = 0.163$ ,  $t = 3.993$ ,  $p < 0.001$ ), and that satisfaction is an antecedence of passenger behavioral intentions ( $\gamma = 0.280$ ,  $t = 5.411$ ,  $p < 0.001$ ). These results agreed with the “service quality-satisfaction-behavioral intentions” paradigm.

For the paths leading to perceived value, the results indicated that passenger service quality had a positive effect on perceived value ( $\gamma = 0.282$ ,  $t = 6.682$ ,  $p < 0.001$ ), while perceived costs had a negative influence on perceived value ( $\gamma = -0.605$ ,  $t = -11.643$ ,  $p < 0.001$ ). Furthermore, results indicated that perceived costs had a stronger effect on perceived value than service quality. Our results confirmed with perceived valued theory that suggested trade-off relationships among perceived valued, service quality, and perceived costs. Thus,  $H_5$  and  $H_4$  were supported. The  $R^2$  of perceived value was 0.617, meaning that service quality and perceived costs accounted for 61.7% of the variance in perceived value. Furthermore, as predicted in  $H_6$  and  $H_7$ , the path estimated showed that perceived value had positive impact on satisfaction ( $\gamma = 0.658$ ,  $t = 14.705$ ,  $p < 0.001$ ) and passenger behavioral intentions ( $\gamma = 0.451$ ,  $t = 8.200$ ,  $p < 0.001$ ). As for the determinants of passenger satisfaction, the results suggested that perceived value had a greater effect on satisfaction than service quality. The  $R^2$  of passenger satisfaction was 0.585, indicating that service quality and perceived value accounted for 58.5% of the variance in passenger satisfaction.

In terms of the influence of switching barriers, the results from our research model indicated that switching costs has a positive effect on passenger behavioral intentions ( $\gamma = 0.146$ ,  $t = 4.455$ ,  $p < 0.001$ ), whereas alternative attractiveness had a negative influence on passenger behavioral intentions ( $\gamma = -0.146$ ,  $t = -3.787$ ,  $p < 0.001$ ). Hence,  $H_8$  and  $H_9$  were supported. As for the antecedence of passenger behavioral intentions, the research results suggested that perceived value had the greatest influence on

**Table 3** The property of path results

|         | Estimate<br>(standardized) | Standard<br>Error | t ratio | p-value |
|---------|----------------------------|-------------------|---------|---------|
| PC → PV | -0.605                     | 0.067             | -11.643 | 0.000   |
| SQ → PV | 0.282                      | 0.046             | 6.682   | 0.000   |
| PV → SA | 0.658                      | 0.053             | 14.705  | 0.000   |
| SQ → SA | 0.163                      | 0.053             | 3.993   | 0.000   |
| SA → BI | 0.280                      | 0.047             | 5.411   | 0.000   |
| PV → BI | 0.451                      | 0.059             | 8.200   | 0.000   |
| SC → BI | 0.146                      | 0.030             | 4.455   | 0.000   |
| AA → BI | -0.115                     | 0.023             | -3.787  | 0.000   |



**Fig. 3** Results of causal structural model

**Table 4** Direct and indirect effects on the behavioral intention

|                   | Direct effect | Indirect effect | Total effect  |
|-------------------|---------------|-----------------|---------------|
| PC → BI           |               |                 | <b>-0.384</b> |
| PC → PV → BI      |               | -0.273          |               |
| PC → PV → SA → BI |               | -0.111          |               |
| SQ → BI           |               |                 | <b>0.225</b>  |
| SQ → PV → BI      |               | 0.127           |               |
| SQ → PV → SA → BI |               | 0.052           |               |
| SQ → SA → BI      |               | 0.046           |               |
| PV → BI           | 0.451         |                 | <b>0.635</b>  |
| PV → SA → BI      |               | 0.184           |               |
| SA → BI           | 0.280         |                 | <b>0.280</b>  |
| SWC → BI          | 0.146         |                 | <b>0.146</b>  |
| AA → BI           | -0.115        |                 | <b>-0.115</b> |

passenger behavioral intentions. The  $R^2$  of passenger behavioral intentions was 0.566, meaning that satisfaction, perceived value, switching costs, and alternative attractiveness accounted for 56.6% of the variance in passenger behavioral intentions.

Table 4 provides the information about the direct effects and indirect effects on behavioral intention. The perceived value has the greatest total effect (0.635) on the behavioral intention, while the alternative attractiveness has the smallest total effect (-0.115) on the behavioral intention.

**Discussions**

Managerial implications

For a better understanding of passenger behavioral intentions, we established an integrated framework from attitudinal perspectives in marketing literature. Our research model

incorporated the “service quality–satisfaction–behavioral intentions” paradigm, the perceived value theory and the switching barriers theory. Specifically, we clarify the relationships amongst service quality, perceived costs, satisfaction, perceived value, switching costs, and alternative attractiveness. And no other studies have done in this way in our present knowledge. The findings support our position and justify the effort to improve service quality, costs, satisfaction, value, and switching barriers collectively as a means of improving passenger service perception. From a managerial viewpoint, our model suggests that any marketing or management program try to improve only one these variables is an incomplete strategy if the effects of the others are not considered.

Our causal model also includes the indirect effects which could help to realize the cognitive process of how passenger behavioral intentions are formed. For example, literature in transportation research has found the link between service quality and passenger behavioral intentions. According to our theoretical model, we further show that service quality affects behavioral intentions through two paths:  $SQ \rightarrow SA \rightarrow BI$  and  $SQ \rightarrow PV \rightarrow BI$ . Therefore, transportation managers who want to get favorable behavioral intentions by providing better service should make sure that the service can increase passengers’ satisfaction (i.e., raising the positive emotion) and represent the valuable of the coach service. These indirect paths may indicate that passengers’ decision-making is a comprehensive and complex process. Constructing passenger behavioral intentions model in this way may approach actual decision-making procedure, and press our research model close to the real-world recommendations.

In our model, we conduct a hierarchical approach to assess passenger service quality, while previous studies have typically used a single-item or average score for each dimension to measure overall service quality. By assessing service quality in the traditional way, practitioners cannot capture the extent of common variance or the extent to which the basic dimensions represent overall service quality. Because it is possible that passengers could focus on certain aspects of the service in their mind while responding to these questions. Therefore, overall service quality may not be correctly reflected by these measures. And the hierarchical framework may come closer to catch these overall evaluations, because it extracts the underlying commonality among dimensions which reflect the passengers’ overall assessment of service quality. Furthermore, using the hierarchical framework at different levels can be served as a diagnostic tool that allows practitioners to determine service areas that are weak and in need of attention. Transportation service quality analysis can be assessed at the overall level (using the full scale in an additive fashion), as well as at the factor level (adding items within a given dimension). This would permit transportation managers to identify problems within their services, and concentrate resources on improving particular aspects of transportation service quality. As the results from our study (Table 1) show TSE and OMS were found to be relatively more important than IP and CS for improving service quality. From a managerial viewpoint, if given a budget constraint to transportation managers, the improvement of offering passengers a comfortable facility and ensuring the promised service is performed accurately should be done precedence over the other two for improve service quality. However, regarding to increasing the behavioral intention, increasing the perceived value will be the clever way.

According to our results, perceived value is the most important predictor of passenger behavioral intentions, and perceived value is affected mainly by perceived costs. Therefore, the coach companies may induce desirable passenger behavioral intentions (e.g., repurchase intention and recommendation intentions) by decreasing the perceived costs. Although transportation literature had offered the similar suggestion, but our study further



confirm that perceived costs affect passenger behavioral intentions through perceived value (PC → PV → BI). From a managerial viewpoint, transportation managers who want to get favorable behavioral intentions by reducing costs should make sure that it can increase passengers' perceived value of their services.

Moreover, managers can reduce perceived cost from monetary and non-monetary aspects. In regard to cut monetary prices, practitioners should first lower the price for the coach services which are less valuable to passengers such as weekday or non-peak hours. Companies might not cut the prices of holiday or weekend which passengers perceived the transportation service is valuable in these days. In terms of non-monetary prices, practitioners attempt to either shorten waiting for service (by operations management), or change the consumers' waiting experience (by perceptions management). For example, company terminals could be better located near major public transport hubs, or offer information on near public transport services to save passenger time to arrive at the station. Furthermore, in order to reduce passengers' perceptions of waiting time, practitioners could fill the time by providing entertainment facilities in waiting rooms such as magazines, video game, and electric massage chair. By filling time, the passenger's mental or physical activity is increase so that less attention is paid to wait itself.

With regard to switching barriers, we find that passengers are indeed more likely to stay with current coach companies when the trouble of switching providers increases, e.g., when switching costs increase and/or the attractiveness of alternatives decreases. Therefore, the optimal strategy for coach companies is to both provide value-added service to customers and to increase switching costs. For example, in order to reduce alternative attractiveness, companies could develop differential or customized services that cannot be made available through other firms. Coach companies can also adopt some marketing strategies to impose higher switching costs—such as loyalty programs, which passengers may lose some benefits when they switch to other coach companies. Bucket pricing strategies can also be adopted to encourage passengers to pay a larger amount in advance for more services which, in turn, impose higher switching costs. It is worthwhile to note that such efforts to lock in passengers can be short-term orientated and should only be used in addition to providing passengers with higher satisfaction through better service values.

#### Limitation and suggestions for future research

This study constructs a passenger behavioral intentions model that contains the “service quality–satisfaction–behavioral intentions” paradigm and the perceived value theory with the switching barriers theory. Differing from the most transportation studies, our research starts with the attitudinal perspective and explores passengers' cognitive process that forms their behavioral intentions. Therefore, we collect passengers' stated preference to examine our proposed model. Formulating our model in this way could us to gain supplemental understanding of passenger behavior (Zins 2001), and this is also a common methodology in marketing, psychology, and sociology research. However, transportation researchers indicate that there are some disadvantages to only use the stated preference data. A better avenue for future research in transportation comes in the used of a combination of stated preference and revealed preference data (Hess et al. 2007). This can be able to enrich our knowledge about passenger behavior.

This study only examines the research model in the coach service. A replication of the proposed model to other transportation industry can gather more information on passenger behavioral intentions. Researchers could apply the proposed model to other transportation service, including airline services or train services, to achieve increased understanding of passenger behavioral intentions. Moreover, basing on our study, the research results are only capable of explaining passenger behavioral intentions in the coach service. Thus, our empirical work suggests that the data cannot reject our research model, and cannot prove that our model is the best model. Any application from our empirical results must be cautions, because it is suitable for the coach service. Future research could compare our model with alternative models from different theories to generalize the best model.

Furthermore, we used a five-point Likert-type response format to measure all the items in this study, and the maximum-likelihood (ML) parameter estimation was used to assess our research model. Since this type of format is served as ordinal or discrete, the matrix of polychoric correlations should be analyzed with the weighted least square (WLS) method for parameter estimations (Bollen 1989; Jöreskog and Sörbom 1996). However, it requires a sample size measured in 1,000–5,000 (West et al. 1995) or greater than 10 times the number of estimated parameters (Raykov and Marcoulides 2000), otherwise the WLS estimator performs poorly and the results generally cannot be trusted. Therefore, researchers suggested that it is probably better to use ML, if the sample size is not sufficiently large (Jöreskog and Sörbom 1996). This can justify in using of ML to estimate our research model. However, future studies are either represent measurements on an interval/continuous scale or collect a sample size over thousands.

According to our results, perceived value plays an important role in predicting satisfaction and passenger behavioral intentions. Thus, further clarification and refinement of perceived value are needed for understanding the influence of perceived value on passenger behavioral intentions. While previous research indicated that perceived value is composed of service quality and perceived costs, equity theory indicates that customers are concerned about whether the sacrifice is fair, right, and/or deserved. Hence, future research could investigate the different properties of perceived value. For example, passengers might evaluate the fairness of pricing or waiting times to obtain a service. Furthermore, passengers might also assess whether they are paying for tangible service equipment or convenience of service, which may have potentially different evaluations on values. Future research could also explore the effect of different perceived values on passengers' intentions.

Research suggests that the nature of switching barriers provides no intrinsic benefits and creates feelings of entrapment through high membership and application fees (Jones et al. 2000; Ranaweera and Prabhu 2003). These “negative” barriers may possibly do more harm than good in the long run. For example, passengers may remain with the present coach service provider but may not provide positive word-of-mouth references. Hence, future research studies could emphasize some “positive” barriers, such as interpersonal relationships, which provide intrinsic benefits. Moreover, studies could further compare the effects of “negative” and “positive” barriers on passengers' behavioral intentions.

## Appendix

The measurement items of each construct (see Table 5).

**Table 5**

| Construct  | No. Indicators  |
|--|---|
| Service Quality (SQ)   | <i>Interaction with Passengers (IP)</i>   |
|  | V <sub>1</sub> Drivers appreciate the safety of passengers when they get on/off the vehicle   |
|  | V <sub>2</sub> Drivers are polite and friendly when communicating with passengers   |
|  | V <sub>3</sub> Drivers driver buses smoothly, and their road-craft is fine  |
|  | V <sub>4</sub> Drivers driver on the right route and never fail to stop when passengers want to get on  |
|  | <i>Tangible Service Equipment (TSE)</i>   |
|  | V <sub>5</sub> Bus companies provide safe and brand new vehicles  |
|  | V <sub>6</sub> Vehicles are clean inside  |
|  | V <sub>7</sub> Noise on the vehicle is not too loud   |
|  | V <sub>8</sub> Equipment in the vehicle satisfies passengers' needs   |
|  | V <sub>9</sub> Air-conditioning is very comfortable   |
|  | V <sub>10</sub> Stop's layout is fine   |
|  | <i>Convenience of Service (CS)</i>  |
|  | V <sub>11</sub> Places of bus stations are proper and convenient  |
|  | V <sub>12</sub> Transshipping on the network is convenient  |
| V <sub>13</sub> Information about bus routes is marked clearly   |   |
| V <sub>14</sub> Company will have notification on the buses in short time when the routes and bus schedule are changed       |   |
| V <sub>15</sub> Company will correct the information at stops in the short time when the routes and bus schedule are changed |   |
| Perceived Costs (PC)   | <i>Operating Management Support (OMS)</i>   |
|  | V <sub>16</sub> I do not have to worry that there is no bus   |
|  | V <sub>17</sub> I usually wait for a bus longer than the scheduled headway  |
| Perceived Values (PV)  | V <sub>18</sub> Company dispatches buses according to the schedule  |
|  | V <sub>19</sub> The fare charged to travel by this coach company is high  |
|  | V <sub>20</sub> The time required to arrive at the station is high  |
| Satisfaction (SA)  | V <sub>21</sub> The time required to wait at the station is high  |
|  | V <sub>22</sub> The company's service offered is valuable   |
|  | V <sub>23</sub> The company's service based on certain price is acceptable  |
| Switching Costs (SWC)  | V <sub>24</sub> It is worthier to travel by this company's coach than by other coach companies  |
|  | V <sub>25</sub> I felt interesting to travel by this company's coach  |
|  | V <sub>26</sub> I felt enjoyable to travel by this company's coach  |
| Alternative Attractiveness (AA)  | V <sub>27</sub> I felt surprised to travel by this company's coach  |
|  | V <sub>28</sub> It would be a hassle for me to get information about other companies  |
|  | V <sub>29</sub> For me, it would take a lot of costs to travel by other coach companies   |
| Behavioral Intention (BI)  | V <sub>30</sub> For me, it would be a high risk to travel by other coach companies  |
|  | V <sub>31</sub> I would probably be happy with the services of another coach company or mode  |
|  | V <sub>32</sub> Compared to this coach company, there are other coach companies or modes with which I would probably be equally or more satisfied |
|  | V <sub>33</sub> I would like to travel by this coach company again  |
|  | V <sub>34</sub> I would like to recommend this coach company to others  |

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