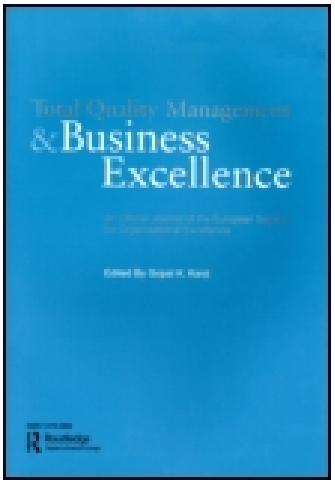

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# Understanding the Antecedents to Customer Loyalty by Applying Structural Equation Modeling

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ABSTRACT *The purpose of this study is to employ structural equation modeling to find linear structural relationships related to customer satisfaction. Analysis of 495 car owners patronizing five automobile service and repair centers operated by Taiwan's three major car companies (Nissan, Toyota, and Mitsubishi), produced the following empirical results: customers' perceptions of price fairness, the level of employee–customer interaction, and customers' perceptions of product quality all have the direct, positive impact on customer satisfaction. The authors identified and examined three dimensions of perceived service quality that positively affect customers' trust levels. These three are tangibility, employee–customer interaction, and employee empathy. Customers' perceptions of price fairness and product quality, as well as customer satisfaction and trust are all positively related to customer loyalty. Customer satisfaction can also affect customer loyalty by helping customers create trust. In light of these empirical findings, this study also includes a discussion of possible implications for managers.*

KEY WORDS: Customer loyalty, customer satisfaction, trust, structural equation modeling, auto repair and maintenance industry

## Introduction

The past 20 years have seen an abundance of studies on perceived service quality, customer satisfaction, and customer loyalty. Still, there are important issues related to these subjects that have yet to be addressed. The intangibility of the concept of service, for example, has long been the focus of researchers and managers (e.g. Bebko, 2000; Kuo, 2003; Lovelock, 1983; Rathmell, 1966; Rushton & Carson, 1989; Shostack, 1977; Wakefield & Blodgett, 1999). However, most service industries provide customers with intangible services in combination with tangible products, although the ratio between

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the two will vary from industry to industry (Rathmell, 1966; Rushton & Carson, 1989; Shostack, 1977). This means that the tangible factors associated with service industries cannot be ignored while issues of service industry management are investigated. For this reason, this study considers both the intangibility of services and the tangibility of products within the research framework.

Furthermore, the existing researches on service industry management have tended to focus on the relationships between service quality, customer satisfaction, and customers' intentions to repurchase. However, overemphasizing some variables, while overlooking others, might serve to distort researchers' views of certain factors that played important parts in the customers' decision-making processes (Cronin *et al.*, 2000). The effects of service quality on customer satisfaction and customer loyalty, for example, have received considerable attention. However, the question of whether service quality, product quality, and perceived price fairness may directly influence customers' intentions to repurchase, as well as their behavioral loyalty, is a different issue, and one worthy of investigation.

Some studies (e.g. Athanassopoulos, 2000; Bei & Chiao, 2001; Bolton & Lemon, 1999; Varki & Colgate, 2001; Voss *et al.*, 1998) have found that the price of a product or service also plays a significant role in shaping customer satisfaction and customer loyalty, while Singh & Sirdeshmukh (2000) have treated the influence of price on trust and customer loyalty. However, Varki & Colgate (2001) pointed out that the role of perceived price construct remains unexplored and needs to be actively managed in the field of service industries. In the study of Parasuraman *et al.* (1988), service quality was viewed as an intrinsic cue, while price perception, on the other hand, was viewed as an extrinsic cue that would be more easily compared among service providers. The empirical result of Jiang & Rosenbloom (2005) has also shown that price perception has a positive impact on customer satisfaction and behavioral intention.

From the perspective of relationship marketing, Doney & Cannon (1997) argued that suppliers and salespeople are important in forming buyers' trust and influencing their purchasing decisions. Recently, researchers have further applied this concept of trust to explore the relationship between customers and service providers (e.g. Garbarino & Johnson, 1999; Singh & Sirdeshmukh, 2000). Applying signal theory, Kirmani & Rao (2000) argued that when customers cannot inspect a product's quality themselves, the quality claimed signal sent by the provider is useless. When signals are not useful, customers will depend on trust. Managing customers' trust, therefore, is especially important in service industries (Chiou, 2004), and the relationships among trust, customer satisfaction, and customer loyalty become important topics to explore.

For this reason, this study focuses on service industries in the hope of achieving the following two goals. First, we hope to propose a more comprehensive model for understanding how customer loyalty is formed. Second, we wish to discuss the relationships including direct and indirect effects among perceived product quality, perceived service quality, and perceived price fairness on customer satisfaction, trust, and customer loyalty.

Following the introduction section, a brief review of the literature is given and the research hypotheses are proposed. In the third section, the paper will describe the samples and methodology of which it makes use. The fourth section contains a discussion of statistical results and their managerial implications, while the fifth and final section contains our concluding remarks.

## Literature Review and Research Hypotheses

Issues related to customer satisfaction and customer loyalty in service industries have gained in recognition and importance over the past decade. However, as most practitioners in the service industry provide both customer satisfaction and customer loyalty simultaneously, it is necessary to investigate them together (Cronin *et al.*, 2000). Parasuraman *et al.* (1985) also found that because of the intangible, heterogeneous, and inseparable nature of the characteristics associated with service quality, the traditional methods of product quality evaluation are ineffective in the service quality counterparts because service quality cannot be measured objectively by such indicators as durability and number of defects (Kuo *et al.*, 2005). That is, service quality and product quality represent significantly different constructs. In addition, concepts related to perceived price fairness (Varki & Colgate, 2001; Voss *et al.*, 1998) and trust (Garbarino & Johnson, 1999; Singh & Sirdeshmukh, 2000) in relationship marketing have recently gained increased recognition among researchers studying service marketing. For these reasons, we have chosen in this study to examine the automobile service and repair (henceforth ASR) industry – an industry in which customers perceive both product and service quality (Bei & Chiao, 2001). This simultaneous dual perception affords us the opportunity to examine the way these two perceptions work together toward the formation of customer loyalty. While it is difficult to obtain complete information from customers with regards to their evaluation of a service provider's performance (Andaleeb & Basu, 1994), they can judge service providers' performances according to extrinsic cues (price fairness) (Kirmani & Rao, 2000), as compared to those service providers' intangible services.

The original measurement of service quality, developed by Parasuraman *et al.* (1988), is comprised of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. However, both responsiveness and assurance are the results of the interaction between service personnel and customers. Thus, this research integrates these two dimensions into one, which is named 'employee–customer interaction'. In this way, this study integrates previous literature into its framework, as shown in Figure 1, to investigate the roles of each variable in shaping customers' loyalty.

### *Perceived Price Fairness*

Consumers may depend on price as an extrinsic signal of quality. Scholars have argued that price has a significant influence on customer satisfaction (Anderson *et al.*, 1994). This is due to the fact stated by Anderson *et al.* (1994, p. 54) that '. . . customer satisfaction is dependent on value, where value can be viewed as the ratio of perceived quality relative to price or benefits received relative to costs incurred . . .'. Moreover, empirical findings have shown that the perceived fairness of price has a positive influence on customer satisfaction (Bei & Chiao, 2001). Recently, related research studies (e.g. Athanassopoulos, 2000; Singh & Sirdeshmukh, 2000) have also revealed that price significantly influences customer satisfaction in service industries. This study, therefore, proposes that the perceived price fairness has a positive influence on customer satisfaction.

H1-1: Perceived price fairness has a positive impact on customer satisfaction.

From the perspective of *agency theory*, the more reasonable a customer perceives a service's price to be, the lower the perceived moral hazard associated with purchasing the

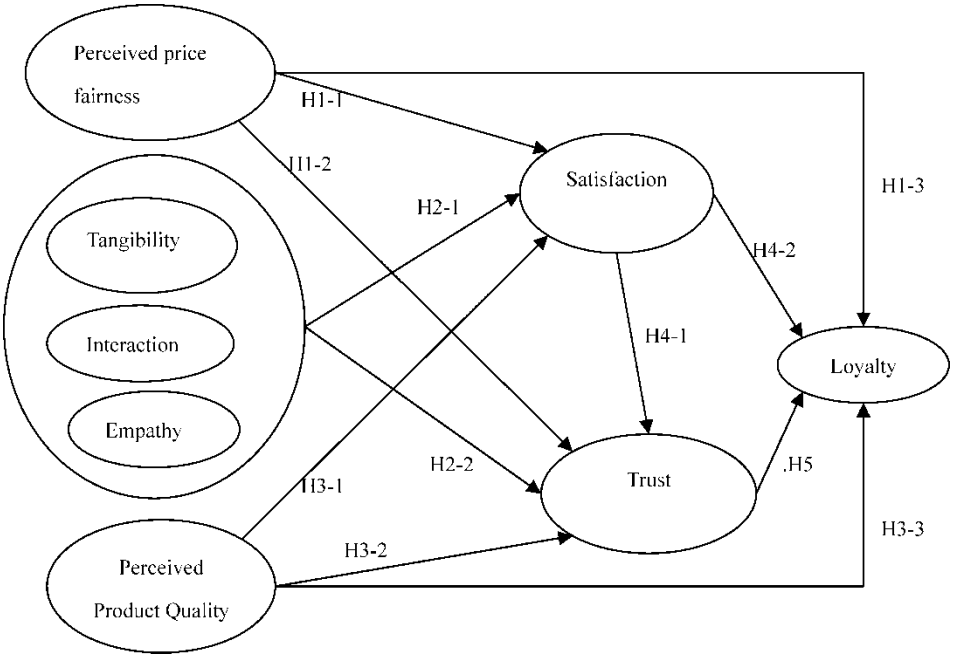


**Figure 1.** Research model used to examine the direct and indirect effects

service. On the one hand, a seemingly fair price may deepen a customer's trust in a service provider (Singh & Sirdeshmukh, 2000). On the other hand, if there emerges a gap between the expected and the actual price, the customer may feel that he has been treated unfairly, and may, as a result, come to distrust the service provider. Therefore, this research proposes that perceived price fairness has a positive influence on trust.

H1-2: Perceived price fairness has a positive impact on trust.

Some researchers have argued that price plays an important role in shaping a customer's behavioral intentions (e.g. Varki & Colgate, 2001; Jiang & Rosenbloom 2005). According to the process model of customer perception, in which the customer goes through three phases (cognitive, affective, conative) before s/he takes action, it can be assumed that when a customer perceives the fairness of the price given by the service provider, positive feelings toward the service provider will gradually develop; these feelings will in turn evolve into behavioral intention. As behavioral intention becomes more fully developed, customer loyalty will start to form. Thus, this research argues that perceived price fairness has a positive influence on customer loyalty.

H1-3: Perceived price fairness has a positive impact on customer loyalty.

*Perceived Service Quality and Perceived Product Quality*

Cronin & Taylor's (1992) research on the banking, pest control, dry cleaning, and fast food industries showed that service quality is one of the antecedents to customer satisfaction.

Using theories of equity and needs, Au *et al.* (2002) provided a conceptual model showing that satisfaction emerges from service attributes. This result was buttressed by the findings of other researchers (e.g. Anderson & Sullivan, 1993; Anderson *et al.*, 1994; Athanassopoulos, 2000; Cronin *et al.*, 2000; Fornell *et al.*, 1996; Kayis *et al.*, 2003). Since an evaluation of quality is usually required for a customer to decide if a service is satisfactory (Oliver, 1999), this research argues that perceived service quality is the precedent factor to customer satisfaction. We, therefore, propose:

H2-1: Perceived service quality has a positive impact on customer satisfaction.
H2-1a: Tangible quality of received services has a positive impact on customer satisfaction.
H2-1b: Employee–customer interaction has a positive impact on customer satisfaction.
H2-1c: Employee empathy has a positive impact on customer satisfaction.

Based on the reasoning previously mentioned, and that product quality is another important construct, the following hypothesis proposed:

H3-1: Perceived product quality has a positive impact on customer satisfaction.

Research in the field of relationship marketing has revealed numerous important insights into the construct of trust. In researching an off-Broadway theater, Garbarino & Johnson (1999) found that attributes related to the quality of service, including the audience's satisfaction with the actors, actor familiarity, and play attitudes, often deepen customers' trust of an organization. Hsieh & Hiang's (2004) study also supported the existence of this causal relationship. In other words, for the duration of the time they are being rendered a service, customers are likely making judgments and evaluations of the service provider according to attributes – both tangible and intangible – provided by the service provider itself. The better the perceived quality of service, the more likely the customer is to gain confidence in that organization, and the more trusting s/he becomes of the service provider (Doney & Cannon, 1997; Singh & Sirdeshmukh, 2000). Therefore, we propose the following hypotheses:

H2-2: Perceived service quality has a positive impact on trust.
H2-2a: Tangible quality of received services has a positive impact on trust.
H2-2b: Employee–customer interaction has a positive impact on trust.
H2-2c: Employee empathy has a positive impact on trust.

Accordingly, our hypothesis with respect to perceived product quality is as follows:

H3-2: Perceived product quality has a positive impact on trust.

As with the perception of fairness of price, a customer's judgment of the quality of a product can be viewed as another extrinsic cue because of the unambiguously. However, service quality is more difficult to evaluate because of the characteristic of ambiguously, that loyalty can only depend on the trust-related issues (Chiou, 2004).

Thus, this study argues only that perceived product quality has a direct effect on customer loyalty. The following hypothesis is proposed:

H3-3: Perceived product quality has a direct positive impact on customer loyalty.

*Customer Satisfaction, Trust, and Customer Loyalty*

In service industries, a high level of contact between service providers and customers is required. The greater customer satisfaction with their service experience, the more they feel they can trust both the organization itself and the personnel that provide its service. Thus, satisfied customers are more likely to increased use on short and in the long run by building trust of an organization than are dissatisfied customers (Birgelen *et al.*, 2001). Hsieh & Hiang's (2004) empirical findings also supported this argument. For the reasons given above, we propose the following hypothesis:

H4-1: Customer satisfaction has a positive influence on trust.

According to attitude theory, a person's attitude towards a specific object will influence his/her attitude toward that object in every conceivable aspect; indeed, these attitudes will influence a person's behavior with respect to the object (Fishbein & Ajzen, 1975). Customer loyalty may be regarded as a repetitive (purchasing) behavior directed toward a certain company's product or brand; therefore, it may be deduced that customer loyalty may be influenced by customer satisfaction (attitude). Taylor & Baker (1994) found that satisfaction acted as a moderator between service quality and loyalty in three of the four industries studied, but later research showed that it acts as a mediator instead of a moderator (Bou-Llusar *et al.*, 2001). This concept is echoed by lots of empirical researchers (e.g. Agustin & Singh, 2005; Banwet & Datta, 2002; Cronin et al., 2000; Cronin & Taylor, 1992; Hsieh & Hiang, 2004; McDougall & Levesque, 2000; Scharitzer & Kollarits, 2000).

Hence, the following hypothesis is proposed:

H4-2: Customer satisfaction has a direct positive impact on loyalty.

Trust is often considered as the most crucial element to a successful relationship (Morgan & Hunt, 1994). Empirical research has revealed that the presence of trust will have a positive effect on the continuity of a transactional relationship (Doney & Cannon, 1997; Ganesan, 1994; Garbarino & Johnson, 1999). Studies taking service industries as their subject have verified that trust is positively related to customers' word-of-mouth behavior (Nijssen *et al.*, 2003; Verhoef *et al.*, 2002). Therefore:

H5: Trust has a positive impact on customer loyalty.

## Research Methodology

*Sampling and Data Collection*

Every industry can be placed on a goods–service continuum, with pure goods purveyors at one extreme and pure service purveyors at the other, but most industries lie somewhere

between the two extremes (Rathmell, 1996; Shostack, 1977). That means that most organizations simultaneously provide both tangible products and intangible services. Accordingly, a pilot study was conducted from 87 respondents who had actually used all of the gas station, banking, and ASR (automobile service and repair) services within the past three months, and the results showed that the three industries were located at different relative positions along the continuum. The industries range from providers of purely intangible services to providers of purely tangible products (i.e. in order, banking services, ASR, and gas station services).

We chose to focus on the ASR industry, using it as our data source for an industry combining relative equal parts of tangible products and intangible services. Moreover, this study collected samples from car owners who actually experienced service from one of the three major automobile companies in Taiwan (e.g. Nissan, Toyota, and Mitsubishi). For each of the three companies, well-trained interviewers brought the questionnaires to five ASRs in the Greater Taipei metropolitan area. Car owners were asked to respond to the questionnaires while they were in the ASR waiting rooms, and all of the questionnaires were collected before customers left the ASR. A total of 650 questionnaires were administered to respondents, and 635 were completed, giving a response rate of 97.69%. After eliminating 140 invalid questionnaires (i.e. those questionnaires in which too many items had been skipped, the same answer was given for every item, or too many items were specified as 'fine'), 495 valid samples left for subsequent analysis.



### *Data Analysis*

This study applies Structural Equation Modeling (SEM) as the tool of analysis for maximum likelihood estimation in examining the proposed hypotheses. Among analysis methods used for SEM verification, many researchers (e.g. Anderson & Gerbing, 1988) have suggested that the Two-Step analysis method is the better one. It can precisely present the reliability of each measurement item during the two steps, and also eliminates any confusion that may be caused by the correlation between the measurement and the structural model. Confirmatory factor analysis (CFA) is conducted for the first step of the measurement model based on the correlation coefficient matrix of each measurement item; this precaution works to verify the fitness of each latent construct. In the second step, after 'fixing' the measurement in step one, the structural model is examined further. In this part, analysis is based on the covariance matrix, and the hypotheses proposed in this study are tested in the full one (a combination of both the measurement and the structural model). Two constructs are measured with a single item in the empirical model of this study. Following Jöreskog & Sörbom's (1996) suggestions, the reliability of constructs evaluated according to single-item measurements was set at 0.85, and the error variance of the observable variable was set as $(\sigma_i^2) \times (1 - \alpha)$. $\sigma_i^2$ is the measurement variance of the observable variable, and $\alpha$ is reliability; the path of the latent variable is set as $(\sigma_i^2) \times \alpha$.

### *Measurements*

(1) *Customer loyalty*. Not unlike earlier research literature definition customer loyalty, (e.g. Cronin *et al.*, 2000; Cronin & Taylor, 1992; McDougall & Levesque, 2000), this study measures customer loyalty according to two measurement indicators: 'The next time I need ..., I'll go back to that company' and 'If people asked me, I

would strongly recommend that they deal with this company'. A five-point scale established a range from 'very unlikely' to 'very likely' to assess customer loyalty. The internal consistency, Cronbach's $\alpha$, of these two indicators is equal to 0.76.

(2) *Customer satisfaction*. Finn & Kayande (1997) suggested that when a respondent is able to come up with an overall judgment, the overall evaluation is likely to be more reliable. Indeed, numerous studies (e.g. Anderson & Sullivan, 1993; Bitner, 1990; Fornell, 1992) have evaluated customer satisfaction in this way. Therefore, this study applies the direct performance measurement in accordance with the Likert five-point scale to obtain customers' overall evaluation of his/her satisfaction. Since this construct is single-item, it is necessary to set the reliability value of these constructs to estimate the error term during the full model analysis. Hair *et al.* (1998) suggested that setting the reliability as *one* implies that there is no error in the indicator measurement. However, it is not possible to avoid error that in the process of measurement. Thus, we apply Hayduk's (1987) suggestion method and the reliability of the construct of overall customer satisfaction was set at 0.85, based on Jöreskog & Sörbom's (1996) suggestion.

(3) *Trust*. This study measured 'trust' on the basis of the perception of trust, including both *competence* and *benevolence* (Singh & Sirdeshmukh, 2000). Our measurement of trust was based on the following two statements of imputed trust: 'The service personnel have the professional knowledge and skills to ensure that my car is in good repair' and 'I can trust the employees of the service center to consider my best interests'. Five-point scale ranges from 'strongly disagree' to 'strongly agree' to assess patrons' trust of the ASR. The internal consistency, Cronbach's $\alpha$, of these two items is equal to 0.76.

(4) *Perceived service quality*. This study employed three constructs – employee–customer interaction, empathy, and tangibility – to measure service quality by modifying SERVQUAL. All items were modified to ensure their applicability to ASR, and the appropriateness and validity of the survey content was confirmed by several marketing professors as well as senior managers in the three maintenance centers. All the items in the questionnaire were measured by respondents' self-managed five-point Likert-type scale ranging from 'strongly disagree' to 'strongly agree'. This study used four statements of subjective judgment to measure employees' interaction with customers. These statements were: 'On entering the service center, customers are greeted by service personnel', 'Even if they are busy, employees of the service center quickly greet customers', 'The service center personnel are forthright in explaining repair requirements and prices of items', and 'The service center personnel provide estimates as to how soon the car repair will be completed and the car returned'. The internal consistency, Cronbach's $\alpha$, of these four items is equal to 0.83. Further, in order to prevent confusion between similar constructs (such as trust and reliability), this study has chosen not to examine the notion of 'reliability'. Empathy was measured by means of the following two statements of subjective judgment: 'The service center can expand their office hours or provide service on the weekends' and 'The service center is sited with the customer's convenience in mind'. The internal consistency, Cronbach's $\alpha$, of these two items is equal to 0.74. As for the measurement of tangibility, evaluation made use of the following three statements of subjective judgment: 'The service center has clean and well-run facilities', 'The service center has an up-to-date look and well-maintained facilities', and 'The service center provides a clean and comfortable lounge area for customers'. The internal consistency, Cronbach's $\alpha$, of these three items is equal to 0.82.

(5) *Perceived product quality*. We defined perceived product quality as customers' judgment of the quality of the parts offered by the ASR. To measure product quality, we made use of a single statement of subjective judgment: 'The quality of the parts provided by this maintenance center is good'. Again, customers' answers were given in terms of a five-point Likert-type scale, ranging from 'strongly disagree' to 'strongly agree' in order to measure perceived product quality. The reliability of this construct is set at 0.85 (Jöreskog & Sörbom, 1996) to take into account the possible measurement errors in the analysis in the full model of SEM.

(6) *Perceived price fairness*. Perceived price is defined as what is given up or sacrificed to acquire a service or product (Athanassopoulos, 2000; Cronin *et al.*, 2000; Voss *et al.*, 1998). It represents customers' perceptions of both the monetary and the non-monetary costs associated with the acquisition and use of a service or product. In this study, respondents were asked to directly evaluate if the ASR's parts and labor costs were acceptable. Two statements of subjective judgment: 'Degree of agreement with the service fee charged by the service center' and 'Degree of agreement with the way the service center charges on car repair parts', which they could again evaluate on a five-point scale ranging from 'very unacceptable' to 'very acceptable'. The internal consistency of these two questions is 0.84.



## Results

### *The Sample Profile*

The descriptive sample of the respondents is shown in Table 1. Some 86% of the respondents were male, while females constituted about 14% of the population sample. This male/female ratio is similar to that of the general car-owning population in Taiwan, where males make up some 80.62%, according to statistics data released by Ministry of Transportation and Communications in Taiwan. The average age of the respondents was 35.44. As for respondents' educational background, most of them were graduates of ordinary senior high or vocational high schools. Those with less than a college education constituted about 40% of our sample. As for respondents' occupations, about 35% of them were general employees, while 20% worked at the middle management level. As for respondents monthly incomes, about 42% of them fell in the income range between US$1001–2000 monthly, while 23% fell in the range of US$2001–3000 monthly.

### *Measurement Model*

To examine the discriminant and convergent validity of the measurement model, this study applied CFA to confirm the fitness of the measurement model. Latent constructs and their corresponding measurement items were listed in Table 2. Results showed that the factor loading of each item was above 0.7, and the *t*-value reached the significant level ($p < 0.001$). This finding confirmed that each measurement construct in this study demonstrated convergent validity. Further examination of Cronbach's $\alpha$ reveals that the reliability of each construct is above 0.7, which implies good internal consistency (Nunnally, 1978). In Table 2, the related fitness indicators (GFI = 0.96; AGFI = 0.93; CFI = 0.98; NFI = 0.96, and RMSEA = 0.049) of the measurement model all reached the acceptable level. This implies that in the measurement model of this study (with the exception of two

**Table 1.** Sample profile

| Characteristics of respondents (Samples) | Nissan (193) | | Toyota (158) | | Mitsubishi (144) | | Total (495) | |
|---|---|---|---|---|---|---|---|---|
| Gender | | | | | | | | |
| Male | 177 | (35.76%) | 128 | (25.86%) | 120 | (24.24%) | 425 | (85.86%) |
| Female | 16 | (3.23%) | 30 | (6.06%) | 24 | (4.85%) | 70 | (14.14%) |
| Age (standard deviation) | 34.03 (9.06) | | 35.39 (9.20) | | 37.40 (9.16) | | 35.44 (9.22) | |
| Education background | | | | | | | | |
| Junior high or below | 22 | (4.44%) | 5 | (1.01%) | 0 | (0.00%) | 27 | (5.45%) |
| Senior high | 93 | (18.79%) | 41 | (8.28%) | 46 | (9.29%) | 180 | (36.36%) |
| College | 48 | (9.70%) | 53 | (10.71%) | 36 | (7.27%) | 137 | (27.68%) |
| Undergraduate | 28 | (5.66%) | 53 | (10.71%) | 44 | (8.89%) | 125 | (25.25%) |
| Graduate/above | 2 | (0.40%) | 6 | (1.21%) | 18 | (3.64%) | 26 | (5.25%) |
| Occupation | | | | | | | | |
| General employee | 77 | (15.56%) | 52 | (10.51%) | 42 | (4.48%) | 171 | (34.55%) |
| Professional driver | 16 | (3.23%) | 8 | (1.62%) | 8 | (1.62%) | 32 | (6.46%) |
| Middle management | 23 | (4.65%) | 35 | (7.07%) | 32 | (6.46%) | 90 | (18.18%) |
| Professional soldier | 20 | (4.04%) | 1 | (0.20%) | 1 | (0.20%) | 22 | (4.44%) |
| High management | 4 | (0.81%) | 12 | (2.42%) | 8 | (1.62%) | 24 | (4.85%) |
| House keeping | 0 | (0.00%) | 8 | (1.62%) | 3 | (0.61%) | 11 | (2.22%) |
| Small enterprise owner | 17 | (3.43%) | 8 | (1.62%) | 12 | (2.42%) | 37 | (7.47%) |
| Student | 2 | (0.40%) | 7 | (1.41%) | 6 | (1.21%) | 15 | (3.03%) |
| Certificated personnel | 11 | (2.22%) | 13 | (2.63%) | 11 | (2.22%) | 35 | (7.07%) |
| Retired | 4 | (0.81%) | 2 | (0.40%) | 5 | (1.01%) | 11 | (2.22%) |
| Others | 19 | (3.84%) | 12 | (2.42%) | 16 | (3.23%) | 47 | (9.49%) |
| Monthly income: USD | | | | | | | | |
| $1000 and below | 22 | (4.44%) | 11 | (2.22%) | 8 | (1.62%) | 41 | (8.28%) |
| 1001–2000 | 99 | (20.00%) | 60 | (12.12%) | 47 | (9.49%) | 206 | (41.62%) |
| 2001–3000 | 42 | (8.48%) | 45 | (9.09%) | 29 | (5.86%) | 116 | (23.43%) |
| 3001–4000 | 11 | (2.22%) | 18 | (3.64%) | 25 | (5.05%) | 54 | (10.91%) |
| 4001–5000 | 8 | (1.62%) | 9 | (1.82%) | 12 | (2.42%) | 29 | (5.86%) |
| 5001–7000 | 6 | (1.21%) | 6 | (1.21%) | 14 | (2.83%) | 26 | (5.25%) |
| 7001 and above | 5 | (1.01%) | 9 | (1.82%) | 9 | (1.82%) | 23 | (0.65%) |



constructs, *perceived product quality* and *overall satisfaction*, which made use of a single indicator) each construct demonstrates acceptable discriminant validity.

### *Hypotheses Testing*

Table 3 shows the means, standard deviations, variances, and correlation/covariance matrix of related constructs. To test the hypotheses, this study conducted an analysis of the structural model in accordance with the research framework given in Figure 1. Relations not evaluated in the $\boldsymbol{\gamma}$ matrix are fixed at zero, while the relations to be evaluated in the $\boldsymbol{\beta}$ matrix are freed. The error terms related to single-item indicators, (i.e. those related to *perceived product quality* and *overall satisfaction*), are fixed, respectively, at 0.06 ($0.424 \times 0.15$) and 0.08 ($0.515 \times 0.15$) (Jöreskog & Sörbom, 1996).

**Table 2.** Constructs and indicators of the measurement items

| Measurement items | Means (SD) | Factor loading (SD) | *t*-value | Cronbach's $\alpha$ |
|---|---|---|---|---|
| *Perceive price fairness* | | | | 0.84 |
| Service fee (X1) | 3.4182 (0.8054) | 0.90 (0.04) | 21.65** | |
| Repair parts (X2) | 3.4606 (0.7857) | 0.80 (0.04) | 18.87** | |
| *Tangibility* | | | | 0.82 |
| Clean maintenance facilities (X3) | 4.1253 (0.6461) | 0.76 (0.04) | 18.58** | |
| Innovative facilities (X4) | 3.9879 (0.7634) | 0.81 (0.04) | 20.34** | |
| Comfortable lounge (X5) | 4.1798 (0.7042) | 0.77 (0.04) | 18.97** | |
| *Interaction* | | | | 0.83 |
| Entering greeted (X6) | 4.2303 (0.6359) | 0.80 (0.04) | 20.27** | |
| Quickly greet even busy (X7) | 3.9619 (0.7639) | 0.79 (0.04) | 20.17** | |
| Explain items and price (X8) | 4.0747 (0.7585) | 0.75 (0.04) | 18.61** | |
| Estimation of dates (X9) | 4.0121 (0.7581) | 0.73 (0.04) | 17.80** | |
| *Empathy* | | | | 0.74 |
| Expand office hours (X10) | 4.0222 (0.7854) | 0.70 (0.05) | 15.38** | |
| Proper location (X11) | 4.0768 (0.7158) | 0.85 (0.05) | 18.38** | |
| *Product Quality* [a] | | | | |
| Repair parts (X12) | 3.9455 (0.6513) | | | |
| *Satisfaction* [a] | | | | |
| Satisfaction (Y1) | 3.8848 (0.7481) | | | |
| *Trust* | | | | 0.76 |
| Professional knowledge (Y2) | 4.0869 (0.7383) | 0.79 (0.04) | 19.56** | |
| Consider customer's interest (Y3) | 4.0444 (0.7461) | 0.80 (0.04) | 19.98** | |
| *Loyalty* | | | | 0.76 |
| Go back (Y4) | 3.9111 (0.6825) | 0.76 (0.04) | 17.62** | |
| Recommend (Y5) | 3.5737 (0.7435) | 0.81 (0.04) | 18.78** | |
| *Fit Index* | | | | |
| $\chi^2$(df) | 159.83 | (75) | | |
| GFI | 0.96 | | | |
| AGFI | 0.93 | | | |
| CFI | 0.98 | | | |
| NFI | 0.96 | | | |
| RMSEA | 0.049 | | | |

Note: [a]means the construct is of single indicator; all the measurement items are gauged with Likert 5-point item; $^{**}p < 0.001$.



Table 4 shows the results of the examination of the hypotheses examination as well as the indirect effects among related constructs. The full model, with its empirical sample numbering 495, reached the range of acceptability, as the value of $\chi^2$/degree of freedom equals 2.136 (Bollen, 1989). Other indices of model fitness and values, GFI = 0.95, AGFI = 0.92, CFI = 0.97, NNFI = 0.96, IFI = 0.97, and RMSEA = 0.048, also confirmed that the full model reached the level of acceptability.

The results showed that *perceived price fairness* has a significantly positive influence on *overall satisfaction* ($\gamma = 0.39$, $p < 0.001$) and *customer loyalty* ($\gamma = 0.28$, $p < 0.001$). However, its impact on trust did not reach the significance level ($\gamma = 0.07$, $p > 0.05$). As for indirect effects, our empirical results revealed that *perceived price fairness* has a significant indirect effect on *customer loyalty* ($\gamma = 0.09$, $p < 0.001$), through either customer satisfaction or trust. Therefore, H1-2 is not supported, but H1-1 and H1-3 are supported.

**Table 3.** Means, standard deviations, variances, correlation/covariance matrixes in constructs measurement

| Construct | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Satisfaction | 3.885 | 0.748 | 0.560 | 0.534 | 0.562 | 0.524 | 0.396 | 0.465 | 0.264 | 0.515 |
| 2. Trust | 4.066 | 0.670 | 0.268 | 0.449 | 0.497 | 0.401 | 0.683 | 0.843 | 0.529 | 0.384 |
| 3. Loyalty | 3.742 | 0.642 | 0.270 | 0.214 | 0.412 | 0.546 | 0.389 | 0.435 | 0.277 | 0.453 |
| 4. Price | 3.440 | 0.739 | 0.290 | 0.198 | 0.259 | 0.546 | 0.357 | 0.407 | 0.210 | 0.475 |
| 5. Tangibility | 4.042 | 0.616 | 0.182 | 0.282 | 0.154 | 0.162 | 0.379 | 0.723 | 0.477 | 0.347 |
| 6. Interaction | 4.100 | 0.599 | 0.208 | 0.338 | 0.167 | 0.180 | 0.226 | 0.358 | 0.564 | 0.407 |
| 7. Empathy | 4.050 | 0.670 | 0.132 | 0.238 | 0.119 | 0.104 | 0.197 | 0.226 | 0.449 | 0.308 |
| 8. Product | 3.946 | 0.651 | 0.251 | 0.168 | 0.189 | 0.228 | 0.139 | 0.159 | 0.134 | 0.424 |

Note: Variances are on the diagonal; covariance is under this diagonal; correlation variances are above the diagonal; every covariance reaches significant level of $p < 0.01$; sample = 495; SD = standard deviation.



**Table 4.** SEM results of hypotheses testing

| Hypotheses | Path analysis/model fit | coefficient | *t*-value |
|---|---|---|---|
| | *Relationships* | | |
| H1-1 | Price → Satisfaction | 0.39 | 7.16*** |
| H1-2 | Price → Trust | 0.07 | 1.77 |
| H1-3 | Price → Loyalty | 0.28 | 6.10*** |
| H2-1a | Tangibility → Satisfaction | −0.07 | −0.65 |
| H2-1b | Interaction → Satisfaction | 0.32 | 3.18*** |
| H2-1c | Empathy → Satisfaction | 0.04 | 0.56 |
| H2-2a | Tangibility → Trust | 0.23 | 2.97*** |
| H2-2b | Interaction → Trust | 0.45 | 5.92*** |
| H2-2c | Empathy → Trust | 0.27 | 4.62*** |
| H3-1 | Product → Satisfaction | 0.30 | 5.81*** |
| H3-2 | Product → Trust | −0.05 | −1.29 |
| H3-3 | Product → Loyalty | 0.08 | 1.99* |
| H4-1 | Satisfaction → Trust | 0.20 | 5.81*** |
| H4-2 | Satisfaction → Loyalty | 0.16 | 4.12*** |
| H5 | Trust → Loyalty | 0.21 | 4.02*** |
| | *Indirect Effects* | | |
| | Product → Satisfaction/Trust → Loyalty | 0.05 | 2.86*** |
| | Tangibility → Satisfaction/Trust → Loyalty | 0.03 | 1.12 |
| | Interaction → Satisfaction/Trust → Loyalty | 0.16 | 4.41*** |
| | Empathy → Satisfaction/Trust → Loyalty | 0.07 | 2.65*** |
| | Price → Satisfaction/Trust → Loyalty | 0.09 | 4.93*** |
| | Satisfaction → Trust → Loyalty | 0.04 | 3.29*** |
| | *Model Fit Index* | | |
| | $\chi^2$(df) | 205.06 (96) | |
| | $\chi^2$/df | 2.14 | |
| | GFI | 0.95 | |
| | AGFI | 0.92 | |
| | CFI | 0.97 | |
| | NNFI | 0.96 | |
| | IFI | 0.97 | |
| | RMSEA | 0.05 | |

Note: $N = 495$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$.

We next examined the influence of *perceived service quality* on *overall satisfaction* from the three dimensions of service quality: *tangibility*, *employee-customer interaction*, and *empathy*. The results in Table 4 showed that *employee–customer interaction* has a significantly positive influence on customer *overall satisfaction* ($\gamma = 0.32, p < 0.001$), while *tangibility* ($\gamma = -0.07, p > 0.05$) and *empathy* ($\gamma = 0.04, p > 0.05$) did not reach the significance level. Therefore, Hypothesis 2-1 is partially supported.

As for the influence of *perceived service quality* on *trust*, we found that *tangibility* ($\gamma = 0.23,\ p < 0.001$), *employee–customer interaction* ($\gamma = 0.45,\ p < 0.001$), and *empathy* ($\gamma = 0.27,\ p < 0.001$) all have a significantly positive influence on *trust*. Hence, Hypothesis 2-2 is supported. Further investigation of the indirect effect of *perceived service quality* on *customer loyalty* showed that both *empathy* ($\gamma = 0.16$, $p < 0.001$) and *employee–customer interaction* ($\gamma = 0.07,\ p < 0.001$) have a positive influence on *customer loyalty* via *overall satisfaction* and *trust*. Yet the indirect influence of *tangibility* on *customer loyalty* did not reach the significance level ($\gamma = 0.03, p > 0.05$).

*Perceived product quality* has a significantly positive influence on both *overall satisfaction* ($\gamma = 0.30,\ p < 0.001$) and *customer loyalty* ($\gamma = 0.08,\ p < 0.05$), but not on *trust* ($\gamma = -0.05, p > 0.05$). Therefore, H3-2 was not supported, but H3-1 and H3-3 were supported. We further investigated the indirect effect of *perceived product quality* on *customer loyalty*. Our empirical findings showed that *perceived product quality* affects *customer loyalty* by means of *customer overall satisfaction* and *trust* ($\gamma = 0.05, p < 0.001$).

As for the relationship between *customer satisfaction* and *trust*, and the relationship between *customer satisfaction* and *customer loyalty*, the results revealed that *customer satisfaction* affects *trust* significantly ($\beta = 0.20, p < 0.001$) as does the relationship between *customer satisfaction* and *customer loyalty* ($\beta = 0.16, p < 0.001$). Thus, H4-1 and H4-2 are both supported. In addition, *customer satisfaction* has an indirect effect on *customer loyalty* through *trust* ($\beta = 0.04, p < 0.001$). Finally, as for the influence of *trust* on *customer loyalty*, *trust* has a significantly positive influence on *customer loyalty* ($\beta = 0.21, p < 0.001$) which supports H5.

## Discussion

The empirical results are summarized in Figure 2. The solid lines represent those hypotheses that were supported, while the dotted lines stand for those that were not supported. In this study, perceived price fairness, perceived product quality, and employee–customer interaction were the three most important antecedents to customer satisfaction.

In general, this supports the satisfaction model proposed by Parasuraman *et al.* (1994). Most research so far, however, has regarded service quality as an integrated factor that is important in forming customer overall satisfaction (e.g. Anderson & Sullivan, 1993; Anderson *et al.*, 1994; Athanassopoulos, 2000; Cronin *et al.*, 2000; Fornell *et al.*, 1996). Yet this study, by dividing service quality into three dimensions (tangibility, employee–customer interaction, and empathy), finds that only employee–customer interaction plays an important role in the formation of customer satisfaction. This finding is similar to the results of the research conducted by Ganesh *et al.* (2000), which seemed to indicate that high quality service, along with high levels of employee–customer interactivity were the most important factors in creating customer overall satisfaction. Tangibility, one dimension of service quality, did not appear to affect customer satisfaction significantly in the present study. One possible explanation is that the respondents of this study were limited to the authorized ASR operated by the top three best-selling

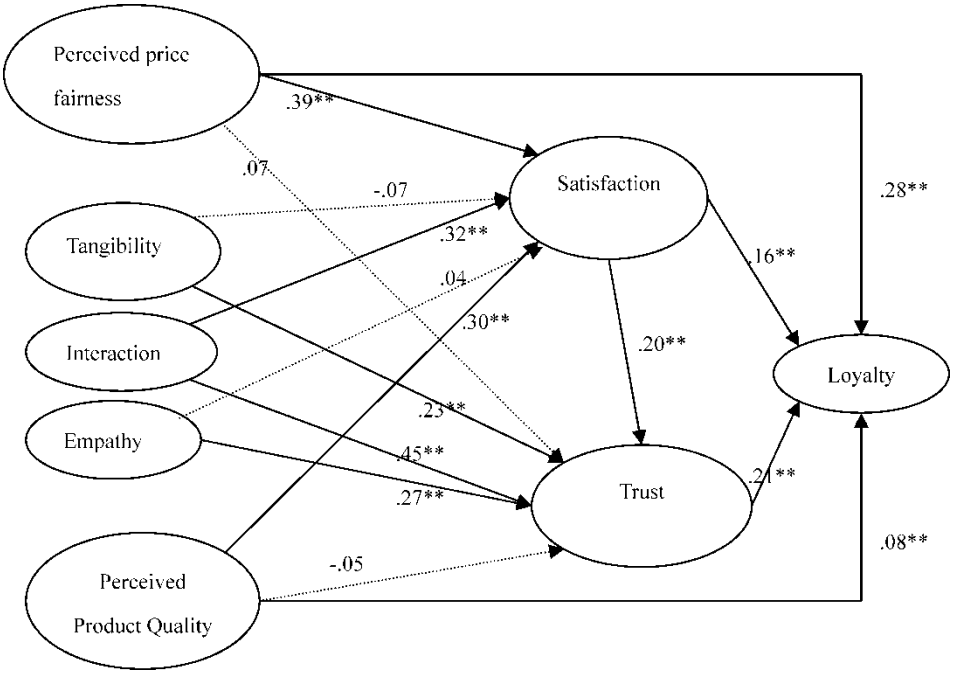


**Figure 2.** Empirical results of the full model. *Note*: The solid line means reach the significant at $p$-value of 0.05, and the dotted line means insignificant level at $p$-value of 0.05

brands (Nissan, Toyota, and Mitsubishi). Among these three brands, the tangible elements of these ASR (e.g. parking lots, physical facilities, and customer lounges) are likely to be maintained at a comparatively higher level than those of other local ASR, and customers may also have some familiarity with the top-name facilities from advertisements. Service providers, however, should still work to maintain a high standard of tangible elements' quality to customers, as such elements are likely to inform customers' overall perceptions.

Notably, all three dimensions of perceived service quality – tangibility, employee–customer interaction, and empathy – all have a significant impact on trust. Therefore, external clues such as facility upkeep, as well as internal clues, such as employee–customer interaction and the empathy demonstrated through transactions, are both important factors in creating trust. In other words, customers may evaluate service providers by means of both external and internal clues; in this way, trust gradually accumulates (Doney & Cannon, 1997). Singh & Sirdeshmukh's (2000) conceptual framework proposed that perceived price fairness has positive effect on trust. However, this relationship is only marginally significant ($t = 1.77$, $p < 0.1$) in the present study. We did find, however, that perceived price fairness has a significant indirect (through customer satisfaction) effect on trust ($t = 4.53$, $p < 0.001$). Therefore, the relationship between perceived price fairness and trust deserves some further exploration. Additionally, although the effect of perceived product quality on trust is not supported in this study, product quality does have an indirect influence ($t = 4.03$, $p < 0.001$) on trust, by way of overall satisfaction. Customer satisfaction, therefore, serves as the mediator in any discussion of the relationships among perceived price fairness, employee–customer interaction, and perceived product quality in

the forming of trust. The influence of customer satisfaction on trust found in our study is similar to the results revealed in Garbarion & Johnson's (1999) study.

With regard to the antecedents of customer loyalty, we found that the related constructs (i.e. perceived price fairness, perceived product quality, overall customer satisfaction, and trust), all play important roles in the formation of customer loyalty. Additionally, perceived price fairness, perceived product quality, and perceived service quality (including both employees' interaction with customers and employees' apparent empathy with customers) have significant indirect influences on customer loyalty, by way of customer satisfaction or trust. Furthermore, customer satisfaction not only directly affects customer loyalty, but also indirectly influences it through its affect on trust. Finally, the summarized empirical results are presented in Table 5.



## Conclusion and Future Suggestions

The purpose of this study is to propose an integrated framework of customer loyalty. Using the two-step approach of SEM, this study confirmed not only the discriminant validity of the full measurement model, but also the construct validity and convergent validity of each latent construct. On this basis, this research further integrated the measurement and the structural model to examine the proposed hypotheses by the full model. The results showed that the customer loyalty model proposed in this study demonstrates considerable model fit and supports the majority of the hypotheses.

The other purpose of this study was to investigate the relationships between perceived product quality, perceived service quality, and perceived price fairness on satisfaction, trust, and customer loyalty. Our empirical findings revealed that perceived price fairness, perceived product quality, customer satisfaction, and trust all play an important role in forming customer loyalty. The factors in the formation of satisfaction are perceived price fairness, perceived product quality, and employee-customer interaction (an element of perceived service quality), while the most important factor in the formation of trust is perceived service quality (i.e. tangibility, employee–customer interaction, and employee empathy).

**Table 5.** Result summary of hypotheses testing

| Hypotheses | Relations | Result |
|---|---|---|
| H1-1 | Price → Satisfaction | Supported |
| H1-2 | Price → Trust | Not-Supported |
| H1-3 | Price → Loyalty | Supported |
| H2-1a | Tangibility → Satisfaction | Not-Supported |
| H2-1b | Interaction → Satisfaction | Supported |
| H2-1c | Empathy → Satisfaction | Not-Supported |
| H2-2a | Tangibility → Trust | Supported |
| H2-2b | Interaction → Trust | Supported |
| H2-2c | Empathy → Trust | Supported |
| H3-1 | Product → Satisfaction | Supported |
| H3-2 | Product → Loyalty | Supported |
| H3-3 | Product → Trust | Not-Supported |
| H4-1 | Satisfaction → Trust | Supported |
| H4-2 | Satisfaction → Loyalty | Supported |
| H5 | Trust → Loyalty | Supported |

In accordance with these findings, the present study suggests that: if an organization regards customer loyalty as a means of creating profit, it should make the enhancement of customer loyalty as one of its strategic goals. However, resources are limited for all firms; thus, they should emphasize the dominate factor that directly influences customer loyalty – i.e. perceived price fairness and perceived product quality in the ASR industry. Moreover, customer satisfaction and trust are also factors that have a direct influence on customer loyalty. Therefore, employee–customer interaction, which influences both customer satisfaction and trust, is the most important element in creating customer loyalty. In sum, if an ASR wishes to enhance customer loyalty but has only limited resources, managers should grant priority to improvements in perceived price fairness, perceived product quality, and the employee–customer interaction aspect of perceived service quality. After improvements have been made to the above constructs, and if the ASR still has resources, it might focus it efforts on highlighting the progress of other dimensions of service quality, i.e. empathy and tangibility.

There are certain limitations to our research, however, which need to be mentioned here. One of the limitations of this study is that the samples come only from three ASRs operated by best-selling brands, and all of which are located in the Greater Taipei metropolitan area. Because of the sample's limited scope and location, the external validity of the research results is limited. Applying the customer loyalty model that emerged from this study to other industries or areas might help to enhance the generalizability of the results. Furthermore, the measurement of constructs in this study could use some fine-tuning. Since all of our data comes from respondents' self-managed, the common-method variance in the customer loyalty model is an inevitable issue, and acts as another limitation to this study's findings.

Finally, there are some ideas for further related research. Customers with different orientations (e.g. transactional or relational customers) may expect to maintain different sorts of relationships with their service providers. Therefore, future research may wish to explore the customer model from the viewpoint of relationship marketing. That means taking relationship constructs as moderators. Such relationship constructs may include different types of customers (Garbarino & Johnson, 1999), gender (Huang *et al.*, 2003), or the length of time during which contact has been maintained with the organization (Verhoef *et al.*, 2002). Such constructs could be meaningfully used to discuss the customer loyalty model. Furthermore, satisfied customers are willing to pay more for service (Homburg *et al.*, 2005), thus integrating profit into the customer loyalty model is another direction. In addition, some researchers believe that discrepancies in research findings are the result of factors related to the length of time considered in various studies. Hence, investigation of this issue from a perspective of longevity might be an interesting topic for further research (Verhoef *et al.*, 2002; Eskildsen *et al.*, 2004). Finally, resent research has focused on nonlinear relations among satisfaction and other constructs (e.g. Homburg *et al.*, 2005; Agustin & Singh, 2005), but has not included service quality, perceived price fairness, or product quality. Examining the non-linear relational curve among all constructs deserves further exploration.



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