Thesis for the Degree of Master of Business Administration

The Impact of Service Quality on Customer Satisfaction and Loyalty in Tianjin Port

- Based on Container Carrier's Opinion -

by

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Abstract

This research examined a model that seeks to explain the customer satisfaction and loyalty in Tianjin Port. Using data collected from a survey of container carriers who are using Tianjin Port now, the paper tested the relationships among the constructs in the model; namely, service quality, switching cost and customer satisfaction, and customer loyalty. In general, container carriers show a slight high customer loyalty in Tianjin Port according to the responses of a survey. The researcher distributed 167 questionnaires among the respondents. Collected data were analyzed by using the SPSS and AMOS. The findings of this research indicate that customer satisfaction is the major factor affecting the customer loyalty, followed by switching cost. The results confirm that service quality has a positive influence on customer satisfaction; customer satisfaction and switching cost have positive influence on customer loyalty. The theoretical and practical implications of the

finding on customer satisfaction and loyalty for Tianjin Port are discussed.

Key words: Customer Satisfaction, Customer Loyalty, Service Quality, Switching Cost, Tianjin Port, Structural Equation Modeling

ACKNOWLEDGMENTS

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CHAPTER 1 INTRODUCTION

This chapter consists of three sections: research background, research objectives, and research procedures. The research background is to give a direction for this study. The main research objective is to point out the main concerns for this study. Finally, figure 1-1 describes the procedures of this study.

1.1 Research Background

Tianjin has become the hub of communications of North China and the gateway of the capital city. It's the largest industrial city in North China and also the important commercial center and largest port city in northern China, which is rich in petroleum, natural gas and sea salt along the coastal area. As one of China's biggest industrial centers, Tianjin has built up an all-round industrial system with machinery, electronics, textiles, chemicals, metallurgy and foodstuff, etc., as its mainstays.

Tianjin is one of the most prosperous business areas as well as a distribution center for goods and materials in North China. It's also a key hub of land and sea communications. Tianjin Port now boasts about 56 docks and 30 periodical international sea routes, serving as the most convenient sea outlet for Beijing, North and Northwest China, as well as an international trading port having relationship with over 300 harbors in about 150 countries and areas.

Tianjin also has a well-developed road transport network, regular air-service to over 30 cities throughout the country, and inland water shipping, in addition to the pipelines for oil transport.

Tianjin Economic and Technological Development Area (TEDA) is located to the southeast of Tianjin City proper, about 45 kilometers away from downtown and 140 kilometers from Beijing. Supported by both Beijing and Tianjin, TEDA enjoys easy access to North China, Northeast China and Northwest China. Situated within the region around the Bohai Sea with a dense population and concentrated cities, TEDA is endowed with a huge market through convenient transportation. The Area has access to the Tianjin-Tanggu trunk road to the south, and the Beijing-Harbin Railway to the west. To the east there is Tianjin New Port, the biggest man-made port in China and the second largest container terminal. To the southwest there lies Tanggu, a district of Tianjin Municipality with a population of 420,000. Beijing-Tianjin-Tanggu expressway runs through TEDA and divides it into two parts, the financial, trading and residential area covering 8.5 square kilometers to the south and an industrial park spanning acreage of 24.5 square kilometers to the north. Beyond the zone there are also the Yat-sen Scientific Industrial Park, Microelectronics Industrial Park and Petrochemical Industrial Park.

As the largest freight terminal in North China, the port has an annual handling capacity of over 100 million tons, 2 million TEUs can be handled here each year, which will increase to 5 million TEUs by 2010. The port has freight exchanges with over 300 ports of 160 countries and regions in the world. With 47 container liner routes and nearly 200

international container liner routes, it is one of the container hubs in the world. With its 12-meter-deep two-way navigation channels, the port serves as the primary gateway of import and export for North China, Northeast China, and Northwest China.

With 8 berths, the container wharf is capable of handling 1 million TEUs per year. The coal wharf has 6 berths with an annual capacity of 20 million tons. The bulk grain wharf has 2 berths with an annual loading capacity of 3.5 million tons. Nanjiang Oil Wharf now has 3 berths dedicated to petrochemicals with a capacity of 10 millions tons per year. Nanjiang coke berth can handle 50,000-ton ships. Nanjiang coal wharf has two berths? One for 35,000-ton vessels and the other for 50,000-ton class. And there are terminals for fertilizers, ore (100,000-ton), and non-metal ore (35,000-ton). The passenger pier handles 30,000-ton ships to domestic ports such as Dalian, Yantai and Longkou, and to international ports such as Kobe of Japan and Inchon of South Korea.

1.2 Research Objectives

According to the above background, after literature review and analyzing the related data, we attempt to achieve the following objective:

1. Understands the carrier's cognitive level of satisfaction, loyalty, service quality, and switching cost about Tianjin Port.

2. Tries to put up a model about Tianjin Port's customer satisfaction, loyalty, and analyzing the influence that service quality and carrier's

switching cost affect the Tianjin Port's customer satisfaction and loyalty.

1.3 Research Procedure

This thesis includes five chapters:

Chapter 1. Introduction

      Depicts the background and purpose of study and outline of the thesis.

Chapter 2. Literature Review

      Reviews the related literature about customer satisfaction, loyalty, service quality and switching cost, and discuss the relationship among the concepts. And reviews the related research about measurement of port selection, and tries to arrange the important factors that affect port's customer satisfaction and loyalty.

Chapter 3. Research Method

      According to the literature review, puts forward the model and hypothesis of this study, sums up the assessment items that related to customer satisfaction, loyalty and accord with the port's characteristic, classifies the factors and aspect that are related to port's customer satisfaction and loyalty, and explains the research method and the content of questionnaire.

Chapter 4. Result of Analysis

Confirms the relationship of factors agree with the model and hypothesis or not. Confirms the influence among the factors, and analyzes the result.

Chapter 5. Conclusion

Concludes the study, and puts forward the suggestion and future work.

Figure1-1 Procedure of This Study
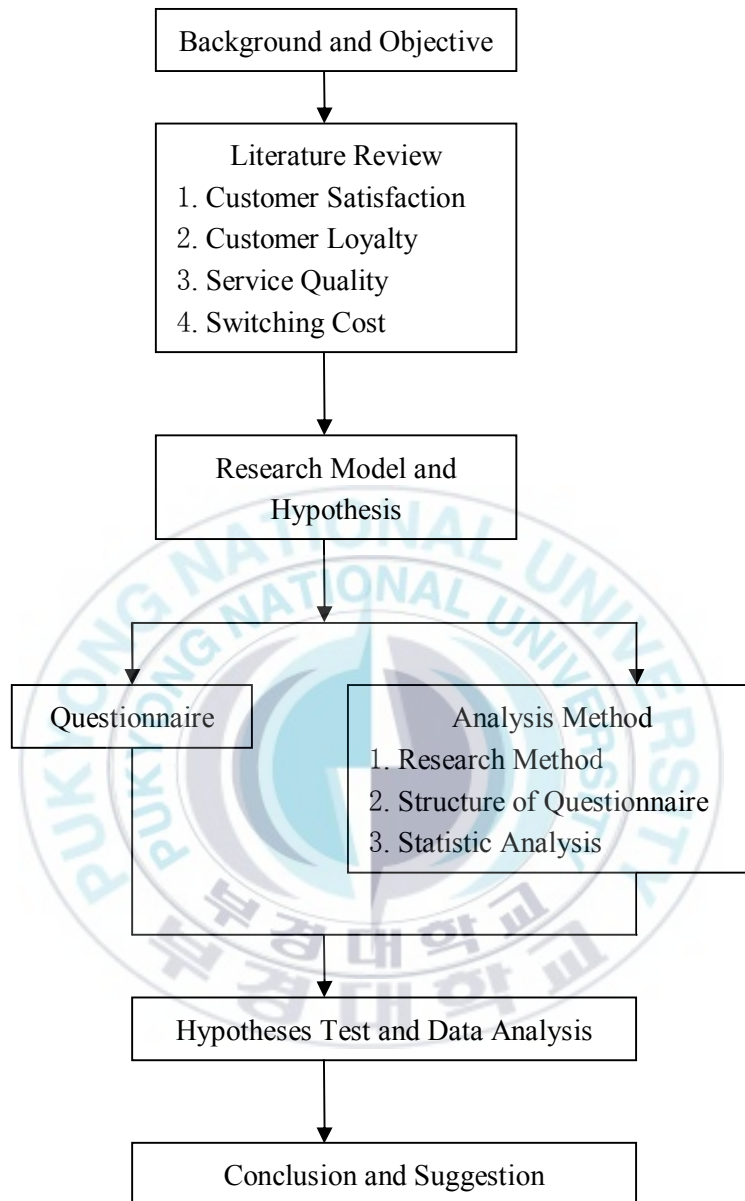
Source: This study.

CHAPTER 2 LITERATURE REVIEW

2.1 Customer Satisfaction

2.1.1 Research of Customer Satisfaction

There has been difference of the concept of customer satisfaction depending on researchers' approach or viewpoint, but closely looking at the words articulated by customers has been known as the right approach to understand the concept of customer satisfaction. Hunt (1977) analyzed the words articulated by speaker while describing customer satisfaction. He stated that among the definition offered were needed fulfillment, pleasure/displeasure, expectation-performance interactions, evaluation of the purchase/consumption experience, evaluation of the benefits of consumption, comparison of actual with ideal outcomes, and the attribute deficits surplus obtained from the purchase.

Another simple approach to the concept of customer satisfaction is the understanding it as perceived value. Value is defined as "what I get for what I give". It can be directly relevant to the concept of satisfaction that in the case the get component is matched or exceeded by the give component, customer satisfaction is established. According to Mullin (2000), the level of satisfaction is calculated by subtracting cost from benefit (Satisfaction = Benefit − Cost). He stated that the customer satisfaction concept is often represented by "get" and "give" components.

In the case of durable products, customer satisfaction may develop over time, having been determined by product performance or perceived quality rather than initial expectation. Customers require experience with a product to determine how satisfied they are with it (Anderson, Fomell and Lehmann, 1994). Therefore, customer satisfaction is defined as attribute satisfaction, i.e., the customer's satisfaction with the usage of the product or service purchased from a supplier. In the case of construction products, satisfaction that a customer has with the product and service provided by a contractor or firm has direct influence on the customers' loyalty to select that contractor (Maloney, 2003). Similarly, if a customer is satisfied with the service and product of the firm, then they will have higher behavioral loyalty.

Customer satisfaction is also widely used in the corporate world for a variety of purposes including measuring and rewarding employees, estimating lifetime value of customers and using satisfaction as a strategic variable. It is also beginning to be used as a measure of performance and competitiveness at more aggregate levels including industry sectors and national economies.

Why has satisfaction seen such an increase in interest over the past few years? It is a result of a variety of factors including maturing markets, increased competition and growing technological parity among competitors (Anderson et al, 1992). As growth rates in most markets in developed countries are very low, the customer, especially a firm's existing customer, is now seen as a revenue and profits generating resource which is important to the firm's financial well-being. Increased competition (both domestic and global) means that other firms are also

aggressively pursuing customers. Furthermore, as it becomes increasingly difficult to compete on the basis of technology along, more and more firms are relying on providing customer satisfaction as a method of differentiating their offering. This can potentially provide an important source of sustainable competitive advantage to a firm by reducing consumer price-elasticties, reducing costs of retaining current customers, insulating them from competitors' marketing efforts and lowering costs of attracting new customers.

There are two very different conceptualizations of satisfaction in the literature. The one that is most commonly associated with individual level customer satisfaction behavioral research is the transaction-specific conceptualization where satisfaction is viewed as a post-choice evaluative judgment of a specific purchase occasion. Definitions of this type include: "an evaluation redered that the [consumption] was at least as good as supposed to be" (Hunt, 1977) and "the consumer's response to the evaluation of the perceived discrepancy between prior expectations [or some other norm of performance] and the actual performance of the product as perceived after performance" (Tse and Wilton, 1998). The other conceptualization of customer satisfaction is a more aggregate measure based on all past purchase and consumption experience. Satisfaction is seen as an overall cumulative evaluation based on many experiences with a good or a service (Formell. 1992; Johnson and Fornell, 1992). This formulation is useful when we are looking at firm-level customer (microeconomic) satisfaction measures.

Oliver's (1989) framework views satisfaction as a state of fulfillment related to reinforcement and arousal. He introduces four concepts: (1)

low arousal fulfillment is described as "satisfaction-as-contentment," while, in contrast, (2) high arousal satisfaction is defined as "satisfaction-as-surprise," which can be positive or negative; (3) "satisfaction-as-pleasure" results when positive reinforcement occurs, such as when the service adds pleasure to a resting state; (4) "satisfaction-as-relief" results from "negative reinforcement," or the removal of an aversive state.

More generally, satisfaction can be grouped into service encounter satisfaction (transaction specific) and overall service satisfaction (brand specific). The service encounter is defined as the period of time during which the consumer and service provider interact with the customers either in person, over the telephone, or through other media (Shostack, 1985). By definition, then, the service encounter is a discrete event occurring over a definable period of time. Each service encounter provides an opportunity for the firm to reinforce its commitment to customer satisfaction or quality and an opportunity for the customer to evaluate the service based on his expectations and the service experience itself. Nonetheless, the evaluation of each encounter will clearly not be perfectly correlated (or necessarily correlated at all) with the customer's overall satisfaction with the firm or perceptions of the firm's quality. However, over time, it is likely that multiple positive (negative) encounters will lead to an overall high (low) level of satisfaction.

Bitner (1990) confirms this likelihood by showing that service encounter evaluation is highly correlated with a more global measure termed service quality, which was operationalized as a form of overall attitude toward the service provider. Oliver and Swan (1989) and

Suprenant and Soloman (1987) similarly found correlations between satisfaction with different types of personalized encounters and evaluation of the service provider, evaluation of the service, and evaluation of the organization.

Overall satisfaction is typically viewed as a function of satisfaction with multiple experiences or encounters with the organization (Bolton and Drew, 1991), and often times researchers do not distinguish between encounter satisfaction and overall service satisfaction. Yet, it is commonly recognized that service satisfaction occurs at multiple levels in the organization (Oliver and Swan, 1989; Surprenant and Solomon, 1987), including satisfaction with the contact person, satisfaction with the core services experienced by the consumer, and satisfaction with the institution overall. Regardless, overall satisfaction is an ongoing evaluation of the brand's ability to deliver the benefits a customer is seeking. This is an important distinction from the transaction-specific (service encounter satisfaction) conceptualization, because it is a customer's overall evaluation of the brand that is of long term interest to management. In general, satisfaction judgments may pertain to any object or idea and the context determines the appropriate scope of analysis and the types of measures employed.

In satisfaction research, consumption emotions are generally assessed after consumption (i.e., at the end of a service transaction) in conjunction with measures of perceived performance and satisfaction. According to the appraisal theories of emotions, consumers cognitively appraise provider performance along the two dimensions of valence and agency, and the outcome of this appraisal is what differentiates emotions (Smith

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and Ellsworth, 1985; Ellsworth and Smith, 1988). The valence dimension indicates appraisal of whether an event is positive or negative from the consumer's point of view, and an event appraised as negative leads to negative from the consumer's point of view, and an event appraised as negative leads to negative emotions while an event appraised as positive leads to positive emotions. The agency dimension refers to appraisals of who or what caused the event. i.e., to whom or to what the event can be attributed. Nonetheless, recent studies also show that consumer satisfaction can actually be increased by the experience of certain types of negative emotions, such as situation-attributed emotions (fear and sadness) (e.g, Arnould and Price, 1993). At first, these findings may seem counter-intuitive, but consider the following example: a passenger can be feeling sad or can be uneasy about a flight; however, if the flight attendant was able to provide a reassuring service, the passenger may in turn have a good experience and be very satisfied with the service encounter.

Spreng et al. (1996) stated that customer satisfaction can be also defined as "affective state that is the emotional reaction to a product or service experience". More specifically, this overall satisfaction is influenced by a consumer's satisfaction with the product itself (attribute satisfaction) and with the information used in choosing a product (information satisfaction) (Spreng et al., 1996). Oliver (1993), who introduced the base theory of expectation disconfirmation defined attribute satisfaction as "the consumer's subjective satisfaction judgement resulting from observations of attribute performance". However, many other researchers (Cadotte, Woodruff & Jenkins, 1987;

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Spreng et al., 1996) argued that this customer satisfaction is usually operationalized not only by attribute level but also by global level as shown in Figure 2-1.

According to Spreng et al.(1996), attribute and information satisfaction are themselves produced by a customer' assessment of the degree to which a product performance is perceived to have met or exceeded his or her desires and expectations (expectation-disconfirmation).

Figure 2-1 Conceptual Model of the Satisfaction Formation Process
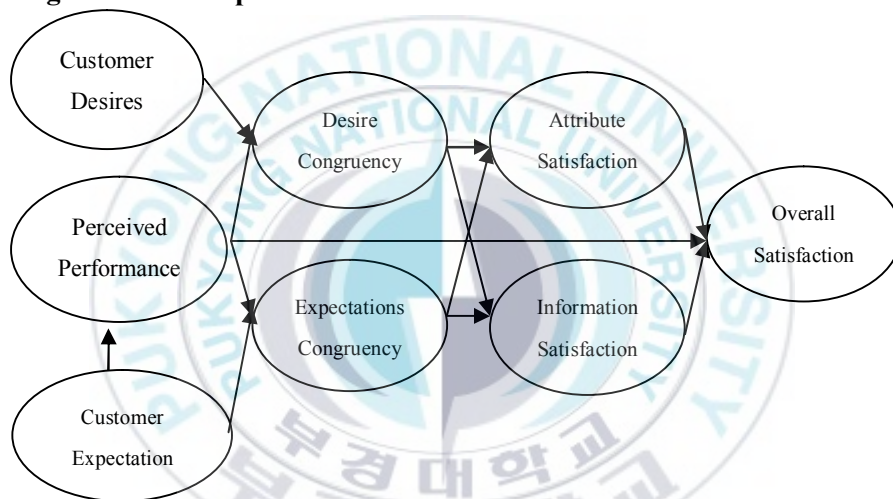
Source: Spreng et al., 1996.

Based on above the concepts of customer satisfaction, in this study, customer satisfaction will be used as the evaluation of container carrier's customer satisfaction in Tianjin Harbor.

2.1.2 The Importance of Customer Satisfaction

Although it has been established that customer satisfaction has a strong impact on business performance, one danger of relying solely on customer satisfaction for business performance is that satisfaction with any service experience does not automatically lead to loyalty or repeat purchase. In other words, satisfied customer might not always return, and unsatisfied customers do not necessarily switch. One survey shows that up to 70% of satisfied customers would consider switching when other options are made available (Taylor, 1998).

Another study reveals that satisfaction data explains less than 15%of customer loyalty (Hochman, 1999); some of the factors or influences that prevent consumers from switching (satisfied or not) include: (1) habit and inertia: customers simply repeat their brand choices to avoid further search and comparison or because they are used to using the service provider and its delivery process; (2) deal-orientation: customers simply choose the best price for the product or service rather than focus on quality or other attributes; (3) benefits of being a "regular": customers often receive preferential treatment or discounts if they are repeat customers; (4) acquaintance with the employees: customers tend to feel more comfortable and trusting when dealing with familiar faces, even if they are not completely satisfied with the whole service; (5) risk averse: somewhat related to #4, customers are afraid of trying new options because unfamiliar service providers pose more uncertainties (the most prominent example is hair dressing services); (6) switching or termination costs: customers can feel constrained by current companies

due to prohibitive "entry fees" (e.g., long-distance telephone companies usually pay for the switching cost for new customers in order to persuade them to change their brand choices by eliminating the barrier); (7) no perceived differences between options: consumers might believe that switching won't render better services or value; (8) no available alternatives: customer might not be aware of other options, or there is no other choice (in the case of monopoly or large price disparity); (9) social and cultural norms: the social environment might encourage loyalty (to another individual or a group of people, or even to a business relationship); and (10) perceived status: there is a certain image attached to using a specific brand or being associated with certain groups of people (the other customers) (Hochman, 1999).

When Gallup looked at customers who were extremely satisfied and emotionally connected to the store – customers whom Gallup calls "fully engaged" – a very different customer relationship emerged. These customers visited the store 5.4 times and spent $210 a month, compared to "satisfied but not emotionally connected" customers who visited the store 4.1 times and spent $144. Apparently, not all "extremely satisfied" customers are the same. Those with strong emotional connections visited the grocery chain 32% more often and spent 46% more money than those without emotional bonds. They believed "Satisfaction without engagement? Worthless. Satisfaction with engagement? Priceless" (McEwen and Fleming, 2003)

As Applebaum (2003) points out, "Holding onto a customer has never been harder – or more important. Proprietary Gallup research shows that the key to wooing customers isn't price or even product. It's emotion."

One might ask, "What is it that actually makes customers loyal?" simply satisfying them certainly isn't enough. Implicit in management legend W. Edwards Deming's call for continuous improvement – articulated in his 1986 work Out of the Crisis – is the idea that a customer who is satisfied today may have a different set of needs tomorrow. Since then, marketing scholarship has established many times over that satisfaction scores along fail to predict how customers will actually behave. Moreover, Applebaum (2003) also indicates that "Part of the problem is that satisfaction scores measure only past experience. The American Customer Satisfaction Index (ACSI), for instance, plots whether a customer though she received good value – whether, for example, a computer is as functional or a hotel room as clean as she expected it to be. The index reflects a rational assessment at a particular moment. But it fails to capture either the customer's intentions – whether she would recommend the brand to others – or emotions. People stay faithful to brands that earn both their rational trust and their deeply felt affection. That dynamic, which Gallup has studied extensively, turns out to a better predictor of behavior than consumer satisfaction measure alone."

However, these studies do not lead to the conclusion that satisfaction is not important or does not have value. On the contrary, these studies find that, satisfaction is extremely important, and without satisfaction, there is no way the customers will be loyal. These studies also show that satisfaction of "a single" service encounter is not enough to achieve high overall satisfaction, nor is it enough ensure customer loyalty. Rather, each service encounter counts towards an overall perception of satisfaction. As a result, it is very important for firms to try to maintain a

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high satisfaction level through each encounter. Here, we limit our scope to the satisfaction of a single service encounter and try to present an overall understanding of the customer's satisfaction.

2.1.3 Determinants of Customer Satisfaction

A number of studies related to customer satisfaction have been carried out due to importance. They can be classified into two fields as shown in Figure. One is study on the determinants of customer satisfaction, such as expectation, goods or service performance, and disconfirmation, as a series of mechanism related to customer satisfaction. The other is study on the effects of customer satisfaction, such as consumer complaints, word-of-mouth, brand conversion, loyalty, and repurchase intention.

Figure2-2 Determinants and Results of Customer Satisfaction

Determinants		Effects
Expectation Performance Disconfirmati	Customer Satisfaction	Complaints Word-of-mouth Brand Conversion Loyalty Repurchase

Source: Oliver, 1980.

A general model on the determinant of customer satisfaction is the "expectation disconfirmation model", which was introduced by Oliver

(1980) and consists of a four-step process, relevant to degree of customer satisfaction. Firstly, the process starts with the consumer's pre-purchase expectations, which is beliefs that product or service provider will achieve a certain level of performance on a set of important attributes. Secondly, a consumer purchases a product or service and forms a perception of performance on the important attributes. Disconfirmation will occur at this stage. The meaning of disconfirmaion, in practical words, is a mental comparison of an actual state of nature with its anticipated probability. In this regard, a positive disconfirmation occurs when a consumer compares the perception of performances with the recalled expectations and the performances exceed expectations. A negative disconfirmation occurs when performances are short of expectations, and a zero disconfirmation will occur when performances equal expectations (Patterson et al., 1997). Thirdly, the perceived disconfirmation determines the level of satisfaction. In other words, satisfaction is influenced mainly by disconfirmation and to a lesser but significant degree, by prior expectation levels. Finally, satisfaction/dissatisfaction is, in turn, presumed to influence subsequent attitudes, intentions, and complaint behavior (Bearden & Teel, 1983).

Criticizing the assumption on expectation of expectation-disconfirmation, Latour & Peat (1979) presented that there are three determinants in comparison level of product to form expectation, modifying the comparison level theory which Thibaut & Kelly (1959) introduced. The determinants are 1) consumer's experience before the fact, 2) promotional expectation by a manufacturer's or a retailer's promotion, and 3) experience of other consumer adopted as a

reference group. Criticizing that expectation-disconfirmation used only the second situational expectation as a comparison norm. They presented "comparison level theory" to modify expectation-disconfirmation theory in customer satisfaction.

Except above theories, mental comparison norms comparing consumer's performance are several types as shown in Table 2-1：

Table 2-1 Other Types of Comparison Norm

Type		Description
Product norm*	Product norm	Determining a normative criterion based on average performance of all products within category which a product belong to.
	Best-brand norm	Determining a normative criterion based on average performance of the best brand product within category which a product belong to.
Equity**		Consumers determine a normative criterion based on a level of product that they feel to be equitable in comparison of proportion of their input/output with other person's proportion related to them (e.g., price).
Ideal***		Consumers determine an evaluation criterion of product based on an optimal level of ideally desirable product.

Source: *Cadotte et al. (1987), **Fisk & Young (1985), ***Tse & Wilton (1988).

Many studies on satisfaction/dissatisfaction after purchase have mainly included a behavioral basis, such as customer's complaint

behavior and repurchase intention etc. These studies put stress on theoretical development and most of them were based on influence to emotional effect (attitude). As a general rule, it was agreed with that satisfaction interacted with other emotional nature. Based on this, in case of integrating the perceptional process about determinants of customer satisfaction, such as expectation and disconfirmation, and behavioral intention, such as complaint behavior and repurchase intention, to appear as a result, it can be expressed as a systematic function as shown in Figure 2-3.

Figure 2-3 Perceptional Process on Determinants and Results of
Customer Satisfaction

① Attitude ($t1$) = f (Expectation) → ② Purchase Intention ($t1$) =
f [Attitude ($t1$)] →

③ Satisfaction/Dissatisfaction = f (Expectation, Disconfirmation) →

④ Attitude ($t2$) = f [Attitude ($t1$), Satisfaction/Dissatisfaction] →

⑤ Repurchase Intention ($t2$) = f [Purchase Intention ($t1$), Satisfaction,
Attitude ($t2$)]
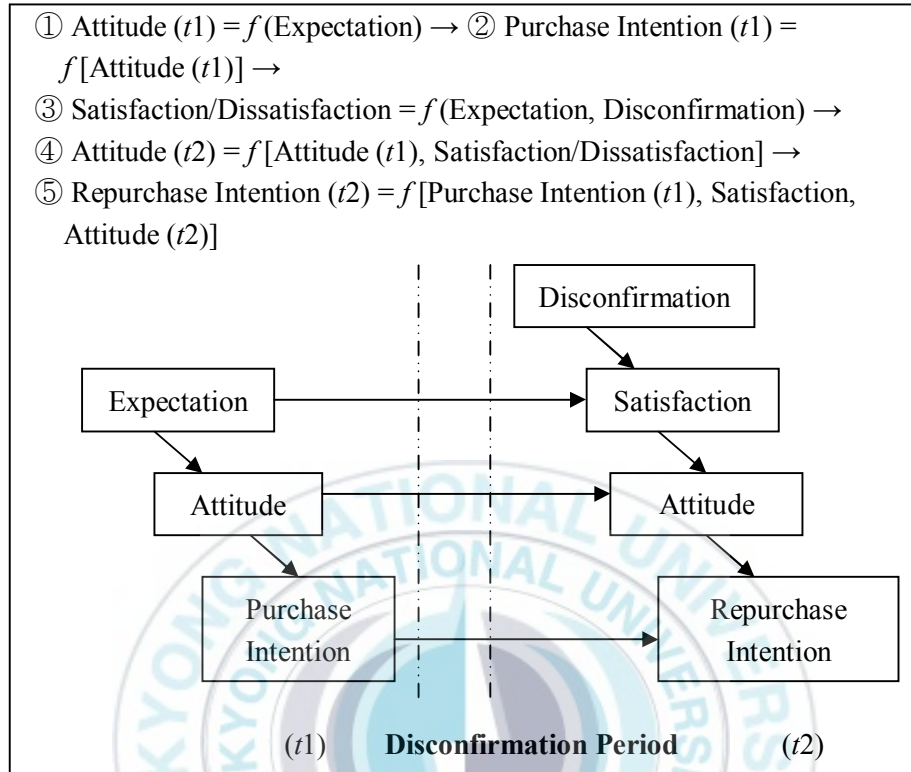
Source: Reichheld & Sesser ,1990.

As mentioned above, consumers reform attitude based on evaluation about satisfaction/dissatisfaction experience after purchase through the perceptional process of purchase, and determine a behavior, such as complaint behavior, word-of-mouth, brand conversion, loyalty, and repurchase intention. Because of this reason, efforts to elevate customer satisfaction and customer management after purchase become very important activity. For instance, Reichheld & Sesser (1990) stated that because profits obtained by prevention against customer defection are

more than profits obtained by other factors related to scale, market share, unit cost, and competitive advantage, zero customer defection should be used by criterion of corporate performance.

2.2 Customer Loyalty

2.2.1 Research of Customer Loyalty

Customer loyalty has been studied variously in accordance with viewpoints of researchers. It is approached by purchase rate, purchase frequency, purchase probability, and so on in the situation of behavioral theory (Jeuland, 1979; Raj, 1982) and also by commitment for certain services, preference and friendly relationship in the situation of attitudinal theory (Oliva et al., 1992).

According to Oliver(1997), customer loyalty was defined and approached synthetically by the attitude and behavior of purchasing same products or services repeatedly, even though situational factors and marketing efforts of other companies show their potential energy, which can attract conversion behavior, in order to have a deep commitment for repurchase or prefer the products continuously also in the future. In this study, customer loyalty will be defined by the combination between customer's friendly attitudes for service and repurchasing behavior, based on this intergration.

Customer loyalty becomes a source of lasting competitive advantage of the company, because it creates cost reduction, the increase of profitability, positive recommendation of other customers through the

effect of word-of-mouth and premium effect and so on(Reichheld, 1996). Particularly, under the reality, competition between companies is deepening, it is analyzed that if customer loyalty will increase 5% in service industry, the increase of profit, 25%~85%, could be happened in accordance with the industry, (Reichheld & Sasser, 1990).

Fomell(1992) indicated following "customer loyalty measurement model" that was determined by satisfaction and switching barriers.

Traditionally, effectiveness of customer satisfaction to loyalty had been recognized as linear relation. According to Johns & Sesser (1995), it was revealed that although customer was satisfied with product or service, the customer didn't have loyalty. Therefore, although a customer was satisfied with service, he or she could be converted to other competitive brand or service. Moreover, Johns & Sesser (1995) mentioned that relation between customer satisfaction and loyalty could be strong or weak by influence of competitive environment among industries. That is, the relationship could be linear or non-linear and be determined by the competitive level of industry.

Customer loyalty represents the repeat purchase, and referring the company to other customers (Heskett et al. 1994). He also sated that customer loyalty is a figure that may be measured directly as measuring the actual repeated sales to customers. According to Duffy (2003) loyalty is the feeling that a customer has about a brand which ultimately generates positive and measurable financial results, improvements in retention and increasing in the share of the company are the obvious economic benefits of customer loyalty.

According to Feick and Lee(2001), customer loyalty has been measured as the long-term choice probability for a brand or as a minimum differential needed for switching.

Several earlier studies identified customer loyalty in several ways such as attitudinal approaches focused mainly on brand recommendations, resistance to superior products (Narayandas, 1996), repurchase intention (Cronin & Taylor, 1992) and willingness to pay a price premium (Bitner & Zeithaml, 2003). Czepiel and Gilmore (1987), define service loyalty as a specific attitude to continue in an exchange relationship based on past experiences. Their definition implies that levels of service loyalty can be assessed by attitudinal measures such as the ones based on intentions to repatronize a service provider. Such attitudinal measures have an advantage over behavioral measures (e.g. repeat patronage) in that they can provide greater understanding of the factors associated with the development and modification of loyalty (Oliva et al., 1992).

2.2.2 The Measurement of Loyalty

Zeithaml et al. (1996) developed a fairly representative scale for measuring loyalty. Although this scale has been used in several studies, it became subject to criticism (Zeithaml et al., 1996; Bloemer et al., 1999). In the present study, the loyalty measurement scale was also modified to include the following items:

1 expression of positive comments about the service

2 recommendation to friends

3 recommendation to whomever might ask for an opinion

4 consideration of Bank X as the first choice among others

5 intention to conduct more transactions

6 intention to switch banks

7 expression of complaints to other clients

8 expression of complaints to external agencies

9 expression of complaints to Bank X's employees.

Items 1–3 comprise the concept of 'word-of-mouth communication', items 4–6 the dimension of 'switching' and items 7–9 the dimension of 'complaint expression'.

In line with Jacoby and Chestnut (1978) we define customer loyalty as the "biased (i.e. non random) behavioral response, expressed over time, by some decision making unit, with respect to one bank out of a set of banks, which is a function of psychological (decision making and evaluative) processes resulting from commitment".

The conceptualization and measurement of loyalty has often remained limited, ignoring the full range of conceivable loyalty (re)-actions that may follow the evaluation of a service (Zeithaml et al. 1996). Cronin and Taylor (1992) for instance focused solely on repurchase intentions, while Bolding et al. (1993) measure repurchase intentions and willingness to recommend. As Zeithaml et al. (1996) argue, dimensions of loyalty, such as, willingness to pay more, and loyalty under increased pricing have often been left out in previous research. Similarly, customer evaluations following a negative service experience have received only limited attention in scales designed to measure customer loyalty intentions and behavior (Singh 1991). With regard to behavioral intentions in a service

setting Zeithaml et al. (1996) proposed a comprehensive, multi-dimensional framework of customer behavior intentions in services. This framework was conceptually comprised of the following four main dimensions: (1) word-of-mouth communications, (2) purchase intentions, (3) price sensitivity, and (4) complaint behavior. In this paper, we therefore also distinguish these four biased behavioral responses.

2.3 Service Quality

2.3.1 Research of Service Quality

Service is characterized and distinguished from product by intangibility, inseparability of production and consumption, heterogeneity, and perishability. (Parasuraman et al., 1985) because of the characteristics, not only is there much difficulty in defining the service and measuring quality, but also various views exist.

Table 2-2 Four Service Characteristics

Characteristics	Contents
Intangibility	Services can not be seen, tasted, felt, heard, or smelled before they are bought.
Inseparability	Services are produced and consumed at the same time and can not be separated from their providers, whether the providers are people or machines.
Heterogeneity	Service quality may vary greatly, depending on who provides it, as well as when, where, and how it is provided.
Perishability	Services can not be stored for later sale or use.

Source: Revised from Kotler, P., & Armstrong, G. (1997). Marketing: An Introduction (4th ed.). Prentice Hall.

Services, especially those with labor content, are very heterogeneous: their performance often varies from producer to producer, from customer to customer, and from day to day (Mullin et al., 2000). As a consequence, quality in service is not engineered in the manufacturing plant. Service quality usually occurs during service delivery in an interaction between the client and the contact person from service firm. A tangible clue, by which quality can be measured, hardly exists as intangible in comparison with quality of goods. In most of cases, a tangible clue of service quality is restricted within physical ability or a human factor of service firm. Therefore, Grönroos (1984) defined service quality as meaning of "perceived service quality" by a consumer by subjective criterion rather than by objective criterion, and distinguished service quality from objective quality.

Parasuraman, Zeithaml, and Berry (1985) stated several interesting themes regarding service quality. "(1) Service quality is more difficult for the consumer to evaluate than goods quality. (2) Service quality perceptions result from a comparison of consumer expectations with actual service performance. (3) Quality evaluations are not made solely on the outcome of a service; they also involve evaluations of the process of service delivery".

Many researchers (Hollbrook & Corfman, 1985; Milne & Mcdonald, 1999; Olshavsky, 1985) understood quality as a form similar in many ways to attitude, which is the overall evaluation of manufactured goods. They also revealed that quality acts as a comprehensive or global value when measuring consumer satisfaction. In addition, there was a study done by Parasuraman et al. (1985) supporting the above notion, carried out in a total of twelve focus group interviews with consumers of four different service areas.

Leading researchers in the field of service quality marketing attempted to understand the characteristics of services and what providers should possess in order to project a high quality service articulated by their customers. Regardless of the business type, the customers carried similar criteria to evaluate service quality. They made a conclusion that customers' perceived service quality is a different concept from their satisfaction level, and service quality can be known by measuring the gaps between customers' expectations and their performance (Zeithaml & Bitner, 1996). There have been a large number of researchers interested in developing service quality, who agreed with the idea that service quality significantly differs from objective quality. They believe

it is a form of attitude, connected but not equivalent to the level of customer satisfaction (Bolton & Drew, 1991; Cronin & Taylor, 1992; Oliver, 1993).

Service quality is viewed as a general, overall appraisal of a product or service designed and intended by service providers and perceived by customers. Perceived quality can also be defined as a relatively global value judgement that relates to the superiority of the overall service (Holbrook and Corfman, 1985).

Perceptions of quality occur at multiple levels in a service organization setting. For example, the consumer is likely to be able to distinguish between the quality of the interaction with the service provider, the quality of core service encounter, and the overall quality of the organization (e.g., brand image). In the service quality literature, researchers stress the importance of good interactions in raising quality perceptions and building relationships with customers, recognizing the essential personal dimension in service experiences. Broader marketing research also looks into the benefit of being a provider for a consumer's lifetime rather than for a one-time transaction. Researchers have established that service quality is strong determinant of customer satisfaction. However, it is again important to emphasize the differences between service quality and customer satisfaction.

Quality perceptions do not require experience with the service or the provider. Many establishments (e.g., 5-star restaurants) are perceived as high quality by consumers who have never visited them. Satisfaction, in contrast, is purely experiential (Rust and Oliver, 1994).

Quality also has fewer conceptual antecedents, although personal and impersonal communications play a major role (Zeithamal et. al, 1993). Satisfaction, on the other hand, is known to be influenced by a number of cognitive and affective processes including equity, attribution, and emotion.

2.3.2 The Measurement and Evaluation of Service Quality

Service quality is an elusive and abstract construct that is difficult to define and measure because of intangibility (Parasuraman, Zeithaml & Berry, 1991). Additionally, finding the important relationship among service quality, customer satisfaction, and purchasing behavior remains largely uncharted. There are several leading instruments for measuring service quality still being laid on the table of argument. They are SERVQUAL, SERVPERF, EP, and Non-Difference Score, which will be described in order as follows.

1. SERVQUAL Model

The word 'SERVQUAL' is an abbreviated form of service quality. The measurement was developed by a leading group of marketing researchers, Parasuraman, Zeithaml, and Berry (hereafter, PZB) in 1985. The basic theory of this measurement was Oliver's (1980) research, expectation–performance disconfirmation model. Interestingly, the different understanding regarding customer's expectation between PZB and Oliver has been realized. As mentioned in the above section of expectation, Oliver (1980) defined expectations as consumer-defined

probabilities of the occurrence of positive or negative events if the consumer engages in some behavior. However, PZB understood the term expectation as customer-wanted level of performance, if customer engages in some behavior (Lee & Kim, 1999).

The first version of the SERVQUAL instrument was made with the 97-item questionnaire. PZB (1985) refined those items by analyzing pooled data. The law data used in computing coefficient alpha were in the form of difference scores. A difference score for each item Q, representing perceived service quality was found by subtracting the expectation score from the corresponding performance (or perception) score (Q = P − E). Through the statistical analysis, the value of coefficient alpha ranged from 0.55 to 0.78 across the 10 dimensions.

Then, PZB introduced a new version of the SERVQUAL instrument in 1991. They modified the old version to the 22-pairs-of-items questionnaire, and captured 5 dimensions of service quality including tangibles, reliability, responsiveness, assurance, and empathy as shown in Table. The new version of questionnaire, it consists of a total of 22-pairs-of-items, 22 expectation and 22 performance items.

Table 2-3 Five Dimensions of SERVQUAL Model

Dimensions	Descriptions
Tangibles	The appearance of physical facilities, equipment, personnel, and communication materials.
Reliability	The ability to perform the promised service dependably and accurately.
Responsiveness	The willingness to help customers and to provide prompt service.
Assurance	The knowledge and courtesy of employees and their ability to convey trust and confidence.
Empathy	The provision of caring, individualized attention to customers.

Source: Revised from Kotler, P. (1999). Marketing Management (millennium ed.). Prentice Hall.

Agreement with each item is assessed on a seven-point scale with end anchors "strongly agree" and "strongly disagree" and no verbal descriptors for intervening scale position. The approach of analyzing perceived quality in the new version of SERVQUAL followed exactly the same way as the old on by subtracting the expectation rating from the performance rating for each of the 22-pairs-of-items.

Figure 2-4 Determinants of Perceived Service Quality
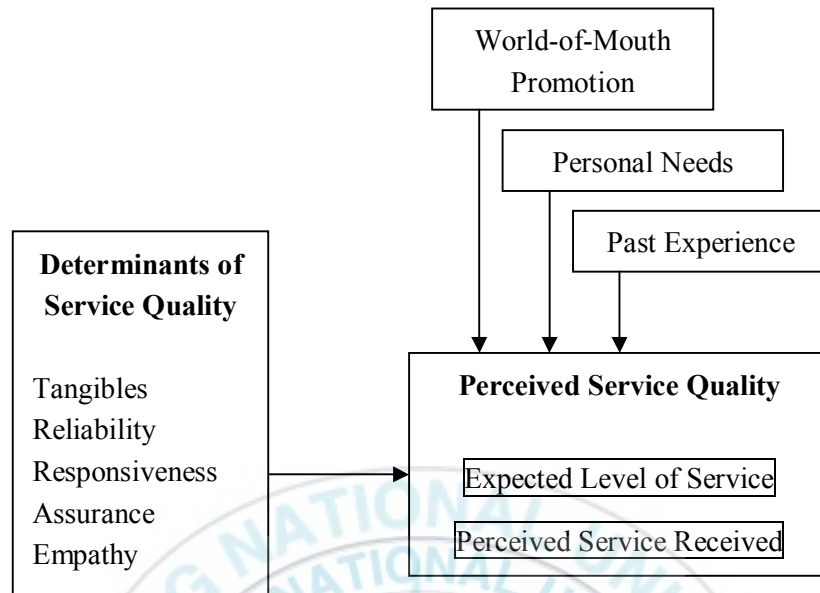
Source: Zeithaml, V. A., Berry, L. L., and Parasuraman, V., "Communication and Control Processes and Delivery of Service Quality", Journal of Marketing (April), 1988.

Figure 2-4 and Table 2-3 show how service quality is determined and its determinants that are five dimensions mentioned above. The five determinants apply both to the expected service and the perceived service. In addition, word-of-mouth promotion, personal needs, and past experiences influence the expected level of service. The relationship between expected service and perceived service is the perceived service quality.

However, some analysts criticized the SERVQUAL instrument. They suggested that despite its popularity, the gauge had serious inadequacies

that restrict its usefulness (Carman, 1990; Lee & Kim, 1999). Brown et al. (1993) said, "SERVQUAL needs to be customized to the service in question in spite of the fact it was originally designed to provide a generic measure that could be applied to any service". They suggested that more items should be added, and the words in the questionnaire should be changed. Moreover, Cronin & Taylor (1992) took issue with the conceptualization and measurement approach used in developing SERVQUAL. They stated that the performance component of SERVQUAL outperformed SERVQUAL itself, which can be concluded that the disconfirmation paradigm was in appropriate measuring perceived service quality.

The five dimensions have been adapted later by some to cover:

Table 2-4 Determinants of Service Quality (PZB:1985)

Determinants	Contents
Tangibles	Appearance of physical facilities, equipment, personnel, and communication materials.
Reliability	Ability to perform the promised service dependably and accurately.
Responsiveness	Willingness to help customers and provide prompt service.
Courtesy	Politeness, respect, consideration and friendliness of contact personnel.
Communication	Listens to its customers and acknowledges their comments. Keeps customers informed. In a language which they can understand.
Credibility	Trustworthiness, believability, honesty of the service provider.
Security	Freedom from danger, risk, or doubt.
Competence	Possession of required skill and knowledge to perform service.
Understanding the Customer	Making the effort to know customers and their needs.
Access	Approachable and easy of contact.

Source: V. A. Zeithaml, A. Parasuraman and L. L. Berry(1985), "Problems and Strategies in Service Marketing", Journal of Marketing, Vol.49, Spring.

2. SERVPERF Model

Cronin & Taylor, who criticized the lack of the SERVQUAL instrument's conceptualization and measurement approach, introduced a different tool, SERVPERF, for measuring customer's perceived service quality in 1992. Cronin & Taylor strongly believed that service quality should be measured as an attitude. Therefore, with much supporting

literature (Bolton & Drew, 1991; Churchill & Surprenant, 1982; Woodruff, Caddotte & Jenkins, 1983), this instrument as placed stress on the importance of customer's performance (Quality = Performance). Cronin & Taylor said, "The performance-based scale developed (SERVPERF) is efficient in comparison with the SERVQUAL scale; it reduces by 50% the number if items that must be measured (44 items to 22 items)".

Cronin & Taylor examined the dimensionality and the validity of service quality measures. The study was conducted on four different types of service forms, such as banks, pest control, dry cleaning, and fast food. The result of the dimensionality test was that the 5-component structure proposed by PZB in 1991 for their SERVQUAL scale was not confirmed in any of the research samples. Especially, the Chi-square statistic specified that an inferior fit between the theory and the actual measurement for the 5-dimensions of SERVQUAL. The result also showed that a convergent validity score between the items in SERVPERF instrument was higher than the score from SERVQUAL.

In addition, Cronin & Taylor conducted a study on the relationship between service quality or customer satisfaction and repurchase intention using SERVPERF. The result of study showed that service quality was a preceding variable of customer satisfaction, and customer satisfaction affected repurchase intention more strongly than service quality. Therefore they presented the implication that executives should not accomplish a strategy focused on the effort to improve service quality but should make an effort for the whole customer satisfaction's enlargement. They noted that although variables such as convenience,

price, or availability of service could enlarge satisfaction, the variables were due to affect little service quality perception.

3. Evaluated Performance Model

Teas (1993) raised an issue, 'conceptual definition of expectation', theoretical justifiability of components in the P-E structure', and measurement validity of expectation and modified expectation', in the validity of SERVQUAL due to the problem of conceptualization and definition. Based on this criticism, He developed the EP (Evaluated Performance) model and the NQ (Normed Quality) model, and then conducted an experiment to compare EP with SERVQUAL or NQ. The experiment result showed that the EP model not only was superior to SERVQUAL and NQ, but also could overcome the vagueness of expectation concept that was the problem in the P-E Gap model.

4. Non-Difference Score

Researchers Brown, Churchill and Peter (1993) (hereafter, BCP) found SERVQUAL to psychometric problems in three distinct areas: reliability, discriminant validity, they proposed that the problems were a result of the use of difference scores. "Since difference score measures are usually less reliable than non-difference score measures, they can be particularly subject this phenomenon" (p.130-131). Variance restriction was noted as a problem given the SERVQUAL's usage of two component scores, given the great difference in value of one component to another. They also said, "there is ample evidence that when people respond to 'what is desirable' in comparison with 'what there is now',

they seldom rate the former lower than the latter. Such is the case with SERVQUAL; the expected or desired level of service is almost always higher than the perceived level of actual service" (p.131).

Based on the above criticisms, BCP (1993) developed a new form of service quality measurement instrument, non-different score. The basic difference between the new model and the SERVQUAL (difference score) method it that while the difference score model attempts to measure two variables (expectations / performances) at different time periods (before and after services), the non-difference model measures both expectations and performance after the service rendered. This eliminates the variance restriction problem of increased desire or expectancy as both components are measured simultaneously (Y. Kim, Personal Communication, June, 18, 2000).

In the study conducted by Lee & Kim (1999), non-difference score measurement was compared to the SERVQUAL and SERVPERF methods to determine reliability and validity of test scoring. A survey was distributed in three Korean hotels to a total of 343 different participants who were guests. Fifty-six of the respondents' surveys were eliminated due to different reasons, leaving the total number of surveys returned at 287. The survey measured service quality among the different hotels and the guests' expectations. The guests were asked before staying whether or not they would participate in the survey. In compiling the data from the survey, it was shown that the non-difference scoring had the highest performance for validity and reliability, followed by SERVPERF and then SERVQUAL.

2.4 Relationships among Customer Satisfaction, Customer Loyalty and Service Quality

A lot of exploratory studies on the relationship among service quality, customer satisfaction and customer loyalty were conducted; however, arguments about direction of their causality were important issue and it was not solved yet. The primay reason is why the concept of service quality differs from the concept of satisfaction according to researcher's view, and the concepts of perceived quality, satisfaction, attitude, and customer loyalty is one of attitude models.

There are two directions of causality. One is the causality of "customer satisfaction → service quality → customer loyalty" because customer satisfaction is defined as the sum of concrete evaluation of exchange, service quality is defined as overall evaluation, and then the sum of concrete evaluation of exchange makes overall evaluation (Bitner, 1990; Bolton & Drew, 1991; Parasuraman et al., 1988). On the contrary, the other is that service quality precedes customer satisfaction to the direction of "service quality → customer satisfaction → customer loyalty" (Anderson & Fornell, 1994; Cronin & Taylor, 1992, 1994; Woodside et al., 1989).

Since clarifying the relationship between service quality and satisfaction should be preceded to understand customer's service evaluation process, the relationship is very important issue in service marketing. Because of its importance, a lot of studies have made efforts to clarify customer's service evaluation process (Bolton & Drew, 1991; Cronin & Taylor, 1992). That has been carried out and indicated as

necessity of reform about the relationship between service quality and customer satisfaction (Parasuraman et al., 1994). However, the causality still has stayed in the issue.

There are a lot of rooms for debate, though the direction of relation has been established just like "service quality → customer satisfaction → customer loyalty" by synthesizing the latest study result (Anderson & Fornell, 1994; Cronin & Taylor, 1992; kim & Oh, 2002).

It is shown that customer satisfaction and customer loyalty have close relationship (Fornell, 1992). According to previous studies, it is analyzed positively that customer satisfaction is become preceding factor of customer loyalty (Bitner, 1990; Dick & Basu, 1994; Fornell et al, 1996). In general, customer whose satisfaction is high are willing to maintain their long-term relationship with the company, and loyal customers recommend for others, and it is the effect of word-of-mouth (Reichheld & Sasser, 1990).

This study receives the relationship of "service quality → customer satisfaction → customer loyalty (Anderson & Fornell, 1994; Cronin & Taylor, 1992, 1994; Woodside et al., 1989)" as to assume that perceived quality influences customer satisfaction, and it will be reflected in the model of this study.

Therefore, in the comparison study, the relationship between service quality and customer satisfaction in the formation of customer loyalty will be analyzed in Tianjin Port.

2.5 Switching Cost

2.5.1 Research of Switching Cost

Customer switching costs are generally defined as costs that deter customers from switching to a competitor's product or service. These costs include elements such as the customers' time, effort, and knowledge that they invest in products, services, or relationships. While switching costs have always been considered an important element in achieving competitive advantage, research indicates that they are becoming even more strategic in the increasingly networked environment (Arthur, 1989, 1990, 1996; Economides, 1995; Yoffie, 1996; Bakos, 1997; Butler *et al.*, 1997; Evans and Wurster, 1997; Shapiro and Varian, 1999; Hax and Wilde II, 2001). The unique characteristics of today's expanding networked environment – high-speed low-cost communications, digitalization, globalization, and the Internet – are impacting both the potential of switching costs and the strategies needed to achieve them.

According to Porter (1998), switching cost is the cost involved in changing from one service provider to another. In addition to measurable monetary costs, switching costs also include time and psychological effort involved in facing the uncertainty of dealing with a new service provider (Dick and Basu, 1994; Guiltinan, 1989). According to Jackson (1985), it is the sum of economic, psychological cost, and physical costs. It includes the psychological cost of becoming a customer of a new firm, and the time effort involved in buying new brand (Klemperer, 1995; Kim

et al., 2003). Hence, switching cost varies from customer to customer (Shy, 2002). Psychological cost is a perceived cost stemming from social bonds that form in the course of time and the uncertainty and risk associated with switching to an unfamiliar brand (Patterson and Sharma, 2000; Sharma, 2003). Thus the switching cost can vary from customer to customer. The definition provided by Porter (1998) will be considered as switching cost in this study.

Switching costs may be created either naturally or artificially. A firm's strategic behavior of creating switching costs in an artificial way is to make the consumers who have purchased its product locked in. therefore, a firm with a higher market share, or for example, in an extreme case, a firm that has participated in a market first, faced with the threat of potential entrants, will have an incentive to create artificial switching costs to keep its customers away from the other (potential) firms (Klemperer, 1987). On the contrary, a firm with a lower market share will have the incentive to attract the customers of its rivals, by artificially reducing the costs of switching from other firms to its own. Typical examples of this business strategy are honoring the rivals' discount coupons, supplying a converter from one system to another, honoring the mileage earned from another airline's mileage program, etc.

In the economics literature several researchers have studied the role of switching costs (Porter, 1980, 1985; Katz and Shapiro, 1985; Farrell and Saloner, 1986; Farrell and Gallini, 1988; Farrell and Shapiro, 1988; Klemperer, 1987a, 1987b, 1995; Shapiro and Varian, 1999; Shapiro, 2000). Klemperer uses theoretical models to show that in certain cases consumers face switching costs after choosing among products that were

4 2

ex ante undifferentiated. As a result, in subsequent purchases rational consumers display brand loyalty when faced with a choice between functionally identical products. He claims that the role of switching costs, or the unwillingness of consumers to switch suppliers, can help to explain important aspects of firm competition, such as why it may be rational for managers to focus so much on market share. In their book *Information Rules* (1999), Shapiro and Varian emphasize that "switching costs are the norm, not the exception, in the information 2 economy." They explain that "the way to win in markets with switching costs is neither to avoid lock-in nor to embrace it. You need to think strategically: look ahead and reason back."

In the marketing field, switching costs are identified as playing a key role in the process of creating strong customer satisfaction (Kotler, 1997). This process, known as relationship marketing, involves all of the actions a firm can take to better understand and satisfy its customer. An important part of relationship marketing is attracting and retaining customers, as outlined below in the Customer-Development Process diagram (Figure 1). Kotler points out that there are two primary ways to retain loyal customers: increasing the level of customer satisfaction and raising switching costs.

2.5.2 Measurement of Switching Cost

The researchers reviewed earlier in concur that a range of switching costs exists that can impact a firm's competitive advantage (Porter 1980, 1985; Klemperer 1995; Kotler, 1997; Shapiro and Varian, 1999; Hax and

Wilde II, 1999, 2001; Amit and Zott, 2001). However, their lack of agreement on the specific switching costs makes it difficult to clearly identify and understand the full range of switching cost opportunities that firms must manage.

In Porter's view, "switching costs are fixed costs incurred by the buyer when it changes suppliers", to which he later adds, they are "costs that potentially arise from all the impacts a substitute has on the buyer's value chain" (1985). Therefore, he emphasizes the potential investments that the customer would need to make due to switching as opposed to investments already made. Klemperer, on the other hand, explains that "a switching cost results from a consumer's desire for compatibility between his or her current purchase and a previous investment" (1995). Therefore, his emphasis is based more on previous investments the customer has made. Finally, the conceptual work of Shapiro and Varian (1999) offers a more balanced perspective of switching costs as a mixture of both past and potential investments, but they do not always provide a clear distinction between the two. In light of these different perspectives, we believe clarification is needed to distinguish between switching costs created by previous investments and switching costs created by potential investments.

The other key conceptual aspect of switching costs that we feel can be enhanced is their scope. We do this in two ways. First, we add a switching cost type called *network switching costs* within the *Previous Investments* (PI) category. Network (PI) switching costs arise due to the investment the customer makes in becoming a member of a network. While memberships have always existed, participation within networks,

particularly virtual networks, has exploded due to the growth in the use of the Internet. The second scope enhancement involves adding a third category of switching costs that we label Opportunity Costs (OC). As opposed to the other two categories of switching costs, which result from past or potential investments, opportunity costs represent opportunities the customer would forego if he or she switched brands. Thus, switching costs are opportunities that the customer had with the previous brand that he or she would no longer have with the new brand, even though the customer had never invested directly in those opportunities prior to the time of switching. We identify two types of switching costs within the opportunity costs category: 1) network, and 2) complements.

The switching cost that creates *network* (OC) switching costs involves the cost of leaving a network which the customer could have participated in and benefited from. For example, if a customer of America Online (AOL) switches to a different online service provider (OSP) he or she would forego the opportunity to participate in the network (for example, virtual communities) along with AOL's 30 million plus subscriber base, even though the customer had never invested in participating prior to the time of switching.

The switching cost that creates *complements* switching costs involves foregoing the opportunity to benefit from the range of complementary products and services available for one's current brand. For example, a customer of a Palm handheld computer who switches to a competitor's incompatible handheld computer would forego the opportunity to benefit from the wide range of Palm-compatible software, even if no investment had been made to purchase or learn how to use such software prior to the

time of switching. Although both network (OC) and complements switching costs have always existed, their presence has increased significantly in the information-based economy, especially as a result of the Internet.

In the left-hand column of Table 2-4 below we list the three general types of switching costs: 1) previous investments, 2) potential investments, and 3) opportunity costs. Within each of the general 7 categories we indicate the range of specific types of switching costs that are possible. In the right-hand column we describe each of the particular switching costs. Because the different types of switching costs can and most often do combine to create higher degrees of switching costs, separating them in practice is not as easy as it is here.

Table 2-5 Classifications of Customer Switching Costs

Type of Switching Cost	Description of Switching Cost
1st Category: Previous Investments	This type of switching cost results from investments the customer has already made in the current brand.
Durable Purchase	Investments made in a durable produce, the value of which exists for the economic lifetime of the product.
Complementary Purchase	Investments made in complementary products that are compatible with the durable equipment previously purchased.
Relationship	Investments made to develop relationships with suppliers.
Learning/Training	Investments made to learn how to use a particular brand.

Search Costs	Investments made to learn about the characteristics of a particular brand and to find the right supplier.
Specialized Supplier	Investments made in specialized products from a single supplier.
Loyalty programs	Investments made in previous purchases of the brand as part of a frequent purchase program that results in accumulated discounts.
Information and Database	Investments in saving information and/or creating databases in a particular brand of software technology.
psychological	The psychological cost of having to give up a brand that the customer simple likes and therefore feels loyal to for non-economic reasons.
Network	Investments made in becoming a member of a network (such as a virtual community or chat group) which may include learning and relationship building.
2nd Category: Potential Investments	This type of switching cost results from investments the customer would or could have to make if he or she wants to switch to a different brand.
Durable Purchase	The cost of having to make a new durable purchase.
Complementary Purchase	The cost of having to make new complementary purchase (if previously purchased complements are not compatible with the new durable purchase).
Relationship	The cost of having to develop new relationship with new supplier.
Learning/Training	The cost of having to learn how to use the new brand.

Search Cost	The cost of having to find a new brand and supplier.
Contractual Commitment	The cost of having to pay a breaking a legal commitment to purchase a certain amount of a brand over a certain length of time from a specific supplier.
Risk of Failure	The risk that the new brand will not perform as expected.
Switching Back Costs	The cost of having to switch back to the previous brand if the new brand proves unsatisfactory.
3rd Category: Opportunity Costs	This type of switching cost results from the opportunities the customer would forego if he or she were to leave the current brand.
Network	The cost of leaving a network even if one has not wet invested in becoming an active member.
Complements	The cost of giving up the benefit of a range of complementary goods and/or services that exist exclusively for the customer's current brand even if the customer has not yet invested in or used such complements.

Source: Adapted from Porter (1980, 1985), Kldmperer (1995), Shapiro and Varian (1999), and Hax and Wilde II (2001).

2.5.3 Relationship between Customer Loyalty and Switching Cost

It has been suggested that the degree of switching costs may have an influence on customer loyalty in a given industry (Anderson and Fornell, 1994; Dick and Basu, 1994; Fornell, 1992; Gremler and Brown, 1996). Andreasen (1982; 1985) found empirical support for the effect of high

switching costs on customer loyalty in relation to medical services. In addition to customer uncertainty and structure of the market, the level of competition and loyalty programmes (e.g. membership programmes, customer clubs, seasonal tickets in theatres and opera houses) may increase the perceived and actual cost of switching (Gruen and Fergusson, 1994; Gummesson, 1995). In other words, in the presence of switching cost, customers who might be expected to select from a number of functionally identical brands display brand loyalty (Klemperer, 1987). In conclusion, it appears that there is a positive relationship between the level of switching costs and customer loyalty in services.

CHAPTER 3 RESEARCH METHOD

This chapter includes the description of methods and procedures for acquiring the information needed. For the purpose of conducting an effective and reliable study, we try to build up a conceptual model for this study based on the research background and objectives described in chapter 1 and the literature review given in the former chapter. This chapter will describe the research methodology, including the research model, research hypotheses, questionnaire design, sample selection and data analysis methods.

3.1 Operational Definition of Variables and Measurement for Port

An operational definition gives meanings to a conception by specifying necessary activities or operations. Therefore, the operational definition specifies what must be done to measure the conceptions established in our research, we generated a pool of sample measures. Operational definitions and questionnaire measurement of this study are listed below.

1. Service Quality (SQ):

Service quality is a wildly studied, and debated, construct [1]. Parasuraman, Zeithmal and Berry proposed that the quality that a consumer perceives in a service is a function of the magnitude and direction of the gap between expected and perceived service. We will design the research model, hypotheses and questionnaire base on the refinement and reassessment of the SERVQUAL Scale in 1991. According to Parasuraman, Zeithmal and Berry's items, we developed 6 important port service items as table 3-1.

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[1] Emimi Babakus, Carl E. Ferguson, and karl G. Joreskog, "The Sensitivity of Confirmatory Maximum likelihood Factor Analysis to Violations of Measurement Scale and Distributional Assumptions," *Journal of Marketing Research* 24 (1987): 227; T.J. Brown, G.A. Churchill, Jr. and P.J. Peter, "Improving the Measure of Service Quality," *Journal of Retailing* 69 (spring 1993):130; J.M. Carman, "Consumer perceptions of service quality: An assessment of the SERVQUAL Dimensions," *Journal of Retailing* 66 (spring 1990): 38; J. Paul Peter, Gilbert A. Churchill, Jr., and Tom J. Brown, "Caution in the Use of Difference Scores in Consumer Research," *Journal of Consumer Research* 19 (March 1993): 658.

Table 3-1 Dimensions of Port Service Quality

Dimensions	Contents of Questionnaire
Tangibles	modernization and holding ability, such as long-term strategy and physical facilities, equipment, etc. of port
Responsiveness	transport timely and answer immediately, zeal of thinking customer's position and preparation
Information	inform clients of their rights and obligations so that they can be fully in charge of their choices
Reliability	operating ability of providing appoint service to customers, reducing time and cost of handling shipping companies' business, and providing real time information, etc.
Security	ability of managing shipping service for calling vessels safely and holding harbors' safety (public security and accidents)
Rapidity	ensure that response times are reasonable

Source: Parasuraman, Zeithmal and Berry, 1991.

2. Switching Cost (SC)

In this research, we defined all the cost factors that customers will change their mind to use Tianjin Port and change to use another port. Our research according to Dick & Basu (1994)'s research, and made 5 factors of switching cost that can effect customers' decision of changing to use Tianjin Port or moving to another port.

Table 3-2 Dimensions of Port Switching Cost

Dimensions	Contents of Questionnaire
Learning Cost	If companies changes to use another port, they will spend huge time and cost to fit in with the operation environment of the new port.
Search Cost	If companies changes to use another port, the cost that they invest and construct in the new port will be very high.
Sinking Cost	If companies don't use the old port, the facility that they invested in the old port will have great loss.
Bargain Cost	If companies don't use the old port, they will loose the preferential terms and rebate that they have now, this kind of expense is very great.
Continuum Cost	If companies don't use the old port, they will loose a lot of source of goods and market.

Source: Dick & Basu , 1994.

3. Customer Satisfaction (CS)

Customer satisfaction is widely recognized as a key influence in the formation of consumers' future purchase intentions (Taylor and Baker, 1994). According to Taylor and Baker's research, searching for factors conducive to consumer satisfaction is an important issue in port. If Tianjin Port wants to be the winner in competition, meeting customer's demand is very important. That is, pursuing consumer satisfaction is their objective.

4. Customer Loyalty (CL)

According to Zethaml, Berry & Parasuraman (1996)'s research, we defined the customer loyalty that customers wanted to use Tianjin Port continually and they wanted to recommend Tianjin Port to other people. Customer loyalty is very important to port, it can make port providing services to customer again and again over time.

3.2 Research Model

This research model from the literature investigating the relationship among service quality, customer satisfaction, switching cost and customer loyalty as following:

Figure 3-1 Conceptual Model of Research
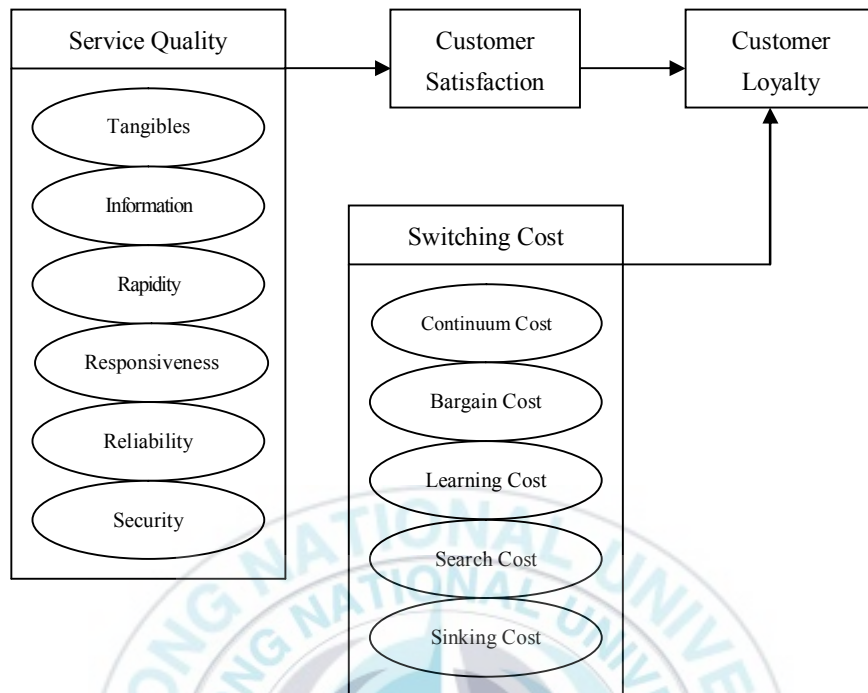
Source: This study.

3.3 Research Hypotheses

On the basis of the literature, this study hypothesizes directional relationships among service quality, customer satisfaction, switching cost and customer loyalty. Based on the preceding discussion, the following research hypotheses are proposed.

Hypothesis 1(H1): Port logistics service quality has positive (+) impact on customer satisfaction.

Hypothesis 1-1: Tangibles has overall positive (+) impact on customer satisfaction.

Hypothesis 1-2: Information has overall positive (+) impact on customer satisfaction.

Hypothesis 1-3: Rapidity has overall positive (+) impact on customer satisfaction.

Hypothesis 1-4: Responsiveness has overall positive (+) impact on customer satisfaction.

Hypothesis 1-5: Reliability has overall positive (+) impact on customer satisfaction.

Hypothesis 1-6: Security has overall positive (+) impact on customer satisfaction.

Hypothesis 2 (H2): Customer satisfaction has positive (+) impact on customer loyalty.

Hypothesis 3 (H3): The more switching cost increase, the more it has positive (+) impact on customer loyalty.

Hypothesis 3-1: The more continuum cost increase, the more it has positive (+) impact on customer loyalty.

Hypothesis 3-2: The more bargain cost increase, the more it has positive (+) impact on customer loyalty.

Hypothesis 3-3: The more learning cost increase, the more it has positive (+) impact on customer loyalty.

Hypothesis 3-4: The more search cost increase, the more it has positive (+) impact on customer loyalty.

Hypothesis 3-5: The more sinking cost increase, the more it has positive (+) impact on customer loyalty.

We classified the hypothesis as 3 steps:

Table 3-3 Hypotheses

1st Step	**H 1**	Port logistics service quality has positive (+) impact on customer satisfaction.
	H 1-1	Tangibles has overall positive (+) impact on customer satisfaction.
	H 1-2	Information has overall positive (+) impact on customer satisfaction.
	H 1 -3	Rapidity has overall positive (+) impact on customer satisfaction.
	H 1-4	Responsiveness has overall positive (+) impact on customer satisfaction.
	H 1-5	Reliability has overall positive (+) impact on customer satisfaction.
	H 1-6	Security has overall positive (+) impact on customer satisfaction.
2nd Step	**H 2**	Customer satisfaction has positive (+) impact on customer loyalty.
3rd Step	**H 3**	The more switching cost increase, the more it has positive (+) impact on customer loyalty.
	H 3-1	The more continuum cost increase, the more it has positive (+) impact on customer loyalty.
	H 3-2	The more bargain cost increase, the more it has positive (+) impact on customer loyalty.
	H 3-3	The more learning cost increase, the more it has positive (+) impact on customer loyalty.
	H 3-4	The more search cost increase, the more it has positive (+) impact on customer loyalty.
	H 3-5	The more sinking cost increase, the more it has positive (+) impact on customer loyalty.

Source: This study.

3.4 Questionnaire Design

There are 5 parts in the questionnaire of this research:

1. Basic information of participants and their companies;

2. Items about service quality of Tianjin Port, include: Tangibles, Information, Rapidity, Responsiveness, Reliability and Security;

3. Customers' perceived switching cost;

4. Customer satisfaction in Tianjin Port; and

5. Customer loyalty in Tianjin Port.

3.5 Sample Selection

Administered in October, 2007, with the generous publics. Several container shipping companies in several cities that using Tianjin Port were selected for the purpose of aiming at the customers of Tianjin Port. Totally we obtained 167 useable questionnaires. Structural equation modeling (SEM) was computed to determine the relationships among service quality, customer satisfaction, switching cost and customer loyalty. The findings aim to enhance service quality and performance in Tianjin Port.

3.6 Data Collection

Each subject was asked to complete the self-administered questionnaire. Instructions emphasized that "there are no right or wrong answers; only your personal opinions matter" to minimize possible

response bias[2]. In the introduction section of the questionnaire, the purpose of the study was described and the importance of a respondent's cooperation was stressed. The respondents were told that "the purpose of this study is to investigate how marketing activities influence consumers' evaluations and purchase intention. To ensure valid and meaningful findings, we need your help."

The questions were arranged in multi-item scales to ensure accurate representation of the constructs of interest. Each scale consisted of several questions pertaining to the same construct; the answers to the questions were averaged to arrive at a scale score. The informants were asked to indicate their agreement or disagreement with the statements provided using 7-point Likert scales where a value of 1 indicates strongly disagreement and 7 indicates strongly agreement.

3.7 Statistical Analysis Method

3.7.1 Research Method

Several methods of surveying were identified as potentials to use in this study. These include a phone survey, mail survey and email survey. A phone survey would ensure a higher response rate and accuracy of responses due to the ability of respondents to clarify questions and discuss their answers. Drawbacks of the phone survey, are time, and cost,

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[2] Elliot Aronson, Phoebe C. Ellsworth, J. Merrill Carlsmith, and Marti Hope Gonzales, *Method of Research in Social Psychology* (New York: McGraw-Hill, 1990), 40.

especially if respondents are in other countries. Mail surveys would have a lower response rate, as they are more time consuming for respondents because the respondent has to fill out the form and then post in back. Email surveys also have a low response rate. First they have the problems of being read by the targeted people. This can be difficult as emails might be treated as spam. Next it can also be time consuming for the respondent have to fill out the survey and then email it back.

3.7.2 Statistic Analysis

According to descriptive analysis to describe the information that this research collected, we can understanding more information about subject investigated, and describe the mean and standard deviation of each item. Respondents ranked the descriptive using a 7-point Likert scale from strongly agree to strongly disagree. For analysis purposes, strongly agree is 7 and strongly disagree is 1. This means the higher the score (range 1 to 7) the stronger the agreement. A score of 3 means a neutral standing. If the mean is high, it means the participants have high estimation and high agreement, and the standard deviation means the participants' estimation is consistent or not, the higher the standard deviation, the more consistent the participant' thinking.

1. Factor Analysis
Exploratory factor analysis (EFA) and principal components analysis (PCA) both are methods that are used to help investigator represent a large number of relationships among interval-level variables in a simpler

(more parsimonious) way. Both of these approaches allow the computer to determine which, of a fairly large set of items, "hang together" as a group, or are answered most similarly by the participants.

There are two main conditions necessary for factor analysis and principal components analysis. The first is that there need to be relationships between the variables. Further, the large the sample size, especially in the relation to the number of variables, the more reliable the resulting factors usually are. Sample size is less crucial for factor analysis to the extent that the communalities of items with the other items are high, or at least relatively high and variable. Ordinary principal axis factor analysis should never be done if the number of items/variables is greater than the number of participants.

2. Reliability Analysis

Cronbach's coefficient alpha. This measure indicates the consistency of a multiple item scale. Alpha is typically used when you have several Likert-typle items that are summed to make a composite score or summated scale. Alpha is based on the mean or average correlation of each item in the scale with every other item. In the social science literature, alpha is wildly used, because it provides a measure of reliability that can be obtained from one testing session or one administration of a questionnaire.

3. Correlation Analysis

Correlation analysis measures the relationship between two items, for example, a security's price and an indicator. The resulting value (called

the "correlation coefficient") shows if changes in one item will result in changes in the other item.

When comparing the correlation between two items, one item is called the "dependent" item and the other the "independent" item. The goal is to see if a change in the independent item (which is usually an indicator) will result in a change in the dependent item. This information helps you understand an indicator's predictive abilities.

The correlation coefficient can range between ?.0 (plus or minus one). A coefficient of +1.0, a "perfect positive correlation," means that changes in the independent item will result in an identical change in the dependent item. A coefficient of -1.0, a "perfect negative correlation," means that changes in the independent item will result in an identical change in the dependent item, but the change will be in the opposite direction. A coefficient of zero means there is no relationship between the two items and that a change in the independent item will have no effect in the dependent item.

A low correlation coefficient suggests that the relationship between two items is weak or non-existent. A high correlation coefficient indicates that the dependent variable will usually change when the independent variable changes.

The direction of the dependent variable's change depends on the sign of the coefficient. If the coefficient is a positive number, then the dependent variable will move in the same direction as the independent variable; if the coefficient is negative, then the dependent variable will move in the opposite direction of the independent variable.

When comparing the correlation between an indicator and a security's price, a high positive coefficient (e.g., move then +0.70) tells you that a change in the indicator will usually predict a change in the security's price. A high negative correlation (e.g., less than -0.70) tells you that when the indicator changes, the security's price will usually move in the opposite direction. Remember, a low (e.g., close to zero) coefficient indicates that the relationship between the security's price and the indicator is not significant.

4. Structural Equation Modeling

The hypotheses presented earlier were tested within a Structural Equation Modeling (SEM) framework using AMOS. Structural Equation analysis has been widely applied in the social sciences and marketing literature. Structural Equation Modeling (SEM) is a powerful statistical technique that combines the measurement model (confirmatory factor analysis) and the structural model (regression or path analysis) into a simultaneous statistical test.

Owing to explaining causality among constructs that cannot be directly measured and according to Anderson and Gerbing's two-stage procedure, confirmatory factor analysis (CFA) and structural equation modeling (SEM) are used in the first and second stages in turn[3]. CFA, a measurement model, is used to relate the observed, recorded, or measured variables to the latent variables (constructs) and examines

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[3] James C. Anderson and David Gerbing, "Structural Equation Modeling in Practice: A Review and Recommended Two Step Approach," *Psychological Bulletin* 103 (May 1988): 420.

whether or not the data can represent what this student really wants to measure. SEM shows the causal relationships among the latent variables. In addition, it descries the causal effects and the variance that are explained.

SEM was used to estimate parameters of the structural model, and the completely standardized were produced by maximum-likelihood estimation. At present, there is no consensus on a single or even a set of measures of fit[4]. Thus, for model evaluation, this study used several standard model evaluation criteria:

(1) Goodness-of-Fit Index (GFI) (Bentler and Bonett 1980) is based on a X^2 likelihood test of the hypothesized model with a null model (no relationships among constructs)[5]. Typically, GFI numbers greater than 0.9 indicate a good fit.

(2) Adjusted Goodness-of-Fit Index (AGFI) (Bagozzi and Yi 1988)[6]. The limitation of GFI is that it can be biased by sample size and degrees of freedom in the model. This partly overcome by the AGFI since it penalizes the number of parameters specified in the model.

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[4] G.M. Maruyana, *Basic of Structural Equation Modeling*, Sage Publications, Inc., London, (1998), 30.

[5] P.M. Bender and D.G. Bonett, "Significance Tests and Goodness of Fit in the Analysis of Covariance Structures," *Psychological Bulletin* 80 (1990): 591.

[6] R.P. Bagozzi and Youjae Yi, "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science* 16 (spring 1988): 80.

(3) Comparative Fit Index (CFI) and Normal Fit Index (NFI) (Bentler and Bonett 1980)[7]. Both these measures compare the research model specified with the null model (no relationships). The NFI can e viewed as a percent improvement over the null model but does not adjust for the number of parameters in the model. The CFI is based on the X^2 distribution and ranges from 0 to 1 with values exceeding 0.9 considered good.

(4) Bollen's Incremental Fix Index (IFI) basically prepresents the point at which the model being evaluated falls on a scale running from the null model (where all correlations are zero) to a perfect fit, where a perfect fit would equal 1. This index is adjusted for the DF of the model[8].

(5) The Root Mean Square Residual (RMR) index represents the average size of the residual correlations.

(6) The Root Mean Square Error of Approximation (RMSEA) is a measure of the population discrepancy that is adjusted for the DF for testing the model. A value of 0.08 or less for RMSEA would indicate a reasonable error of approximation[9].

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[7] Bentler and Bonett, "Significance Tests and Goodness of Fit in the Analysis of Covariance Structures,"591.

[8] K.A. Bollen, "A New Incremental Fit Index for General Structural Equation Models," *Sociological Methods and Research* 17 (1989): 310.

[9] M.W. Browne and R. Cudeck, "Alternative Ways of Assessing Model Fit," *Testing Structural Equation Models*, ed. K. Bollen and J.S. Long (Calif: Newbury Park, 1993), 160.

CHAPTER 4 RESULTS OF ANALYSIS

This chapter will describe research subjects' basic data according to the valid questionnaires. Next, it will perform a confirmatory factor analysis to validate the critical factors of respondents of service quality, customer satisfaction, switching cost and customer loyalty. Then test will be carried out to ascertain the relationships among service quality, customer satisfaction, switching cost and customer loyalty using structural equation modeling. Finally, the results of hypotheses test are presented as well.

4.1 Fundamental Relate Statistics Analysis of Sampling

The following table shows the view and completion rates for the survey.

Table 4-1 Response Rates

Sent Questionnaires	Returned Questionnaires	Invalid Questionnaire	Valid Questionnaire	Rate of Valid Recovery
300	218	51	167	55.7%

Source: This study.

This research according to the concept of *Central Limit Theorem:* 「As sample size increases, the sampling distribution of sample means

approaches that of a normal distribution with a mean the same as the population and a standard deviation equal to the standard deviation of the population divided by the square root of *n* (the sample size).⌋ The returned quality of this research has been already reached the requisition of that theorem, so the sampling hypothesis of these questionnaires is normal distribution.

Sample data of this study will be described in table 4-2.

Table 4-2 Details of Sample Data

Content	Item	Number	Percentage (%)
Main Sailing Route	Coastal Route	83	49.7%
	Oceangoing Route	79	47.3%
	Other Route	5	3%
Freight Handling Amount (TEU)	Less than 250000	12	7.2%
	260000-500000	16	9.6%
	510000-750000	36	21.6%
	760000-1000000	12	7.2%
	1010000-1500000	22	13.2%
	1510000-2000000	37	22.2%
	More than 2000000	32	19.2%
Type of Company	Foreign Shipping Company or Agency	62	37.1%
	Domestic Shipping Company or Agency	104	62.3%
	Coastal Shipping Company	1	0.6%
Time Length of Doing Business	Less than 5 years	35	21%
	6 – 10 years	62	37.1%
	11 – 15years	43	25.7%
	16 – 20 years	17	10.2%
	More than 20 years	10	6%

Source: This study.

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4.2 Results of Analysis

This study focused on understanding the nature of the relationship among service quality, customer satisfaction, switching cost and customer loyalty. Through structural equation modeling (SEM) using AMOS, this study tested the specified framework (refer to figure 4-1 for a diagram of the model). This study evaluated the measurement model and considered the relationship between observed measures and latent constructs. This study also tested the specified hypotheses between the latent constructs. The result of the SEM analysis allowed us to understand which variables best explained the constructs and to understand the nature (direct and indirect) of the relationship between constructs.

4.2.1 Validity and Reliability Analysis

The results of item reliability, construct reliability, and average variance extracted are reported in table 4-3. Most of them are acceptable based on the criteria suggested by Bagozzi and Yi. A completely standardized solution produced by the AMOS maximum likelihood method that most items were loaded highly on their corresponding factoring factors, which supported the independence of the constructs and provided strong empirical evidence of their validity. As table 4-3 shows, the construct reliabilities for all the constructs are above the minimum of 0.7 recommended by Nunnally. Variance-extracted

estimates are above 0.5, indicating that there is more "signal" than "noise" in the data.

The result of confirmatory factor analysis shows that factor loading of all manifest variables are significant (T＞1.96), indicating that all manifest variables can explain latent variables. To get the best fitting model, this study deletes measurable indicator variables which are based the magnitude of standardized regression weights. Hence, this study deletes SQinf, SQres, SQrap, SQsec, SCcon and SCbar. All manifest variables have quite high standardized regression weights (from 0.637 to 0.840) are quite reliable indicators in this study.

Overall fit statistics of the measurement model were as follows: Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI) were 0.823 and 0.791, respectively. Comparative Fit Index (CFI) was 0.898, Normed Fit Index (NFI) was 0.844, Incremental Fit Index (IFI) was 0.898, Root Mean Residual (RMR) was 0.036, and Root Mean Square Error of Approximation (RMSEA) was 0.073. The confirmatory factor analysis indicated a reasonable level of fit of the model.

This study also used Cronbach's coefficient α to evaluate the reliability of the scales. The α scores for each scale range from 0.764 to 0.910. Since all α scores are considerably higher than the acceptable level advocated by Nunnally, all scales exhibit a high degree of reliability[10]. The results of Cronbach's coefficient α are reorted in table 4-3.

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[10] Nunnally, Psychometric Theory, 30.

Table 4-3 Results from Test on Reliability and Validity

Framework Component	Standardized Factor Loading	Standardized Error	Critical Ratio	Error Variance	Item Reliability	α If Deleted	Variance extracted*
Service Quality							
SQtan	0.802	0.029	27.655	0.209	0.644	0.9101	0.6308
SQinf	0.729	0.039	18.692	0.253	0.432		
SQres	0.705	0.033	21.182	0.248	0.486		
SQrel	0.800	0.032	25.00	0.222	0.640		
SQrap	0.706	0.034	20.765	0.333	0.498		
SQsec	0.614	0.049	12.531	0.378	0.376		
Customer Satisfaction							
CS1	0.774	0.040	19.35	0.252	0.600	0.8332	0.6557
CS2	0.801	0.032	25.031	0.248	0.641		
CS3	0.782	0.033	23.697	0.307	0.612		
Switching Cost							
SCcon	0.680	0.041	16.585	0.270	0.462	0.8885	0.6700
SCbar	0.702	0.034	20.647	0.381	0.493		
SClea	0.782	0.025	31.28	0.216	0.611		
SCsea	0.758	0.029	26.138	0.235	0.574		
SCsin	0.749	0.039	19.205	0.211	0.560		
Customer Loyalty							
CL1	0.796	0.034	23.412	0.243	0.633	0.8768	0.7332
CL2	0.815	0.035	23.286	0.200	0.665		
CL3	0.810	0.034	23.824	0.227	0.655		
CL4	0.776	0.033	23.515	0.260	0.602		

Source: This study.

* The average variance-extracted for each construct are above0.5, indicates convergent validity among items measuring the construct.

4.2.2 Factor Analysis

According to the results of reliability and validity analysis, we analyzed 10 items of service quality, 3 items of customer satisfaction, 6 items of switching cost and 4 items of customer loyalty, and tried to find the potential structure and measurement, made them to turn into few but more correlated variables.

On the aspect of service quality, the tangible1 get the highest value. On the aspect of customer satisfaction, the CS2 is the highest. On the aspect of switching cost, the SCsea1 is the highest. And on the aspect of customer loyalty, the CL1 is the highest. And all of the α value are higher than 0.8. So we don't have any problems with reliability and validity of all the factors.
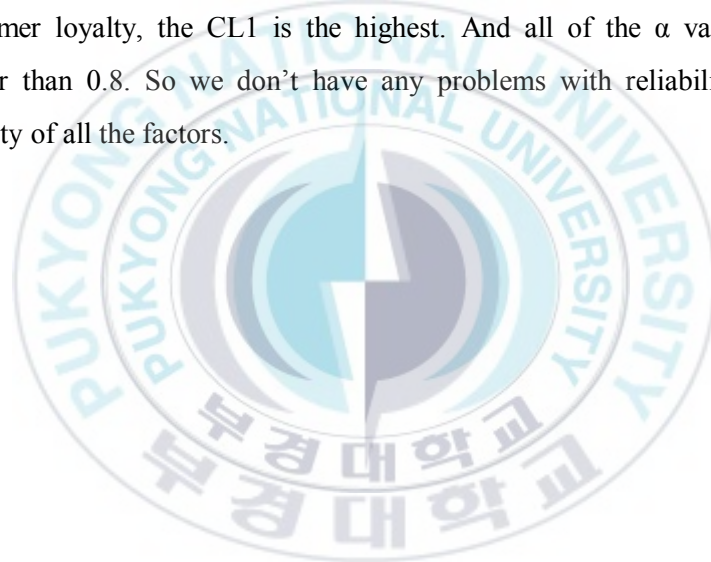
Table 4-4 Rotated Factor Matrix

	Factor 1	Factor2	Factor3	Factor4
SQtan1	0.885	0.011	0.113	0.088
SQtan4	0.854	-0.071	0.011	-0.129
SQrel3	0.743	0.230	0.264	0.138
SQrel5	0.716	0.230	0.264	0.138
SQtan3	0.708	0.212	0.133	0.163
SQrel5	0.697	0.076	0.372	0.216
SQtan1	0.663	-0.066	0.120	0.438
SQtan2	0.613	0.023	0.404	0.170
SQrel2	0.607	0.303	0.406	-0.141
SQrel4	0.606	0.215	0.503	0.168
CS2	0.387	0.765	0.142	0.022
CS1	-0.057	0.754	0.336	-0.012
CS3	0.270	0.713	-0.062	-0.052
SCsea1	-0.001	0.128	0.826	0.076
SClea2	0.119	-0.060	0.719	0.019
SCsea2	-0.062	-0.052	0.713	0.270
SCsin1	0.222	0.256	0.698	0.016
SClea1	0.255	0.549	0.575	0.251
SCsin2	0.263	0.030	0.558	-0.020
CL1	0.340	0.064	0.277	0.758
CL2	0.054	0.419	0.243	0.605
CL3	-0.038	0.135	0.515	0.533
CL4	-0.134	0.211	0.056	0.519
Cronbach's α	0.9101	0.8332	0.8885	0.8768
Variance Explained	17.44	14.305	14.052	10.102

Source: This study.

After reliability and factor analysis, finally we decided the items of each factor as table 4-5:

Table 4-5 Final Items of Each Factor

	Items	Contents
Service Quality	**Tangibles1**	Tianjin Port has already constructed the facilities (nautical mark, enough depth of water, safe transportation system of vessel, etc.) for vessels leaving and entering harbor very well.
	Tangibles2	Tianjin Port has many kinds of facilities (ship mats, CY, CFS, etc.) for processing cargo.
	Tangibles3	Tianjin Port has many kinds of equipments (container cranes, harbor cranes, yard tractors, conveyers, etc.) for processing cargo.
	Tangibles4	Tianjin Port has constructed the multiple transportation system very well.
	Tangibles5	Tianjin Port has already distributed assistant facilities (cargo divided area, assembly area, packing company, etc.) in boat-train area (close to each other).
	Reliability1	Tianjin Port can observe the schedule of the vessels that have already touched port.
	Reliability2	Tianjin Port can ensure that a cargo enters and leaves port on time.
	Reliability3	Tianjin Port can keep the promised time of starting and finishing work very well.
	Reliability4	Tianjin Port almost never made a mistake when handling business.
	Reliability5	Workers in Tianjin Port have a sense of responsibility and they handle business honestly.

Customer Satisfaction	**CS1**	I am satisfied with all of Tianjin Port's port logistics service.
	CS2	It is wise to choose Tianjin Port's port logistics service.
	CS3	It is a good experience to use Tianjin Port's port logistics service.
Switching Cost	**Learning1**	We must familiarize ourselves with all the new methods of the new port that we will change to.
	Learning2	We must examine again all of the structures and procedures of the new port that we will change to.
	Search1	It consumes a lot of time and effort to find a new port.
	Search2	It is difficult to find information of a new port.
	Sinking1	The time and effort that we spent in Tianjin Port is very regrettable.
	Sinking2	The time and effort that we invested to make the unofficial relationship in Tianjin Port is very regrettable.
Customer Loyalty	**CL1**	Although there are numerous other port logistics service providers, our company will still continue to principally use Tianjin Port's service.
	CL2	Although the price is high, our company will continue using Tianjin Port's logistics service.
	CL3	I will recommend Tianjin Port's logistics service to other companies (or people).
	CL4	I will give positive comments about Tianjin Port to other companies (or people).

Source: This study.

4.2.3 Correlation Analysis

A correlation analysis was conducted on all variables to explore the relationship between variables. The correlation procedure was subject to a two tailed of statistical significance at two different levels highly significant ($p < 0.01$) and significant ($p < 0.05$).

The result of correlation analysis for all the variables is shown in Table 4-6. It examines the correlations among tangibles and reliability of service quality, learning cost, search cost and sinking cost of switching cost, customer satisfaction, and customer loyalty of Tianjin Port.

Table 4-6 Correlation Matrix

	SQtan	SQrel	SClea	SCsea	SCsin	CS	CL
SQtan	-	0.68**	0.68**	0.50**	0.018	0.246**	0.25**
SQrel		-	0.75**	0.62**	0.012	0.33**	0.31**
SClea			-	0.71**	0.003	0.44**	0.32**
SCsea				-	0.136	0.44**	0.38**
SCsin					-	0.33**	0.45**
CS						-	0.72**
CL							-

Source: This study.

*$p < 0.05$, **$p < 0.01$

7 6

4.3 Structural Equation Modeling

This study took a staged approach (i.e., nested models comparisons) to testing hypothetical models that describe the relationship between both observed and unobserved measures. This staged approach, similar to hierarchical regression, allows us to determine if the addition of new set of relationships adds significantly to the explanation of the variation in the data. The result of the best fitting model is shown in table 4-5 and figure 4-1. Goodness-of-fit statistics, indicating the overall acceptability of the structural model analyzed, are acceptable: GFI=0.908, AGFI=0.870, CFI=0.942, NFI=0.912, IFI=0.942, RMR=0.027, and RMSEA=0.076. Most path coefficients are significant ($p<0.05$). The p-values of the estimates for hypotheses testing were determined with two-tailed t tests. This study lists acceptability of the best fitting model in table 4-5.

Table 4-7 Results of the Best Fitting Model

Parameter estimate	Standardized factor loading	Standard error	Critical ratio
SQ→SQtan	0.840*	0.032	26.250
SQ→SQrel	0.732*	0.045	16.267
CS→CS1	0.770*	0.404	19.250
CS→CS2	0.801*	0.033	24.273
CS→CS3	0.788*	0.031	25.419
SC→SClea	0.768*	0.031	24.774
SC→SCsea	0.739*	0.033	22.394
SC→SCsin	0.749*	0.041	18.268
CL→CL1	0.797*	0.033	24.152
CL→CL2	0.814*	0.035	23.257
CL→CL3	0.809*	0.033	24.515
CL→CL4	0.778*	0.033	23.576
Parameter estimate	**Standardized path coefficients**	**Standard error**	**Critical ratio**
SQ→CS	0.798*	0.051	15.647
CS→CL	0.564*	0.110	5.127
SC→CL	0.332*	0.100	3.32

Source: This study.

*Indicates a parameter that is significantly different from zero (t>1.96, p<0.05).

Figure 4-1 Best Fitting Model

GFI=0.920   AGFI=0.887

CFI=0.956   NFI=0.925

RMR=0.026   RMSEA=0.066

Source: This study.

7 9
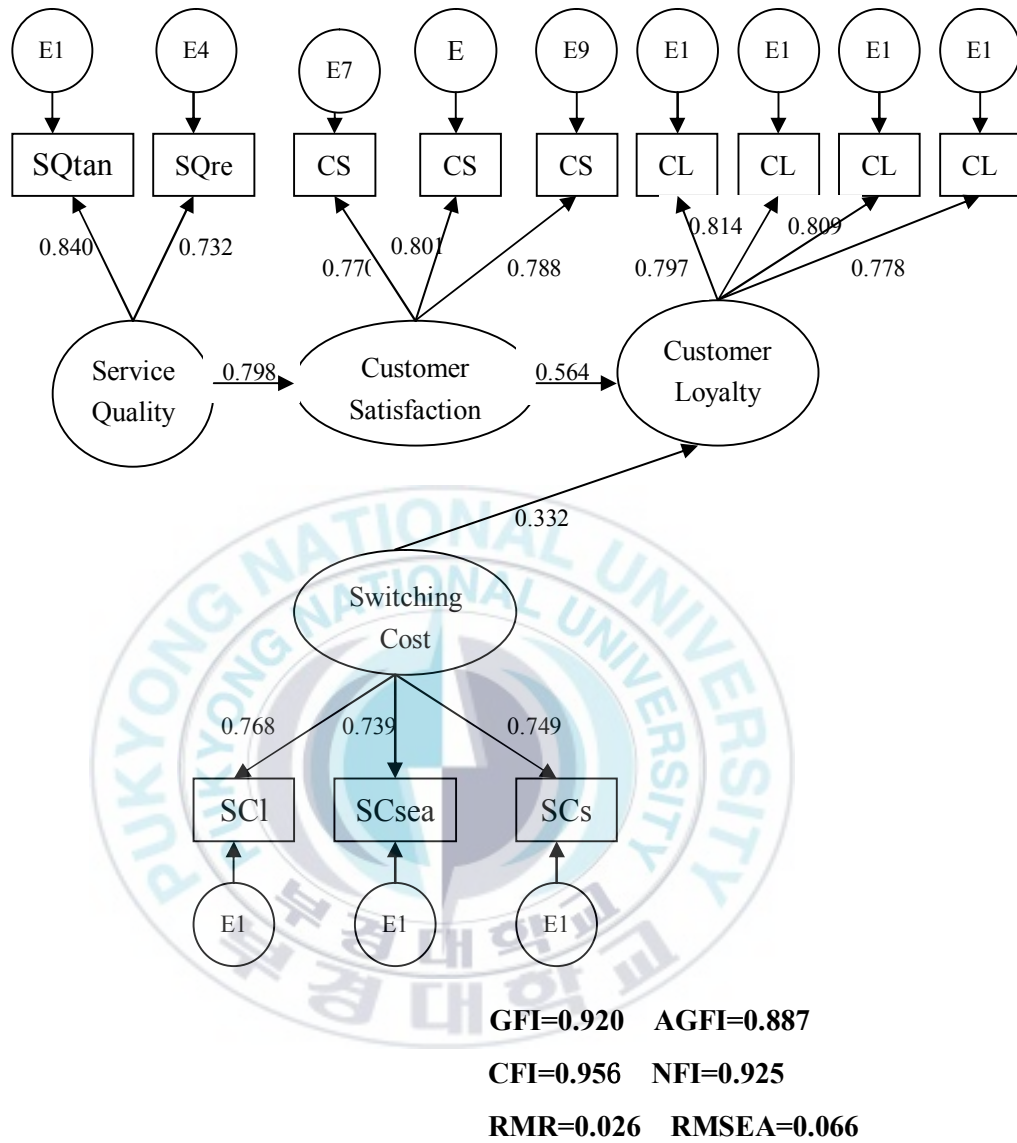
Table 4-8 Acceptability of the Best Fitting Model

Standard Model Evaluation Criteria	Remark
1. Goodness of Fit Index (GFI)>0.9?	Yes, GIF=0.920
2. Adjusted Goodness of Fit Index (AGFI)>0.9?	*No, AGFI=0.887
3. Comparative Fit Index (CFI)>0.9?	Yes, CFI=0.956
4. Normed Fit Index (NFI) >0.9?	Yes, NFI=0.925
5. Root Mean Square Residual (RMR) <0.05?	Yes, RMR=0.026
6. Root Mean Square Error of Approximation (RESEA)<0.08?	Yes, RESEA=0.066

Source: This study.

*GFI and AGFI have achieved 0.8-0.89 reasonable level (Byrne, 1989).

4.4 Results of Hypotheses Test

According to the best fitting model, the results of hypotheses test were summed up in table 4-9.

Table 4-9 Summary of Hypotheses Test

H 1	Port logistics service quality has positive (+) impact on customer satisfaction.	**Supported**
H 1-1	Tangibles has overall positive (+) impact on customer satisfaction.	**Supported**
H 1-2	Information has overall positive (+) impact on customer satisfaction.	Rejected
H 1-3	Rapidity has overall positive (+) impact on customer satisfaction.	Rejected
H 1-4	Responsiveness has overall positive (+) impact on customer satisfaction.	Rejected
H 1-5	Reliability has overall positive (+) impact on customer satisfaction.	**Supported**
H 1-6	Security has overall positive (+) impact on customer satisfaction.	Rejected
H 2	Customer satisfaction has positive (+) impact on customer loyalty.	**Supported**
H 3	The more switching cost increase, the more it has positive (+) impact on customer loyalty.	**Supported**
H 3-1	The more continuum cost increase, the more it has positive (+) impact on customer loyalty.	Rejected
H 3-2	The more bargain cost increase, the more it has positive (+) impact on customer loyalty.	Rejected
H 3-3	The more learning cost increase, the more it has positive (+) impact on customer loyalty.	**Supported**
H 3-4	The more search cost increase, the more it has positive (+) impact on customer loyalty.	**Supported**
H 3-5	The more sinking cost increase, the more it has positive (+) impact on customer loyalty.	**Supported**

Source: This study.

Hypothesis 1 is supported. Service quality positively influences customer satisfaction. Our study revealed that there is a causal relationship between service quality and customer satisfaction. The above finding is consistent with the research findings reported by Cronin and Taylor, who found a positive correlation between service quality and customer satisfaction. In hypothesis, these are also some small hypotheses. Because we deleted SQinf, SQres, SQrap, SQsec, hypothesis 1-2, 1-3, 1-4, 1-6 are rejected, and just hypothesis 1-1 and 1-5 are supported. And we just found a positive correlation between Tangibles and Reliability of service quality and customer satisfaction[11].

Hypothesis 2 is supported. A positive significant relationship is found between customer satisfaction and customer loyalty. In other words, our study reveals that there is a significant relationship between customer satisfaction and customer loyalty. The above finding is consistent with the research findings reported by Bitner, Bolton and Drew, who found a positive relationship between customer satisfaction and customer loyalty.

Hypothesis 3 is supported. The proposed path from switching cost to customer loyalty is supported. The above finding is consistent with the research findings reported by Anderson, Fornell, Dick, Basu, and Andreasen, who found a positive correlation between switching cost and customer loyalty. Same as hypothesis 1, we deleted SCcon and SCbar in switching cost, so hypothesis 3-1 and 3-2 are rejected, and just hypothesis 3-3, 3-4 and 3-5 are supported. And we just found a positive

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[11] J. Joseph Cronin Jr. and Steven A. Taylor, "Measuring Service Quality: A Reexamination and Extension," Journal of Marketing 56, No.3 (1992): 58.

correlation between learning cost, search cost and sinking cost of switching cost and customer loyalty.

CHAPTER 5 CONCLUSIONS AND SUGGESTIONS

Chapter 4 presents the results of the statistical data analysis. In this chapter, we will integrate those results and other findings into conclusions for this study. The research findings will be summarized. The conclusions will be drawn then. Finally, some suggestions for future studies and research limitations will be offered.

5.1 Research Finding

There are so many papers to research port's customer loyalty, but the papers that research the Tianjin Port's customer loyalty are just few. This research according to the literature review, used the harbor's special service attribute into the sorts of service quality and switching cost of port, and built the SEM mode of Tianjin Port's customer satisfaction and loyalty. After analyzed the questionnaire, we got the research conclusion as following:

1. Service quality has direct influence to Tianjin Port's customer satisfaction.

The SEM model of this research identifies that positive influence to customer satisfaction by service quality in other service business (Zeithaml et al. 1996, Bloemer et al. 1999, Ruyter et al. 1998, Lee and Cunningham 2001) can be used in the research about port management.

In this research, tangibles is the most important in the factors of service quality, second is reliability. Because tangibles is related to authority's modernization and holding ability (such as long-term strategy and physical facilities, equipment, etc.); reliability is the operating ability of providing appoint service to customers, reducing time and cost of handling shipping companies' business, and providing real time information, etc., both of them are related to the Tianjin Port Authority. So on the aspect of service quality, the key of promoting customer satisfaction by improving service quality is positive interaction between carriers and authority.

2. Switching cost has the positive influence to Tianjin Port's customer loyalty.

   According to the result about building the SEM model of Tianjin Port's customer loyalty, switching cost has the positive influence to customer loyalty. This result is similar with the result of Lee and Cunningham (2001)'s research.

   When carriers leave Tianjin Port, the main switching cost that they think about is the cost of building and fitting in with new port. On the other words, carriers care that if they move to a new port, they will have venture cost, that affect their loyalty to Tianjin Port. So if Tianjin Port can reduce the venture cost that carriers care too much compare with other ports, the Tianjin Port's customer loyalty can be enhanced.

3. Customer satisfaction has direct influence to Tianjin Port's customer loyalty.

According to the result of SEM model of Tianjin Port's customer loyalty, customer satisfaction has the positive influence to customer loyalty. This result is similar with the result of Oliver (1980), Reichheld & Sasser(1990), Fornell(1992), Bitner(1990), Dick & Basu(1994)'s research.

Customer satisfaction and customer loyalty have close relationship. If customers hose satisfaction is high are willing to maintain their long-term relationship with Tianjin Port.

5.2 Implications for Managers

In port, the quality of service is difficult for the average customer to judge and he or she has relatively little contact with the service provider. Therefore, an important implication for port managers is that it is essential to meet customer expectations for the service core. The basic promise or implicit contract must be delivered, as it is a significant driver of customer satisfaction, which directly related to future intentions. This confirms prior research that has identified the importance of delivering the core service or the basic promise to customers. It also points out the importance of "getting it right the first time." Port managers need to understand what their basic promise is to the customer and deliver on that promise. This promise generates the basic expectations that customers have with respect to the service. The promised could also include the time to complete of service. Customer will evaluate core service quality based on the promises made, which may include secondary aspects of the core. Thus, the port manager needs to deliver on

all the promised made to meet core expectations. Before port managers want to acquire customer satisfaction, they focus on service quality.

To gain more positive service quality, switching cost and customer satisfaction, which directly affected customer loyalty, should be further considered simultaneously. Although the results emphasize the importance of quality as an operational tactic and strategic objective, the acceptable price range concept should not be ignored[12]. That is to say, buyers have a price range that is acceptable for a given purchase, rather than a single price. Besides, port managers should actively enhance customer satisfaction in many ways, such as service providers' performances and enhancement of corporate image, so as to attract customer.

When carriers leave Tianjin Port, the main switching cost that they think about is the cost of building and fitting in with new port. On the other words, carriers care that if they move to a new port, they will have venture cost, that affect their satisfaction to Tianjin Port. So if Tianjin Port can reduce the venture cost that carriers care too much compare with other ports, the customer satisfaction can be enhanced.

Finally, the services manager who only contemplates the possible effect of service quality momentum on customer's behavioral intention may make a mess if he or she does not also ponder over the impact of such a strategy on satisfaction attributed to Tianjin Port's services. Nowadays, though there are no effective approaches to solving the

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[12] Kent B. Monroe, *Pricing: Making Profitable Decision* (New York: McGrow-Hill, 1990), 25.

complicated decision-making process, at least, making efforts to ensure core service quality will pay in terms of customer loyalty traits.

5.3 Conclusions

The objective for this study is to clarify the relationships among service quality, customer satisfaction, switching cost and customer loyalty in Tianjin Port. Based on research findings and implications for managers, the following conclusions are proposed. First, service quality is an antecedent factor of customer satisfaction. Second, customer satisfaction is an important determinant of customer loyalty. Third, switching cost is a very important determinant of customer loyalty.

By empirically test this model, this study justifies the hypotheses and understands how these factors influence behavioral intentions. In light of the results, managers will be able to make a better strategic planning.

5.4 Suggestions for Future Research

Future studies might use a random sample of service customers in multiple contexts to increase the generalization of the results. Owing to this study only discuss relationships between customers and port, future research will discuss the research topic for discussion on different industries.

This study stresses that this model is not designed to include all possible influences on customer loyalty for Tianjin Port. Hence, future

researchers will increase other variables on customer satisfaction and loyalty.

5.5 Research Limitations

Although this study provides theoretical and substantive explanations, it still suffers from several limitations. Overcoming them can be a direction for future research.

1. A major limitation for the study is that this study was limited to testing this model from a single industry.

2. This study stresses that this model is not designed to include all possible influences on consumer loyalty. This study limits the consideration to the identified variables simply because the focus of the investigations is on the between intentions of links between service quality, satisfaction, switching cost and customer loyalty.

3. As the data is constricted to the consumers of Tianjin Port, this study cannot deduce a general conclusion from the studies in other districts with different demographic backgrounds.

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APPENDIX

The Questionnaire for Service Quality Measurement of Port Logistics

Dear Participant,

We are writing to request your cooperation for a study that focuses on customer satisfaction and loyalty in Tianjin Port. Your initial participation in the pre-testing section of the research study would be greatly appreciated.

I would be most appreciative if you would complete the enclosed survey questionnaire and return it to me. Your comments regarding the survey questionnaire would be very helpful.

In order to refine the hypothesis and survey instrument, it is important that we receive a response from you on each item. I would like to emphasize that your responses will be kept completely confidential and will be only used for academic research purposes. The result of the study will be used only in an aggregate form. We will also make the results of our study available to you.

Sincerely yours,

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I. Basic Information of Your Company

Please select your answer with a check (√).

1．Where is the most important sailing route of your company?

① Coastal Route (Japan, South Korea, East Asia, etc.)

② Oceangoing Route (North America. Europe, World-circling , etc.)

③ Other Route (South America, Australia, Africa , etc.)

2. How much was the average freight handling cost of your company in the past

three years?(   ) TEU

3. Which is the main vessel used in your company?

① Container Vessel   ② General Cargo Vessel   ③ Other (   )

4. Type of company:

①Foreign Shipping Company, Agency

②Domestic Shipping Company, Agency   ③Coastal Shipping Company

④Other (   )

5. How long has your company done business with the harbor service enterprise (container terminal, TOC, cargo-working company, etc.) until now?

① < 5 years ② 6 – 10 years   ③ 11 – 15years   ④ 16 – 20 years
⑤ > 20 years

6. What is your position in your company?
① Captain   ② Officer   ③ above Section Chief   ④ Lieutenant
⑤ above Director

7. Please write basic information about yourself.
* Name of Your Company _____
* Your Working Post_____
* Tel., E-mail_____

II. Items about Tianjin Port's Service Quality Level

1. Please evaluate the following questions about Tianjin Port's physical facilities (Tangibles) and check (√) the appropriate number (① is strongly disagree, ⑦ is strongly agree).

	Items	Strongly Disagree <--> Strongly Agree
1-1	Tianjin Port has already constructed the facilities (nautical mark, enough depth of water, safe transportation system of vessel, etc.) for vessels leaving and entering harbor very well.	① ② ③ ④ ⑤ ⑥ ⑦

1-2	Tianjin Port has many kinds of facilities (ship mats, CY, CFS, etc.) for processing cargo.	① ② ③ ④ ⑤ ⑥ ⑦
1-3	Tianjin Port has many kinds of equipments (container cranes, harbor cranes, yard tractors, conveyers, etc.) for processing cargo.	① ② ③ ④ ⑤ ⑥ ⑦
1-4	Tianjin Port has constructed the multiple transportation system very well.	① ② ③ ④ ⑤ ⑥ ⑦
1-5	Tianjin Port has already distributed assistant facilities (cargo divided area, assembly area, packing company, etc.) in boat-train area (close to each other).	① ② ③ ④ ⑤ ⑥ ⑦

2. These questions are about how well-informed you are about Tianjin Port. (Information). This is to enable your company to know about Tianjin Port easily and use its services more conveniently. Please check "√" to choose the appropriate number (① is strongly disagree, ⑦ is strongly agree).

	Items	Strongly <-- Strongly Disagree > Agree
2-1	Tianjin Port has already constructed the EDI System very well.	① ② ③ ④ ⑤ ⑥ ⑦
2-2	Tianjin Port has already constructed the Port management Information System (Port-MIS) very well.	① ② ③ ④ ⑤ ⑥ ⑦
2-3	The website of Tianjin Port's container terminal has been made very well.	① ② ③ ④ ⑤ ⑥ ⑦
2-4	Tianjin Port can grasp the real-time of cargo and container through the internet.	① ② ③ ④ ⑤ ⑥ ⑦
2-5	Tianjin Port has already constructed the computerized Terminal Operation System (TOS) very well.	① ② ③ ④ ⑤ ⑥ ⑦

3. These questions are about the Tianjin Port's positive attitude (Responsiveness) when helping customers and providing prompt service. Please check (√) to choose the appropriate number (①is strongly disagree, ⑦is strongly agree).

Items		Strongly Disagree <--> Strongly Agree
3-1	Tianjin Port has accomplished the One-stop service very well.	① ② ③ ④ ⑤ ⑥ ⑦
3-2	Tianjin Port is making an effort to listen and resolve customers' dissatisfaction.	① ② ③ ④ ⑤ ⑥ ⑦
3-3	Tianjin Port handles sudden or unusual situations very well while operating the port.	① ② ③ ④ ⑤ ⑥ ⑦
3-4	Tianjin Port can handle urgent (changing mother vessel, destination, etc.) and special (dangerous article, etc.) cargoes very well.	① ② ③ ④ ⑤ ⑥ ⑦
3-5	Tianjin Port can provide port service without interruption (365 days a year including weekends and holidays, 24-hour service).	① ② ③ ④ ⑤ ⑥ ⑦

4. These questions are about the Tianjin Port's ability to perform the promised service in a reliable and accurate manner (Reliability). Please check (√) to choose the appropriate number (①is strongly disagree, ⑦is strongly agree).

Items		Strongly Disagree <--> Strongly Agree
4-1	Tianjin Port can observe the schedule of the vessels that have already touched port.	① ② ③ ④ ⑤ ⑥ ⑦
4-2	Tianjin Port can ensure that a cargo enters and leaves port on time.	① ② ③ ④ ⑤ ⑥ ⑦
4-3	Tianjin Port can keep the promised time of starting and finishing work very well.	① ② ③ ④ ⑤ ⑥ ⑦

		Strongly Disagree <--> Strongly Agree
4-4	Tianjin Port almost never made a mistake when handling business.	① ② ③ ④ ⑤ ⑥ ⑦
4-5	Workers in Tianjin Port have a sense of responsibility and they handle business honestly.	① ② ③ ④ ⑤ ⑥ ⑦

5. These questions are about Tianjin Port Authority's (administrative organizations, terminal, cargo-working company, etc.) ability of answering customer' demands quickly (Rapidity). Please check (√) to choose the appropriate number (①is strongly disagree, ⑦is strongly agree).

	Items	Strongly Disagree <--> Strongly Agree
5-1	Tianjin Port can do cargo work and transporting operation rapidly.	① ② ③ ④ ⑤ ⑥ ⑦
5-2	Tianjin Port has accomplished the procedure for delivering cargo rapidly.	① ② ③ ④ ⑤ ⑥ ⑦
5-3	Tianjin Port has accomplished the customs procedure of cargo rapidly.	① ② ③ ④ ⑤ ⑥ ⑦
5-4	Tianjin Port has accomplished the administrative procedure (applying to use port facilities, applying to enter and leave port, customs duty, quarantine, etc.) rapidly.	① ② ③ ④ ⑤ ⑥ ⑦
5-5	Tianjin Port has accomplished the service about vessel entering and leaving port rapidly.	① ② ③ ④ ⑤ ⑥ ⑦

6. These questions are about Tianjin Port's security (Security). Please check (√) to choose the appropriate number (①is strongly disagree, ⑦is strongly agree).

	Items	Strongly Disagree <--> Strongly Agree

6-1	Tianjin Port operates a harbor ensuring safety system (observing ISPS-Code).	① ② ③ ④ ⑤ ⑥ ⑦
6-2	Tianjin Port keeps the public security in the harbor very well.	① ② ③ ④ ⑤ ⑥ ⑦
6-3	Tianjin Port handles (preventing damage, robbery, change in quality, pollution, etc.) cargo safely.	① ② ③ ④ ⑤ ⑥ ⑦
6-4	Tianjin Port has established effective measures for disasters (fire, explosion, etc.) in the harbor.	① ② ③ ④ ⑤ ⑥ ⑦
6-5	The rate of accidents occurring in Tianjin Port is low.	① ② ③ ④ ⑤ ⑥ ⑦

Ⅲ. Items about Tianjin Port's Customer Satisfaction

According to the situation of your company, please evaluate the following items about Tianjin Port's customer satisfaction with a check (√).

	Items	Strongly Disagree <--> Strongly Agree
1	I am satisfied with all of Tianjin Port's port logistics service.	① ② ③ ④ ⑤ ⑥ ⑦
2	It is wise to choose Tianjin Port's port logistics service.	① ② ③ ④ ⑤ ⑥ ⑦
3	It is a good experience to use Tianjin Port's port logistics service.	① ② ③ ④ ⑤ ⑥ ⑦

IV Items about Tianjin Port's Switching Cost

These questions are about the switching cost when your company changes Tianjin Port to use another harbor. Please check (√) to choose the appropriate number (① is strongly disagree, ⑦ is strongly agree).

		Items	Strongly Disagree <--> Strongly Agree
Continuum Cost	1	We are not sure the port logistics service of the new port that our company wants to change to is good or not.	① ② ③ ④ ⑤ ⑥ ⑦
	2	The port logistics service level of the new port that our company will change to may not reach the level that I expected.	① ② ③ ④ ⑤ ⑥ ⑦
Bargain Cost	1	Our company may not receive many kinds of special preferential terms and rebates in the new port that we will change to.	① ② ③ ④ ⑤ ⑥ ⑦
	2	Our company may not receive the existing useful additional information in the new port that we will change to.	① ② ③ ④ ⑤ ⑥ ⑦
	3	Our company may not receive some kind of political temptation benefits in the new port that we will change to	① ② ③ ④ ⑤ ⑥ ⑦
	4	It is possible we may suffer economical damage in the new port that we will change to.	① ② ③ ④ ⑤ ⑥ ⑦
Learning Cost	1	We must familiarize ourselves with all the new methods of the new port that we will change to.	① ② ③ ④ ⑤ ⑥ ⑦
	2	We must examine again all of the structures and procedures of the new port that we will change to.	① ② ③ ④ ⑤ ⑥ ⑦
Search Cost	1	It consumes a lot of time and effort to find a new port.	① ② ③ ④ ⑤ ⑥ ⑦
	2	It is difficult to find information of a new port.	① ② ③ ④ ⑤ ⑥ ⑦

Sinking Cost	1	The time and effort that we spent in Tianjin Port is very regrettable.	① ② ③ ④ ⑤ ⑥ ⑦
	2	The time and effort that we invested to make the unofficial relationship in Tianjin Port is very regrettable.	① ② ③ ④ ⑤ ⑥ ⑦

Ⅴ. Items about Tianjin Port's Customer Loyalty

These questions are about whether your company will continue using Tianjin Port or not. Please check (√) to choose the appropriate number (①is strongly disagree, ⑦is strongly agree).

	Items	Strongly Disagree <--> Strongly Agree
1	Although there are numerous other port logistics service providers, our company will still continue to principally use Tianjin Port's service.	① ② ③ ④ ⑤ ⑥ ⑦
2	Although the price is high, our company will continue using Tianjin Port's logistics service.	① ② ③ ④ ⑤ ⑥ ⑦
3	I will recommend Tianjin Port's logistics service to other companies (or people).	① ② ③ ④ ⑤ ⑥ ⑦
4	I will give positive comments about Tianjin Port to other companies (or people).	① ② ③ ④ ⑤ ⑥ ⑦