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THE DETERMINANTS OF CUSTOMER LOYALTY: AN ANALYSIS OF INTANGIBILE FACTORS IN THREE SERVICE INDUSTRIES

Lien-Ti Bei
Yu-Ching Chiao

The purpose of this study is to investigate how customers' perceptions of service quality, product quality, and price fairness influence their loyalty to a particular service provider. Based on the results of a pilot study, we have elected to study banks, auto repair and maintenance shops, and (gasoline) filling stations, each of which are characterized by differing degrees of intangible service provision. Our results show that customer satisfaction either fully or partially mediates the relationship between consumers' perceptions and their loyalty. The direct or indirect effects on customer loyalty of the perception of product and service quality, as well as of perceived price fairness, are related to the differing levels of intangible service associated with each of the three different service industries.

INTRODUCTION

Over the past two decades, service quality, customer satisfaction and customer loyalty have occupied a dominant position in research on the marketing of service industries. Early on, the 'dimensions and measurement of service quality' were, for the majority of researchers, the primary subjects of interest. Later, after having established a fairly firm grasp of issues related to measurement, researchers began to investigate more complex conceptual relationships, and to consider how such relationships act to drive behavioral intention (Cronin, Brady, and Hult, 2000). Parasuraman, Zeithaml, and Berry's (1994) conceptual model, for instance, hypothesized that customer satisfaction is influenced simultaneously by service quality, product quality, and price.

While the fundamentally intangible nature of service itself has long been a central issue in research on the service industry (Bebko, 2000; Lovelock, 1983; Parasuraman, Zeithaml, and Berry, 1994; Rathmell, 1966; Rushton and Carson, 1989; Shostack, 1977; Wakefield and Blodgett, 1999), the significance of tangibility as a dimension of service quality was recognized in the important findings of Parasuraman, Zeithaml, and Berry (1988, 1991). Indeed, most service industries at once offer both intangible services and tangible products to customers, in varying proportions (Rathmell, 1966; Rushton and Carson, 1989; Shostack, 1977). It is worth noticing that tangible products, such as the food provided in a restaurant, differ from the tangible dimension of service quality which would be the interior decoration and tableware in the restaurant case. However, after Parasuraman, Zeithaml, and Berry's (1994) study, the impact of the quality of tangible products on customer satisfaction has rarely been discussed within the context of customer satisfaction research.

Price is another important issue, and one which is often excluded from research on

service quality.   Typically, the effect of price on consumer satisfaction has been considered only after the relationships among service quality, consumer satisfaction, and loyalty in service industries have been thoroughly examined (Athanassopoulos, 2000; Bolton and Lemon, 1999; Varki and Colgate, 2001; Voss, Parasuraman, and Grewal, 1998).   Still, it has been suggested that perceived price fairness plays an important role in customer satisfaction and retention (Varki and Colgate, 2001).

This study has three major purposes.   The first is to examine the influence of perceived service quality, product quality, and price fairness on customer satisfaction and loyalty in three service industries.   The second is to construct a feasible integrative model of customer satisfaction and loyalty that takes into account both the direct and indirect effects of customers' perceptions.   Finally, this study examines how perceived product quality, service quality, and price fairness differently influence customer loyalty, owing to the moderating effect of the varying proportions of products to service in each of the three industries.

RESEARCH MODEL AND HYPOTHESES

This study begins with an integration of the literature on the concepts related to, and the relationships among, service quality, product quality and perceived price, and their relationships to customer satisfaction and loyalty.

Customer Satisfaction and Customer Loyalty

The desire to understand which factors work together to create customer satisfaction, as well as how such factors work together to do so, is one of the primary reasons for researchers' and marketers' interest in service quality.   A person's attitude towards a specific subject will affect his or her intention to execute various actions with regards to this subject (Fishbein and Ajzen, 1975).   Customer loyalty, which may be called the continuously positive purchasing behavior of a customer towards a certain company or brand, will, clearly, be affected by customer satisfaction.   This conclusion has many times been supported by empirical research (Chiou, Droge, and Hanvanich 2002; Cronin, Brady, and Hult, 2000; Cronin and Taylor, 1992; McDougall and Levesque, 2000).

From the behavioral perspective, the definition and measurement of brand loyalty is based on customers' actual purchasing behavior.   The most accurate way to measure brand loyalty is by means of the Proportion of Purchase Method.   According to this method, customer loyalty is measured by examining the proportion of a customer's total purchases comprised of certain brands, during a given period of time.   However, using the behavioral perspective as a basis for measuring consumer loyalty does not allow a distinction to be made between mere repeat-purchase behavior and actual brand loyalty (Jacoby and Chestnut, 1978).   Thus, some scholars have emphasized the important role of customers' attitudes, suggesting that both behavior and attitude should be considered in defining and evaluating consumer loyalty (Oliver, 1999).   These scholars argue that the difference between loyalty and mere repeat-purchase behavior is that loyalty is based on a consumer's distinct preference or liking for a brand or product.

The concept of loyalty includes both positive attitudes *and* behavior.   However, customer satisfaction, which is the antecedent to loyalty, is also a positive attitude.   Customer loyalty, then, should be measured purely in behavioral terms in the study of the relationship

between customer satisfaction and customer loyalty, as positive attitude is embedded within customer loyalty owing to the antecedent role played by customer satisfaction.

Relationships between Perceived Service Quality, Customer Satisfaction, and Customer Loyalty

Empirical findings support the view that service quality is one of the primary determinants of customer satisfaction (Anderson and Sullivan, 1993; Anderson, Sullivan, and Lehmann, 1994; Athanassopoulos, 2000; Cronin, Brady, and Hult, 2000; Fornell et al., 1996; Parasuraman, Zeithaml, and Berry, 1994).   In the early 1990s, some scholars also proposed that customers' satisfaction levels could retroactively affect their perceptions of service quality (Bitner, 1990; Bolton and Drew, 1991).   Bitner's (1990) path analysis indicated that service quality affects customer satisfaction, and that customer satisfaction in turn affects customers' recollected perceptions of service quality.   In her final model, the relationship between satisfaction and perceived service quality was very close.   Cronin and Taylor (1992) studied banking, pest control, dry-cleaning, and fast food services in an effort to explore the relationship between service quality and customer satisfaction.   Their results suggested that perceived service quality is an antecedent to customer satisfaction.   Thus, the current cross-sectional study makes use of the same causal relationship—i.e., that perceived service quality will affect customers' satisfaction.

The majority of research indicates that service quality affects customer loyalty only through customer satisfaction. (e.g., Anderson and Sullivan, 1993; Gotlieb, Grewal, and Brown, 1994; Jamal and Naser, 2003; Patterson and Spreng, 1997; Roest and Pieters, 1997).   However, some studies suggest that service quality might also have a direct impact on customer loyalty. (Bitner, 1990; Boulding et al., 1993; Parasuraman, Zeithaml, and Berry, 1988, 1991; Taylor and Baker, 1994; Varki and Colgate, 2001; Zeithaml, Berry, and Parasuraman, 1994).   Cronin and Taylor (1992) hypothesize that perceived service quality positively affects consumers' behavioral intentions.   Interestingly, their empirical results show that perceived service quality positively affects behavioral intention only through customer satisfaction.   That is, the effect of perceived service quality on behavioral intention appeared to be indirect.

Recently, Cronin, Brady, and Hult (2000) pointed out that both the direct and indirect effects (i.e., through customer satisfaction) of service quality on behavioral intention should be considered.   In their examination of six different service industries, they found that in four cases, the service quality directly and positively affected behavioral intention; moreover, the indirect effect of service quality on customer loyalty through customer satisfaction was supported empirically in each of the six industries (Cronin, Brady, and Hult, 2000).   Both direct and indirect influences of service quality on behavioral intention were also found in a study comparing banking services in the U.S. and New Zealand (Varki and Colgate, 2001).   This study thus proposes the following hypotheses:

H1a: *Perceived service quality affects customer loyalty indirectly and positively through customer satisfaction.*

H1b: *Customers' perceived service quality directly and positively affects their loyalty.*

Relationships between Perceived Product Quality, Customer Satisfaction, and Customer Loyalty

So far, much of the service marketing literature has focused only on service quality, and has not taken into consideration the fact that the majority of service industries in fact provide both intangible services and tangible products. Few industries provide *purely* tangible products (for instance, salt or chemical products); likewise, few industries provide *purely* intangible services, (for instance, consulting or teaching) (Shostack, 1977). The concept of a product-service continuum implies that the provision of only products or only services are two extremes, while the majority of providers fall somewhere between these two extremes (Rathmell, 1966). That is, most products require, to some degree, the support of services, and most services require some relationship to a product or products. In developing their theories on the dimensions of service quality, Lehtinen and Lehtinen (1991) suggested that the physical quality of service comprises not only physical support[1], but also the associated physical products themselves. The tangible dimension of service quality has been thoroughly researched in service marketing studies, but the effects of the quality of the associated tangible product has rarely been investigated.

The importance of product quality in customers' purchasing decisions has, however, been fully recognized in the area of durable goods (Brucks, Zeithaml, and Naylo, 2000). The influence of product quality on customer satisfaction was proposed by Parasuraman, Zeithaml, and Berry (1994), but was not recognized in succeeding empirical studies on the service marketing area. After reviewing 32 studies of the service industry, Cronin, Brady, and Hult (2000) suggested that future research should include some consideration of the quality of the products associated with the services, thereby emphasizing the significance of product quality in consumers' decision-making process.

In a study of service at gas stations, Lee (1998) applied the customer satisfaction model proposed by Parasuraman, Zeithaml, and Berry (1994) to examine the effects of both product and service quality on customer satisfaction and loyalty. Their results showed that customers' perception of the quality of gasoline at a gas station not only had a positive effect on customers' satisfaction, but also led directly to repeat-purchase behavior. Moreover, when it came to influencing customer loyalty, the effect of the quality of gasoline outweighed the effect of customers' satisfaction with the quality of service they received. Such findings imply that customers' willingness to repeatedly buy gasoline from the same gas station are likely influenced by the reliability of the product offered by the gas station. Accordingly, this research hypothesizes that product quality also affects customer loyalty both directly and indirectly.

H2a: *Perceived product quality affects customer loyalty positively and indirectly through customer satisfaction.*

H2b: *Perceived product quality affects customer loyalty positively and directly.*

Relationships between Perceived Price Fairness, Customer Satisfaction, and Customer Loyalty

From the consumer's perspective, the monetary cost of something is what is given up or sacrificed to obtain a product (Zeithaml, 1988). Thus, in studies on related topics, price has

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[1] The physical support of service quality refers to physical environment and physical facility, which is similar to the dimension of tangibility defined by Parasuraman, Zeithaml, and Berry (1998).

often been conceptualized and defined as a sacrifice (Anderson, Fornell and Lehmann, 1994; Athanassopoulos, 2000; Chang and Wildt, 1994; Sirohi, McLaughlin, and Wittink, 1998; Sweeney, Soutar, and Johnson, 1999).   There are three components to the concept of price: objective price, perceived non-monetary price, and sacrifice (Zeithaml, 1988).   The objective monetary price (simply put, the amount of money paid for product) is not equivalent to the perceived price (that is, the price as understood and recorded in the mind of consumer) since consumers do not always know or remember the actual price paid for a product.   Instead, they encode the price in a way that it is meaningful to them (Zeithaml, 1988).

As to the relationship between price and satisfaction, research has shown that price is one of the determinants of customer satisfaction (Anderson, Fornell, and Lehmann, 1994; Parasuraman, Zeithaml, and Berry, 1994; Zeithaml and Bitner, 2000).   When customers were asked about the value of services rendered, they consistently considered the price charged for the service (Anderson, Fornell, and Lehmann, 1994).   In those cases in which consumers did not consider price in forming their judgments about the quality of service, it was generally because they lacked a reference price (Zeithaml and Bitner 2000).   Still, though, this group ranked price as an important factor when it came to their overall satisfaction.

The theoretical formation of price perception in services remains largely unexplored (Varki and Colgate, 2001).   This study suggests that the perception of price fairness plays an important role in any exchange transaction.   The feeling of fairness depends on the gain-loss ratio felt by both partners in the exchange.   From the consumer's perspective, the gain is the product to be received, whereas the loss is the money to be paid.   When a consumer pays a higher price than others do, or when a consumer receives a lesser product than anticipated (either in terms of quantity or quality), perceived negative price inequity occurs.   On the other hand, perceived positive price inequity may result from either receiving a larger or better product than others who paid the same price, or paying a lower price but receiving the same product (Martins and Monroe, 1994).   Price fairness should have an influence on customer satisfaction (Parasuraman, Zeithaml, and Berry, 1994) as well as on behavioral intentions (Varki and Colgate, 2001).   This study, then, proposes that the perceived fairness of price should directly affect customer loyalty, and should also affect it indirectly via customer satisfaction.

H3a: *Perceived price fairness affects customer loyalty positively and indirectly through customer satisfaction.*

H3b: *Perceived price fairness affects customer loyalty positively and directly.*

Conceptual Model

Combining the above hypotheses, this study puts forth an integrated research framework, as shown in Figure 1.   The framework is based on the satisfaction model of Parasuraman, Zeithaml, and Berry (1994), and focuses on consumers' perceptions of the antecedents shown in the model.

FIGURE 1

The conceptual framework of this study
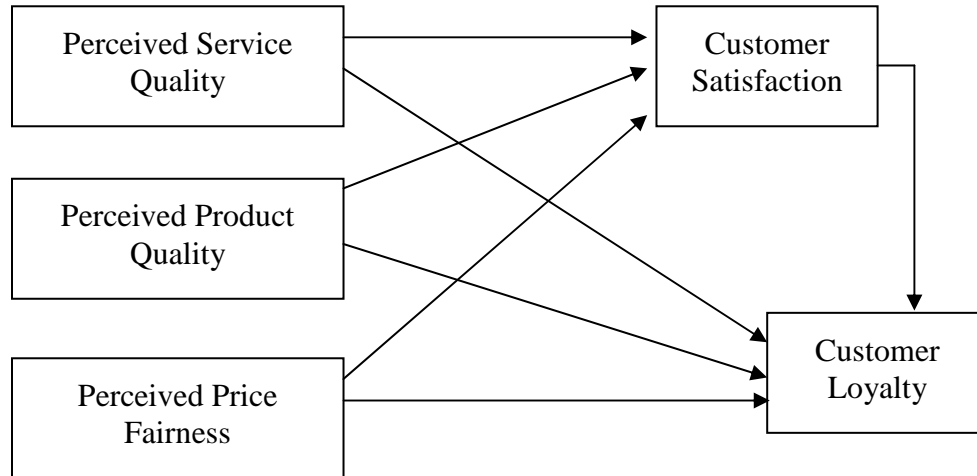
METHODOLOGY

This study makes use of data from three studies, which used similar questionnaires to examine service quality. The three data sets have been extracted from a study of gas station service conducted by Lee (1998); a study of banking service conducted by Yieh and Chiao (2001); and a study of auto repair and maintenance service conducted by Bei and Chiao (2001). Their samples and data are briefly described in the next section.

Sample and Data

Before the year 2000, a single company, the Chinese Petroleum Corporation (CPC), provided gasoline to all gas stations in Taiwan. Two-fifths of the gas stations were operated directly by CPC, while the other three-fifths were privately owned. Theoretically, the quality of all gasoline products was the same, since all products came from the same source. Interestingly, however, consumers perceived variances in the quality of gasoline from one station to another (Lee, 1998). The price of gasoline was the same at all of the filling stations, and was therefore not included in this data set. Of 9,959 questionnaires distributed to drivers, 3,578 were completed and returned. The valid sample size was 3,109, for an effective rate of 31 percent. This sample size was too large to be effectively compared with the other two data sets used in this study. Therefore, for the purposes of our research, we randomly selected 500 questionnaires from the pool of 3,109.

Banking service provides almost no tangible products. The prices set by each bank (such as deposit rates, loan rates, and service fees) may vary, but only within a small range. Product quality is not an issue in this industry, because the Taiwanese government allows only limited product variation. This means that banks compete almost solely on the basis of service quality. Therefore, the banking service is used in this study to investigate the effects of perceived service quality and perceived price fairness on customer satisfaction and customer

loyalty. Data on banking service was collected by means of questionnaires. Respondents were asked to evaluate the service at the bank at which they conducted most of their transactions. The total number of questionnaires distributed was 1,150; 690 were returned. The number of valid responses totaled 610, for an effective response rate of 53 percent.

The third service industry considered was that of auto repair and maintenance. Service, in this industry, meant the repair of automobiles, and the repair and replacement of auto parts, along with cleaning, inspecting and maintenance, and related repair services. Consumers exhibited differences in their perceptions of the charges levied by each auto repair and maintenance provider. Thus, consumers' perceptions of product quality, service quality, price fairness, satisfaction, and loyalty are all of relevance, in this service industry. A total of 650 questionnaires were distributed to car owners in 15 garages operated by Mitsubishi, Toyota, and Nissan (the three top-selling auto brands in greater metropolitan Taipei). Of the 635 surveys returned, the valid sample size was 495, for an effective response rate of 76 percent.

Pretest

We conducted a preliminary test so that we could compare the quantity of services rendered in each industry, as well as the importance of the services and products offered, as perceived by consumers. On our pretest questionnaire, respondents graded the three industries on a continuum ranging from purely tangible product to purely intangible service, as proposed by Rathmell (1966) and Shostack (1977). Our respondents to the questionnaire were 87 EMBA students, all of whom had had experience with all three types of services. All of the 87 questionnaires were collected, and all were valid.

The results of our pretest indicated that gas station service was regarded as the industry characterized by the highest level of product tangibility, while banking service was regarded as the industry characterized by the highest level of intangible service; auto repair and maintenance service fell in-between. The three data sets were first independently analyzed to test the model shown in Figure 1, then were analyzed again according to their proportion of tangibility to intangibility.

Measurement

We then measured the five variables that we considered to be most important: perceived service quality, product quality, price fairness, customer satisfaction, and customer loyalty, as measured in the three secondary data sets. All the items were measured according to Likert-type five-point scales.

Perceived Service Quality As the main purpose of this study is to examine the correlations among all of the relevant constructs, we chose use to make use of the concept of post-perception in our measurement of service quality (Cronin and Taylor, 1992; Zeithaml, Berry, and Parasuraman, 1994). That is, any evaluation of how good or bad service is should be based on consumers' perceptions of service quality. The questionnaires we used contained 25, 21, and 23 different items for evaluation for the gas station, banking, and auto repair industries, respectively.

The dimensions of service quality in the three data sets have been developed based on the SERVQUAL scale (Parasuraman, Zeithaml, and Berry, 1994). The reliability of each dimension after factor analysis is in the range of Cronbach's alpha from 0.60 to 0.93. All items related to service quality were then amalgamated, and an average score of service quality was determined.

Perceived Product Quality In effort to foster the most fruitful discussion of the effects of product quality on customer satisfaction and loyalty, this study distinguishes product quality from service quality according to the satisfaction framework put forth by Parasuraman, Zeithaml, and Berry (1994). Product quality is defined as the perceived quality of tangible products obtained by consumers. In the case of the gas stations, customers indicated their perception of the quality of gasoline. In the case of auto repair and maintenance, customers indicated their perception of the quality of the parts and oil offered by the automobile maintenance center. The internal consistency of the two five-point Likert-type items assessed by Cronbach's alpha is 0.55.

Perceived Price Fairness *As* discussed earlier, price may be defined as what consumers must sacrifice to gain a product or service. Customers' perceptions of price have both simple monetary associations and more complex, non-monetary associations, which vary from customer to customer (Athanassopoulos, 2000; Cronin, Brady, and Hult, 2000; Voss, Parasuraman, and Grewal, 1998; Zeithaml, 1988). The data sets used in this study asked respondents to give both monetary and non-monetary evaluations of price, as well as to assess price fairness. In the case of banking services, the average score of three items (bank deposit interest rates, loan interest rates, and all service fees) was used in the assessment of perceived price fairness, with a Cronbach's alpha of 0.75. In the case of auto repair services, respondents were simply asked to evaluate the reasonableness of the costs of repair, maintenance, and auto parts. There were two five-point scales ranging from 'very unreasonable' to 'very reasonable' for wages and parts, separately. The internal consistency of these two questions is Cronbach's alpha 0.84.

Customer Satisfaction Finn and Kayande (1997) have argued that overall measures of consumer satisfaction are the most reliable, as respondents are generally better able to make aggregate judgments. A number of researchers have also used an overall measure to assess customer satisfaction (e.g., Anderson and Sullivan, 1993; Bitner, 1990; Fornell, 1992). These three data sets all use a single item to measure customers' overall satisfaction with the level of service rendered.

Customer Loyalty In keeping with the existing literature on the marketing of service industries (e.g., Cronin, Brady, and Hult, 2000; Cronin and Taylor, 1992; McDougall and Levesque, 2000), we asked questionnaire respondents whether they would choose "to remain loyal to a service provider or continue engaging in transactions with that provider" as well as whether they would choose "to recommend the service provider to other consumers." We used both of these questions to measure customer loyalty. The Cronbach's alpha ranges from 0.76 to 0.90 in the three data sets.

Analysis

The conceptual framework put forth in this study involves a mediating construct. To test the mediating role of customer satisfaction between perceived service quality, perceived product quality, perceived price, and customer loyalty, a series of three regression equations was applied, as suggested by Baron and Kenny (1986). First, the independent variable (the antecedent, in this study) must be significantly related to the mediator variable (customer satisfaction). Second, the independent variable must be significantly related to the dependent variable (customer loyalty). Finally, when the dependent variable is simultaneously regressed on both the mediation variable and the independent variable, it is expected that the mediator will dominate the relationship.

RESULTS AND DISCUSSION

To address the problem of multicollinearity, this study makes use of the Variance Inflationary Factor (VIF) to test correlation among all variables. Since the VIF value of independent variables in all models is less than 2, the data used in this study are judged to have no significant multicollinearity problem. After confirming that customer satisfaction is significantly related to customer loyalty in all three industries, the testing of the relevant hypotheses was carried out.

The Effects of Perceived Service Quality on Customer Satisfaction and Customer Loyalty

Table 1 shows the effects of perceived service quality, perceived product quality and perceived price fairness on customer satisfaction and customer loyalty in all three industries. To test the mediating role of customer satisfaction between customers' perceptions and loyalty, the three regression models are examined step by step.

Model 1 is established to examine the effects of perceived service quality, perceived product quality, and perceived price fairness on customer satisfaction. The overall model fit for the gas station, banking, and auto repair services is good (F=73.75, p<0.01; F=186.47, p<0.01; F=106.49, p<0.01) and the corresponding adjusted R^2's are 0.23, 0.38, and 0.39, respectively. Perceived service quality has a significant effect on customer satisfaction in all three industries (t=11.85, p<0.01; t=11.77, p<0.01; t=3.09, p<0.01), which means that perceived service quality positively affects customer satisfaction. Perceived product quality has a positive and significant effect on customer satisfaction in the case of auto repair and maintenance (t=5.65, p<0.01), but is not significant in the case of gas station service. Perceived price fairness has positive effects on customer satisfaction in both the banking and auto repair services (t=9.38, p<0.01; t=7.91, p<0.01).

TABLE 1

Effects of perceived service quality, perceived product quality, and perceived price fairness on customer satisfaction and customer loyalty

Variables	Gas Station Service		Banking Service		Auto Repair and Maintenance Service	
	Coefficients	t value	Coefficients	t value	Coefficients	t value
Model 1	**Dep. Var.: CS**					
Indep. Var.						
Intercept	1.692	9.63	0.941	7.84 **	0.355	1.60
PSQ	0.536	11.85 **	0.376	11.77 **	0.220	3.09 **
PPQ	0.018	0.59			0.379	5.65 **
PPF			0.329	9.38 **	0.326	7.91 **
Model F value		73.75 **		186.47 **		106.49 **
Adjusted R^2		0.23		0.38		0.39
Model 2	**Dep. Var.: CL**					
Indep. Var.						

Intercept	2.546	11.78 **	1.031	8.22 **	0.912	4.73 **
PSQ	0.057	1.04	0.493	14.76 **	0.162	2.63 **
PPQ	0.253	6.81 **			0.258	4.42 **
PPF			0.166	4.53 **	0.331	9.23 **
Model F value		25.77 **		172.82 **		99.16 **
Adjusted R^2		0.10		0.36		0.37
Model 3	**Dep. Var.: CL**					
Indep. Var.						
Intercept	2.017	8.89	0.898	6.88 **	0.882	4.44 **
PSQ	-0.115	-1.87	0.439	11.99 **	0.107	1.78
PPQ	0.250	6.97 **			0.162	2.81 **
PPF			0.119	3.06 **	0.248	6.81 **
CS	0.315	5.94 **	0.142	3.37 **	0.253	6.74 **
Model F value		30.20 **		120.99 **		92.42 **
Adjusted R^2		0.16		0.37		0.43

Note: 1. * denotes $p<0.05$; ** denotes $p<0.01$.

    2. Sample size of gas station service = 500; Sample size of banking service = 610; Sample size of auto repair and maintenance service = 495.

    3. CS = Customer Satisfaction; CL = Customer Loyalty; PSQ = Perceived Service Quality; PPQ = Perceived Product Quality; PPF = Perceived Price Fairness.

       The dependent variable in model 2 and model 3 is customer loyalty.   A comparison of the two models reveals that when customer satisfaction (i.e., the mediator) is added into model 3 as one of the independent variables, the estimated coefficients of service quality are weaker than those of model 2.   Similarly, the coefficient of banking service drops from 0.493 to 0.439, while the coefficient of auto repair and maintenance drops from 0.162 to 0.107.   The decline in coefficients is evidence that the effect of perceived service quality on customer loyalty is partially explained by customer satisfaction.   The indirect effect of perceived service quality on customer loyalty through customer satisfaction is supported in the banking services industry as well as in the auto repair and maintenance industry.

       Accordingly, it can also be concluded that perceived service quality affects customer loyalty directly, as perceived service quality is significant (t=14.76, p<0.01) in model 2 and remains significant (t=11.99, p<0.01) in model 3 for banking service.   The direct effect of perceived service quality on customer loyalty is consistent with previous findings (Boulding et al., 1993; Parasuraman, Zeithaml, and Berry, 1988, 1991; Taylor and Baker, 1994; Zeithaml, Berry, Parasuraman, 1994).   In the case of auto repair and maintenance services, perceived service quality affects customer loyalty almost entirely through customer satisfaction. Perceived service quality shows a noticeable positive effect on customer loyalty (t=2.63, p<0.01) in model 2, but when customer satisfaction is added to model 3, it has no significant effect on customer loyalty (t=1.78, p>0.05).   The direct effect is diluted by the mediator— that is, by customer satisfaction.   In other words, perceived service quality has only an indirect relationship to customer loyalty in the auto repair and maintenance industry.   This indirect result is consistent with the findings of other researchers (Anderson and Sullivan, 1993; Gotlieb, Grewal, and Brown, 1994; Patterson and Spreng, 1997; Roest and Pieters, 1997).   However, perceived service quality is related only to customer satisfaction, and not to customer loyalty,

when it comes to gas stations.   Overall, hypotheses 1a and 1b are partially supported.

The Effects of Perceived Product Quality on Customer Satisfaction and Customer Loyalty
Perceived product quality is considered only in gas stations and in auto repair services. A comparison of the three models indicates that perceived product quality has both direct and indirect effects on customer loyalty in the auto repair and maintenance industry.   The coefficient of auto repair and maintenance decreases from 0.258 (t=4.42, p<0.01) in model 2 to 0.162 (t=2.81, p<0.01) when customer satisfaction is added in model 3.   The weaker estimated coefficient of perceived product quality demonstrates the mediating role that customer satisfaction plays between perceived product quality and customer loyalty.   Hypotheses 2a and 2b are both supported in the auto repair and maintenance industry.

In the case of gas stations, perceived product quality demonstrates entirely different attributes.   It has no significant effect on customer satisfaction in model 1 (t=0.59), but has a strong direct effect on customer loyalty.   In models 2 and 3, the estimated coefficients are almost the same: 0.253 (t=6.81, p<0.01) and 0.250 (t=6.97, p<0.01), respectively.   The mediator, customer satisfaction, does not dilute the effect of perceived product quality in model 3.   This implies that perceived product quality is strongly and directly related to customer loyalty in the instance of gas station service.   Thus, hypothesis 2a is not supported, but hypothesis 2b is supported in the tests related to gas station service.

The Effects of Perceived Price Fairness on Customer Satisfaction and Customer Loyalty
Perceived price fairness is considered a factor in the banking and auto repair industries. In these two industries, the significance of perceived price fairness appears to be very similar. Model 1 shows perceived price fairness to be significantly related to customer satisfaction in both industries, with t=9.38 (p<0.01) for banking service and t=7.91 (p<0.01) for auto repair service.   Likewise, in model 2, perceived price fairness has a significant effect on customer loyalty: t=4.53 (p<0.01) in the banking model, and t=9.23 (p<0.01) in the auto repair model. When the mediator, customer satisfaction, is added into model 3 as one of the independent variables, the estimated coefficients of perceived price fairness on customer loyalty are weaker than those in model 2.   The coefficient of banking service decreases from 0.166 to 0.119, and the coefficient of auto repair and maintenance service drops from 0.331 to 0.248.   The phenomena of weakened coefficient supports the view that perceived price fairness has an indirect effect on customer loyalty through customer satisfaction, as proposed in hypothesis 3a.

On the other hand, the effects of perceived price fairness in model 3 are still significant in both the banking and auto repair industries (t=3.06, p<0.01; t=6.81, p<0.01, respectively), even after accounting for the influence customer satisfaction.   These findings suggest that perceived price fairness is also directly related to customer loyalty, as proposed in hypothesis 3b.   This is consistent with the contentions of Varki and Colgate (2001), which were made based upon their findings with respect to banking service in New Zealand.   Their research, which involved banking services data from the U.S., showed that perceived price was not significantly related to behavioral intention.   The conflicting findings related to the effects of perceived price in the banking industry indicate that further empirical study is needed.

CONCLUSIONS AND SUGGESTIONS

The effects of perceived service quality, product quality, and price fairness on customer satisfaction and customer loyalty have received little attention. Few researchers in the field of service marketing have studied intangible services and tangible products together. This study employs three secondary data sets containing information on gas stations, banking, and the auto repair and maintenance industry, each of which are characterized by differing levels of intangibility. Our hope was to augment the existing research in the field of service industries.

The overall results of this study are shown in Figure 2. We found, firstly, that perceived service quality has a direct and positive effect on customer loyalty, and an indirect and positive effect on customer loyalty by means of customer satisfaction. All of our hypotheses regarding the perception of service quality in the banking service industry (which represents the highest level of intangibility) are supported. Only the indirect effect of perceived service quality is supported in the auto repair and maintenance industry, which is characterized by a moderate level of intangibility. Gas station service is characterized by the highest level of product tangibility, but the perception of service quality appears to have neither a direct nor indirect effect on customer loyalty. We have concluded that those service industries characterized by higher levels of intangibility require a higher quality of service to enhance customer satisfaction and boost customer loyalty.

FIGURE 2

The significant results derived from the conceptual mode
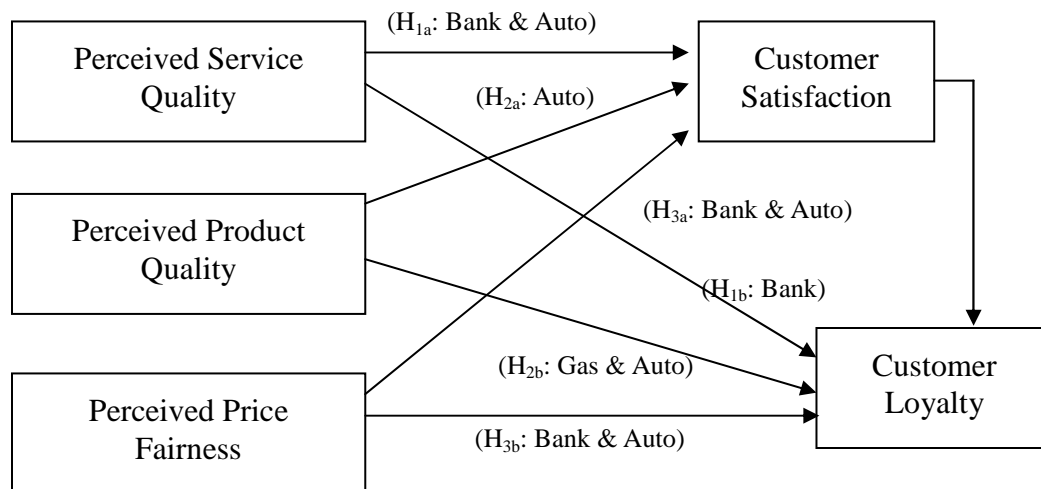
Second, perceived product quality has a direct and positive effect on customer loyalty in the case of both gas station services and auto repair and maintenance services. Also, perceived product quality has an indirect, positive effect on customer loyalty through customer satisfaction—but only in the auto repair and maintenance industry. Because most service

industries offer both intangible services and tangible products, perceived product quality does indeed have a significant influence on customer loyalty, according to the findings of this study. In a service industry, when the tangible product is equal in importance to the intangible service (i.e., in the auto repair and maintenance service), product quality plays a role commensurate with that of service quality in influencing customer loyalty. Perceived product quality is related to customer loyalty both directly and indirectly through customer satisfaction.

However, if in a service industry the tangible product of relevance is of primary importance to the customer (i.e., as in the case of gas stations), perceived product quality directly affects customer loyalty and may not even be related to customer satisfaction. Customer satisfaction is mainly built by means of quality service, but quality service does not ensure loyal purchasing behavior. One possible explanation for this is that customers would rather repeatedly visit a gas station that offers reliably high-quality gas, regardless of the level of service at the gas station. Based upon this finding, we suggest that managers in those service industries that offer high levels of tangible goods should first pay attention to the quality of core products, then work to enhance service quality.

Finally, perceived price fairness has a direct and positive effect on customer loyalty; through customer satisfaction, perceived price fairness also has an indirect effect on customer loyalty. These effects are supported in the both banking and auto repair and maintenance industries. In other words, consumers' perceptions of fair pricing strongly affects their satisfaction with both products and services, and directly affects their purchasing behavior. Thus, managers should not ignore the important role of price. This study does not suggest that managers should lower prices to gain temporary favor with consumers; rather, price fairness is the key concept. That is, managers should attempt to establish prices that seem reasonable and fair with respect to the products and services rendered (Zeithaml and Bitner, 2000). Although the effects of price fairness on customer loyalty have been discussed in this study, the formation of price theory in the service industry research, generally, is still in exploratory stages. It is suggested that the relationship between price and purchasing behavior be studied further.

Overall, managers in service industries are advised, first and foremost, to thoroughly evaluate the proportion of intangible service and tangible product. The current study suggests that managers in industries with high levels of intangible service should place emphasis on the measurement and management of service quality, and should examine the level of service quality on a regular basis. This strategy is advisable, as service quality not only indirectly affects customer loyalty through customer satisfaction, but also directly affects customer loyalty. Study results emerging from the industries with the lowest level of intangible services indicate that service quality does not affect customer loyalty through customer satisfaction. In this case, product quality is more important than service quality. Based on their knowledge of the importance of products and services in consumers' perceptions, managers can decide which one should be established as a core competence.

One further suggestion relates to the concept of a continuum ranging from purely tangible products to purely intangible services (Rathmell, 1966; Shostack, 1977). In this study, only three service industries have been selected to represent three different levels of tangibility. The continuous relationship between high levels of tangible products and the importance of product quality, and vice versa (i.e., the relationship between high levels of intangible services and the importance of service quality) would be an interesting topic for future research. Also, it should be noted that this paper presents results found only in a Chinese society—Taiwan. It may not be appropriate to generalize the results of this study to other consumer societies. It would be

practical and useful, therefore, to conduct similar studies in other cultural contexts in effort to find out whether these findings should be identified as culturally limited or as universal conclusions.

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