

FACTORS INFLUENCING LOYALTY OF DENTISTS TOWARDS DENTAL PRODUCT SUPPLIERS

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***Abstract:** Many successful companies are concerned about how to maintain and develop their long-term relationships with consumers. When there is a recession in the economy, an effort to keep the loyal consumers in order to maintain the profit is more important than trying to expand the market size. There is no exception for Vietnam market, to survive and become successful in this growing economy, sustaining the customer loyalty is a key matter of many companies. There have been many researches on measuring loyalty in many different fields such as airlines, restaurants, banks, or even in electronic service. However, there are few studies about loyalty in dental supply industry. Therefore, this study aims to identify factors that influence dentist loyalty towards dental product suppliers in Vietnam. This research proposes a model has presents not only behavioral factors but also attitudinal factors. Data collection was done through quantitative surveys and then, 100 valid answers were used for Partial Least Square – Structural Equation Modeling (PLS-SEM) analysis. The results have showed that the most important factor affecting dentist loyalty toward dental product suppliers is customer commitment, followed by customer satisfaction, then trust and reputation, finally is the switching cost. Overall, the results enable us to suggest some policies to improve Vietnamese dental product supplier's performance in many aspects such as commitment, trust, relationship satisfaction, reputation, switching cost and price fairness*

***Keywords:** Customer loyalty, Commitment, Trust, Customer Satisfaction, Reputation, Switching cost and Price Fairness*

1. INTRODUCTION

Normally, there are 98% adults, who are in the age of eighteen to thirty-five, suffer from oral health problems and this has become an increasing trend nowadays. As the enhancement in living standards, Vietnamese people become more aware of oral health care. As a result, many new dental clinics are established as well as the growing demand for dental products and equipment.

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Vietnam medical device market size is about \$599 million in 2011 and plans to achieve \$1.047 millions in 2015 due to the strong privilege policy of government for foreign investors, the annual growth rate will be 15% within 2011 to 2015. Go further in analyzing the medical device market structure in Vietnam in 2011, imaging product has 27% of the total expenditure; the next big portion is medical consumables that hold 14.5%, including syringes, needles, and catheters; orthopedics and implant accounted for 5.1%. The last portion belongs to dental products that accounted for 3.8% [hbmsip.gov.tw]. Dental product suppliers accounted a small part of medical device market with the total turnover around US\$50 million in 2012. Even though the Vietnamese economy has been suffered a lot from the global crisis, the growth rate still achieved 15% per annum. In the dental device market, there are 2 main segments: consumable products and equipment products. Regarding the consumable products, they are classified in specialties: orthodontics, restoratives, prosthodontics, endodontic, periodontics, aesthetics, and implant products. The largest segment of the market is restorative, which has reached US\$40 million, and the fastest-growing segment is a dental implant. In general, the dental industry also grows strongly in the long run because they need more dental treatment due to the increasing of losing teeth by ages. In fact, the growth rate of dental industry is always higher than the GDP growth rate at least 10% every year. The Vietnam dental market structure consists of dentists, and technicians (working in dental laboratories) who produce prosthetics for dentists. Dental distribution companies supply products and services for both customer groups. Currently, there are 5,000 office-based dental practices and 600 dental laboratories, which are supplied by dental distributors. The largest dental products distributors in Vietnam include Dentsply (US), Viet Tien, Viet Dang, Tran Trung, D.O.E, N.K.Luck (Malaysia), NhaPhong, Minh Khoa, 3M (US), Tuyet Hai, Demedico, 3D, GC, Nha Viet, Dai Tan, and Mai Anh which account for approximately 75% of the market share. Dentsply and Viet Tien are two largest suppliers with 14.5% and 10% market share; they were also first official companies that exploit dental market in Vietnam from 1998.

Due to the high-potential market demand for dental products, many dental suppliers will be established to supply dental products every year. Therefore, customer loyalty is believed as the most effective weapon for the supplier to compete with other competitors since it is the key variable that attracts the customers' intention to stay with their current providers (Khatibi *et al.*, 2002). Expanding loyal customers can assist in generating more profitability because the cost of retaining existing customers is less than that of acquiring new ones (Reichheld, 1996). Therefore, understanding how and why a sense of loyalty develops in consumers remains one of the crucial management issues at the movement. By accessing to the dentists, this research will give useful information to identify factors that impact on customer loyalty towards dental product suppliers. In other words, this research provides dental product suppliers the direction and valuable understandings of what factors should be taken into account to gain consumer's loyalty.

There are studies about how customer loyalty provides the sustainable competitive advantage for companies, and that developing and increasing customer loyalty is an important factor in the firm's growth and performance (Reichheld, 1996; Lee and Cunningham, 2001). However, not enough studies have been conducted on the subject of dental product supplier industry. This is partly due to relatively short history of the industry. Dental supply business is still a young industry in Vietnam, that there is not any value research that could support well for organizations who want to understand dentists' behavior to make the marketing strategy plan. Therefore, a research on dentist's behavior is a necessary now. Furthermore, many previous researchers concentrated on only one construction of customer loyalty, which is mainly service quality when carrying out the measurement customer loyalty. Therefore, in alignment to fulfill this gap, this research will explore more other factors that affecting customer loyalty and from that develops a model. From all mentioned above, there is an urgent need to identify factors that influence dentist loyalty towards dental product suppliers as well as to provide some suggestions for dental product suppliers in Vietnam basing on the analysis result.

The proposed model used in this research investigates factors affecting the customer loyalty in the dental product supply industry as well as in B2B context. All of the key variables which could have a crucial role in customer loyalty like customer commitment, customer satisfaction, trust, and switching cost will be included. In general, using structural equation modeling, all the hypotheses are empirically proven to be statistically significant, which point out the relationships between related factors mentioned in each hypothesis. As the analyzed results, among five factors affecting customer loyalty, customer commitment is the most important factor, followed by customer satisfaction, then trust and reputation, finally is the switching costs. In the next section, the literature on customer loyalty and the variables that have the impact on customer loyalty will be presented. In addition, the research model, as well as the hypotheses will also be provided in this section. Following the literature section is the methodology which presents the way the choose sample as well as collecting data. After that, the data analysis section will be presented and then are the discussions, and implications sections.

2. LITERATURE REVIEW

2.1. Loyalty

As from Reichheld (1996) study, loyalty of customers plays an important role on a firm's profits. Brand loyalty is considered as one of the factors helping to reduce marketing cost (Aaker 1991). Although there are numerous of studies, definitions about the importance of loyalty in the consumer market, its concept in B2B markets is still not clearly defined (Fournier and Yao, 1997; Oliver, 1999; Lau and Lee, 1999; Chaudhuri and Holbrook, 2001). Researchers focused on two main facets of brand loyalty, which are behavioral facets and attitudinal facets (Aaker, 1991; Assael, 1998; Day, 1969; Oliver,

1999; Tucker, 1964; Jacoby and Kyner, 1973; Jacoby and Chestnut, 1978). Behavioral loyalty refers to a repeated purchase of client while attitudinal loyalty defined as an aspect of dispositional commitment. While behavioral loyalty mainly depends on situational factors, attitudinal loyalty has more consistency. In addition, Attitudinal played a crucial role in boosting behavior.

Dick and Basu (1994) had suggested that loyalty was resulted from relative attitude, a favorable attitude toward a firm compared to its rivals, and repeated trade. They also found that low relative attitude with high repeated patronage means false loyalty and low relative attitude with low repeated patronage means no loyalty. In addition, as stated in Jacoby and Kyner (1973) study, brand loyalty, a psychological processes' function, is a partial behavioral reaction which accumulated over time. True loyalty indicated the commitment, satisfaction between firm and its client not only repeated trades (Bloemer and Kasper 1995, Oliver 1997, 1999). Clients who repeated trade only because they were lacked of desire to change can easily switch to other suppliers when offered better a deal. Therefore, a favorable relative attitude is one of the key factor lead to loyalty. Previous researches (Bitner and Hubbert, 1994; Oliver, 1999) not only founded evidence about the intimate relationship between satisfaction and behavioral intention but also the positive relationship between satisfaction and loyalty.

2.2. Commitment

When a relationship is identified as indispensable enough for a person to use all attempt to maintain it in long term, a commitment is made. As defined by Moorman *et al.* (1992), commitment refers to an "enduring desire to maintain a valued relationship". Besides the fact that commitment can influence loyalty and repeated purchase, it has been found to have key effect in organizational purchasing behavior, which can lead to higher motivation or reduction in customer repurchasing intention (Porter *et al.*, 1974; Farrell and Rusbult, 1981).

Commitment and loyalty are connected. Rather, commitment has a convincing positive impact on loyalty (Bettencourt, 1997). Berry (1995) defined commitment as a crucial element in an effective relationship, which can lead to relationship loyalty. As stated by Goala (2003), commitment surpasses the general preferable attitude towards the brand. It acted as a catalyst to stabilize the behaviors in any circumstances (Scholl, 1981) and is the critical consideration of long-term loyalty (Morgan and Hunt, 1994). Commitment is relied on three core behavior outcomes: the brands' repurchase intention (Geyer *et al.*, 1991; Amine, 1999), the opposition to changes which arisen from competition (Crosby and Taylor, 1983; Debling, 1998), and the opposition to undesirable emotions resulted from dissatisfactions (Gurviez, 1999). As argued by Zeithaml *et al.* (1996) and Bettencourt (1997), commitment can lead to a favor towards a brand, and thus develop the intention to continue using the brand and resistance to the performances of the rivals. Thus, even if a competing supplier offers a better deal, a more committed consumer is more unlikely to switch. Besides, commitment not only can lessen the negative impacts on the changes in clients' manner, it also enhances the

positive will towards an expansion of the brand (Gurviez, 1999; Ahluwalia et al., 2001). Therefore, it would be advantageous to have a superior degree of commitment in order to steady the relationship. As stated by Oliver (1999, p.34) loyalty was described as:

“....a deeply held commitment to re-buy or repurchase a preferred product/service consistently in the future, thereby causing repetitive same-brand or same-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior.”

Client who “ferverently desires to re-buy a product or service and will have no other” is identified by Oliver (1997) as a client who desires it “against all odds at all costs”, which conceptualize “ultimate loyalty”. Anderson and Weitz (1992) proposed that mutual commitment can enhance the effectiveness which leads to a rise in the mutual profitability. Consequently, the following hypothesis is proposed:

H1: There is a positive relationship between customer commitment and customer loyalty.

2.3. Satisfaction

Erevelles and Leavitt (1992), together with Oliver (1997), indicated that one of the central notions in marketing is satisfaction. Numerous studies indicated that the past experience of customer relationship is one of the leading keys in the determination of clients’ repeated purchasing (Anderson *et al.*, 1994; Cronin and Taylor, 1992; Zeithaml *et al.*, 1996). Satisfaction has been considered as a psychological state when a discrepancy between the emerging emotion and expectation, which accumulated from the past purchases, occurs (Oliver and Swan, 1989). Many findings have been producing evidence of the direct proportion relationship of loyalty and satisfaction. As argued by Krishnamurthi and Raj (1991), one of the important elements that affect the viability of a brand over the long-term is customer loyalty. High customer loyalty is primary a result from high customer satisfaction (Fornell, 1992). By satisfying customer’s needs better than other competitors, service suppliers can create loyalty more easily (Oliver, 1999; Clarke 2001). As in their research, Mittal, Ross and Baldasare (1998), Mittal and Kamakura (2001) stated that at a moderate level of satisfaction, loyalty is believed to slightly increase and then significantly increases at high level of satisfaction. Customer satisfaction is assumed as the most effective and also the cheapest source of market communication by many researchers (Dubroski, 2001). He then explained the reason for that is because satisfied customers will prefer the supplier again and then suggest their favorable experience to others. In contrast, once the supplier makes customers dissatisfied due to the low quality of products or services or other reasons, they will be more likely to disseminate negative appraisal about the products or services (Dubroski, 2001) and change to another supplier or spread unfavorable word of mouth (Dube and Maute, 1996). In other words, a reduction in satisfaction could lead to a fall in loyal behavior (Hirschman 1970; Ping, 1993, 1999) and encourages switching intention (Walsh, Dinnie, and Wiedmann, 2006). Contrariwise, a high degree of satisfaction can decline the negative emotion in damaged relationships (Maute and

Forrester, 2001) and create favorable effects on customer loyalty (Mittal et al, 1998). Therefore, the following hypothesis is posited:

H2: There is a positive relationship between customer satisfaction and customer loyalty.

The degree of customer satisfaction is believed to affect the trust of a customer (Dwyer *et al.*, 1987; Geyskens *et al.*, 1999). Chiou (2004), Caceres and Paparoidamis (2007) said that there is a positively and directly connection existed between trust and customer satisfaction. Previous researchers, such as Ganesan, (1994), Tax, Brown and Chandrashekar (1998) found that satisfaction reinforces the supplier's credibility and improves trust over time as it grows every time meeting or exceeding consumer's expectation. Some rationales for the correlation between satisfaction and trust are provided. Gwinner *et al.* (1998) found that customers will experience benefits of confidence, society and special treatment in long-term relationship with suppliers. Confidence benefits, which are analogous with trust in the present study, is considered as the most significant to consumers among the three benefits. Confidence benefits create faith in the supplier's reliability, decline the risk and anxiety, as well as realizing the expectation. In the long term, consumer satisfaction is improved when they perceive the relationship between trust and these benefits. Generally, a consumer is likely to reduce their trust to the suppliers if they feel dissatisfied with the products or services or other factors depend on the previous experience (Chiou and Droge 2006). The following hypotheses are therefore proposed:

H3: There is a positive relationship between customer satisfaction and trust.

Fornell (1992) found a positive connection between customer satisfaction and the repeated purchase intention for a brand, which is brand loyalty. Numerous researchers have pointed out that satisfaction is a determinant in creating relationship commitment in B2B relationship (Bejou *et al.*, 1998, Sharma and Patterson, 2000; Ganesan, 1994). The link between satisfaction and commitment have been considering by many practitioners and academicians as its ability to achieve wishful results like long-term cooperation (Ganesan, 1994) and reduce the probability of relationship's termination (Morgan and Hunt, 1994). Through the researchers, Caceres and Paparoidamis (2007) proved that satisfaction has a positive impact on commitment. As stated by Tellefsen, T. (2002), customers prefer to purchase from the supplier with the higher levels of satisfying and grow more commitment to the supplier. Satisfaction is pointed out as the forecast of commitment (Steer, 1977 and Stevens *et al.*, 1978). A strong interactive connection between satisfaction and commitment is believed to be existed (William and Hazer, 1986). As a result, this research hypothesizes that:

H4: There is a positive relationship between customer satisfaction and consumer commitment.

2.4. Trust

Trust, in many researches, has been considered as one of the foundation factors in customer loyalty development. (Morgan & Hunt, 1994; Moorman *et al.*, 1993; Sirdeshmukh *et al.*, 2002; Singh & Sirdeshmukh 2000). Chiou (2004) and Lin *et al.* (2006)

suggested that there is a positive and direct relationship between the perceived trust and the loyalty of customers. As stated in Ganesan (1994) study, the long-term relationship between clients and suppliers is affected by how much they trust each other. Trust refers to the willingness to depend on the trade companion (Moorman *et al.*, 1993) or the belief that their relationship will give positive results (Anderson and Narus, 1990). McKnight and Chervany (2002), in their recent studies, perceived trust as trusting intention and trusting belief. Trust intention refers to the willingness of the truster towards the trustee. Trust belief, on the other hand, bases on the cognition of the features of the supplier, which are the capability, probity and goodwill of the supplier. Ganesan (1994) believed that the more the suppliers concerned about positive customer outcomes, the more they received client's trust. Kassim & Abdullah (2008), through their research, have pointed out that customer trust can lead to increase in satisfaction as well as royalty towards the supplier. Gaining the trust of customers contributes to growth in customer loyalty. Trust is identified as an essential determinant for a customer in creating a relationship with a particular brand. The development of customer commitment towards a brand might become impossible without trust. Trust, with its characteristics, is believed to decrease the risk in the procedure of establishing exchange relationship. As argued by Morgan and Hunt (1994), customers seem to have cooperative propensity towards the reliable suppliers by demonstrating their loyalty with behavioral evidence. In other words, customers are more likely to continue in using the service as well as recommend the service to the others when they trust the supplier. Therefore, the research proposes the following hypothesis:

H5. There is a positive relationship between trust and customer loyalty.

Numerous recent studies reported that customers are more likely to commit to a relationship when they realize that there is trust exists. As argued by Young and Wilkinson (1989), when considering the long term collaboration between customers and suppliers, trust is viewed as a wishful and efficient attribute. Hrebiniak (1974) proposed that the desire of the customers to commit to the relationship where trust exists is due to its highly valued characteristics. Moreover, the customers prefer a trustworthy supplier partly due to the undeniable reason that commitment embodies vulnerability (Morgan and Hunt, 1994). Through a principle of generalized reciprocity, McDonald (1981) indicated that this causal connection is interpreted as "mistrust breeds mistrust and as such would also serve to decrease commitment in the relationship and shift the transaction to one of more direct short-term exchanges" by social exchange theory. Caceres and Paparoidamis (2007) stated that there is a positive and direct relationship between trust and customer commitment. As stated by Morgan and Hunt (1994), Moorman *et al.* (1992), and Geyskens *et al.* (1999), in relationship commitment, trust has been indicated as one of the cardinal factors. Ganesan (1994), with the research on the connection between customers and supplier in the United States, emphasized that the degree of commitment of the customers depends on the level of trust for the suppliers. That is, the more trustworthy the supplier gains, the more committed the customers become. With the similar findings, Ring and Van de Ven (1989)

comprehended that trust is an indispensable determinant in every transaction. As these transactions encompass risks, the commitment of the customers to them seems to be increased by greater trust. Trust is considered as a prerequisite for success of the commitment between customer and suppliers (Dyer, 1996). Achrol (1991), De Ruyter et al. (2001); Miettälä and Möller, (1990) also proposed similar research findings. In the other words, without the existence of trust in the relationship, the commitment of customers to their supplier is impossible. The following hypotheses are therefore proposed:

H6: There is a positive relationship between trust and consumer commitment.

2.5. Reputation

Reputation is identified as one of the attributes which affects the sustainable growth of a brand (Herbig and Milewicz, 1993). Consequently, a service supplier can own a great number of reputations, domestically and globally, for its product quality, price as well as innovation. Numerous empirical studies have offered that reputation positively affects the development of sales as well as market share on one hand (Shapiro, 1982), and creates a superior customer loyalty on the other (Andreassen and Lindestad, 1998; Robertson, 1993). The behavioral intention of customers, which is customer loyalty, is argued to be positively and directly impacted by the brand reputation (Eastlick and Feinberg, 1999). Similar studies findings of Sandvik and Duhan (1996) believed that brand reputation is positively associated with the loyalty of customers toward the brand. Resnick and Zeckhauser (2002), through their investigation, proved that the profit and loyal client base of a brand depend on the degree of reputation of the brand. Methlie and Nysveen (1999) explained this phenomenon as the relying of customers on their belief of the preferable brand based on the brand's reputation functioning as a social norm. A greater level of loyalty, through the investigation of Casalo *et al.* (2008), is perceived to be affected by a more favorable reputation of the supplier. Goode and Harris (2007), with similar findings, represented a direct and positive link between the preferable perception of supplier reputation and customer loyalty. In the other word, customers are more likely to use the interpretations of reputation as proxies for trustworthiness due to their cautious behavioral intention. As a consequence, the hypothesis is demonstrated as below:

H7: There is a positive relationship between reputation and customer loyalty.

2.6. Switching Cost

The connection between customer loyalty towards a brand and the switching cost is a subject that has attracted much attention from the researchers. Many studies had signified the importance of switching cost regarding customer loyalty (Aydin *et al.*, 2005; Albert, 2002; Lewis, 2002; Jones *et al.*, 2000; Storbacka *et al.*, 1994; Sharma and Patterson, 2000; Whitehead, 2003;). As defined by Shergill & Bing (2006), switching cost refers to the expensive financial, timing and psychological problems that customers

have to face with when switching suppliers. In the other words, it is the cost that customers have to pay in order to change another supplier (Porter, 1980).

Kim, Kliger, and Vale (2003), in their research, specified that switching cost is not only the cost measured in monetary terms, but it also the psychological factors, such as uncertainty about new selected brand, spending time and effort in trying and adopting alternative products and services. As a consequence, switching cost is regarded as a barrier in switching suppliers (Dick and Basu, 1994; Guiltinan, 1989). With many problems, such as the probability to go through difficulty in using new products and services, the problems when establishing a new relationship with altered supplier, customers are required to analyze both the benefits and the costs when considering to change suppliers. Switching cost, on one hand, creates a barrier and restrains the customer from demanding other suppliers (Jones *et al.* 2002, Aydin & Ozer, 2005), and on the other hands, it weakens the sensitivity of customer for the price and satisfaction to the current supplier (Fornell, 1992), decrease the probability of changing (Jones *et al.*, 2000) and enhance the possibility of staying in the existing relationship with the current suppliers. Based on recent study of Kon (2004), there is a high possibility that the customer is more likely to maintain the loyalty in terms of repeating purchases, when the costs of switching are high, due to the involvement of risk and expenditures leading to the reduction in the appeal of other alternatives. Customer are more likely to be motivated to keep the current relationship to economize on switching costs, for instance, the cost they already made on the relationships, given all else being equal (Dwyer *et al.*, 1987, Heide and Weiss, 1995). In their research, Hauser *et al.* (1994) had shown the same findings, that is, the more the switching cost increases, the more the sensitivity to satisfaction reduces. Therefore, costs of switching can be considered as a mechanism in developing customer loyalty (Dick & Basu, 1994).

Numerous empirical revealed the same results that the decision of continuing with the current supplier of unsatisfied customers is due to their discernment about the extra time and costly effort spent on changing. Based on the results of Anderson and Sullivan's study (1993), even though customers, towards airline and banking industries, continue to maintain the same business despite the decreasing in the quality, they prefer to change the supplier in the case of supermarkets. The reason is because the costs of switching for airlines, and banks are more costly compared to that of supermarkets. As seen, the unsatisfied customer that prefers to stay in the existing relationship with the supplier in the situation of high switching cost, compared to the unsatisfied customers who choose to stay in the situation of low switching cost, have a higher probability of unwillingly stick with the supplier, therefore, have fewer tendencies to recommend the supplier. Consequently, switching cost is identified as a crucial element when customers consider changing supplier. Therefore, we advance the following hypothesis:

H8: There is a positive relationship between switching costs and customer loyalty

2.7. Perceived Price Fairness

Zeithaml and Bitner (1996), in their investigation into the connection between price and satisfaction, has stated that the degree of satisfaction was wider than the extent of service quality assessment. Satisfaction was subject to the determinant of the quality of service and product, price and personal factors. Numerous empirical studies mentioned the essential role of price towards customer satisfaction (Anderson *et al.*, 1994; Parasuraman, Zeithaml and Bitner, 2000; Zeithaml, and Berry, 1994). As stated by Anderson *et al.* (1994), the customers seem to be concerned about the price of the service when they are asked about the value of the service. When it comes to the overall satisfaction of customer, price was ranked as a significant element (Zeithaml and Bitner, 2000). The perception of the price fairness of customers bases on the ratio of gain and loss in the transaction. The gain refers to the received product, while the loss indicates the paid money, as from the view of customers. Either in terms of quality or quantity, customers' discerning of the obligation to pay at a higher price than the others or the obtaining of fewer amounts of product than expectation can cause the customers' displeasure due to the occurrence of perceived negative price inequity. On the contrary, either when customers obtain a larger amount of product with the similar price or when they pay at a lower price with a same amount of product compared to others, perceived positive price inequity occurs, which in turn increases the satisfaction of customers (Martins and Monroe, 1994). Many researchers have emphasized the impact of price fairness on the satisfaction of customer (Parasuraman *et al.*, 1994) as well as on their behavioral intentions (Varki and Colgate, 2001). Therefore, the following hypothesis is suggested:

H9: There is a positive relationship between perceived price fairness and customer satisfaction.

2.8. Research Model

Based on the previous literature, the research model for this study is then presented as follows:

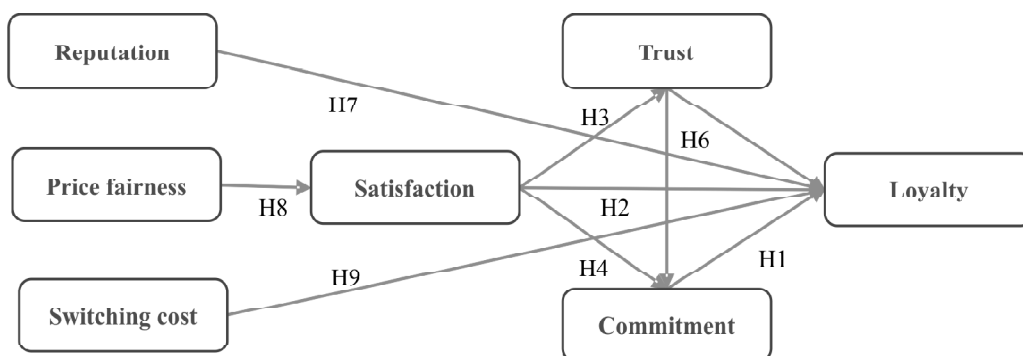


Figure 1: Proposed conceptual framework

3. RESEARCH METHODOLOGY

3.1. Instrument Development

There are seven factors included in the research model. With multiple items, each factor was measured carefully. Customer commitment, customer satisfaction, trust, and Loyalty were measured with items adapted from Caceres and Papparoidamisin (2007). Switching cost and price fairness were measured with items from Methli and Nysven (1999) model of Loyalty of online bank customers. The measurement scales of perceived price were adapted from Beiand Chiao (2006). After being fully developed, the instrument was examined among ten dentists who had been buying dental products for long time. Then basing on their feedbacks, some items were adjusted to making them become more logical and understandable. The adjusted items and their sources are listed in the Appendix. All the items were evaluated using five-point Likert scale with the range from strongly disagree (1) to strongly agree (5)

3.2. Sampling and Data Collection

A quantitative is the compatible approach for measuring customer's perception about brand loyalty towards dental product suppliers. Questionnaires were distributed randomly to the dentists in two conferences held in Ho Chi Minh City on October 4th, 2014 and October 27th, 2014. We also received a strong support from one large dental supplier in Ho Chi Minh City, Vietnam. The company allows us to assess its customer database. Therefore, we can contact with the dental clinics to conduct the survey. A total of 100 surveys were collected. As shown in the Table 1, that is, the summary of the demographic information of the respondents.

To calculate the minimum sample size needed, this research used the below sample size formula:

Sample Size [surveysystem.com]

$$ss = \frac{Z^2 * (p) * (1 - p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (.5 used for sample size needed)

c = confidence interval, expressed as decimal (in this research, basing on the responds level of the respondent, this research chooses c = 0.1)

$$new\ ss = \frac{ss}{1 + \frac{ss - 1}{pop}}$$

Where: pop = population

As stated by the Vietnam Association of Dentistry, Dentist ratio present in our country is one dentist / 26,000 population; meanwhile, the proportion of the region and the world is one doctor / 500-1000 People [citinews.net]. Vietnam population is more than 90 million people. Therefore, there are about 3500 dentists.

Basing on these two equations and the information, the minimum sample size needed for our research is at least 94 respondents. Therefore, a sample size of 100 is adequate

Table 1
Demographic Profiles

	<i>Number</i>	<i>Percent</i>
Gender		
Male	75	75
Female	25	25
Age		
<30	11	11
30-40	38	38
41-50	32	32
51-60	16	16
>61	3	3
Source of products		
NSK	39	39
W&H	29	29
Kavo	13	13
Sirona	9	9
Bienair	2	2
from Taiwan or Chinese	8	8
Suppliers		
Denwin Company	16	16
NK.Luck Company	30	30
Viet Dang Company	10	10
Viet Tien (Medent) Company	9	9
Tran Trung Company	10	10
Dai Nha Company	1	1
Dental shop	10	10
Others	14	14

Based on the table, among 100 dentists participated in the survey, the percentage of female respondents (25%) is much lesser compared to the percentage of male respondents (75%). Besides, the majority of respondents are in range which is from 30 to 40 years old (38%). People from 41 to 50 years old follow behind within 32%. Meanwhile, people of another age range which is from 51 to 60 years old and less than 30 accounts for 16% and 11%. The last, also the smallest proportion group is people that are older than 61 years old. From the table above, most people prefer to use NSK product, which is 39%. The next two product following behind NSK are W&H product

and Kavo product, which account for 29% and 13%. The rest are Sirona product (9%), product from Taiwan or Chinese (8%) and Bienair product (2%). Regarding high speed-hand pieces suppliers, most of respondents (30%) use products of NK.Luck Company. Following are 16% of respondents using the products of Denwin Company and 14% of respondents using the products from other companies. Number of respondents who use products of Viet Dang Company, Tran Trung Company and Dental shop are similar, which is 10%. Finally, the products of Viet Tien (Medent) Company are used by 9% of respondents and products of Dai Nha Company are only used by 1% of respondents.

4. DATA ANALYSIS AND RESULTS

We use Partial Least Squares (PLS) software version 3 to analyze the data. To analyze the research model, the structural equation modeling analysis was used. First, confirmatory factor analysis (CFA) test was conducted to test the validity of the data. The validity test included examining both the convergent validity and discriminant validity of the data. To examine whether the factors can be efficiently reflected by their items, a convergent validity test was employed; while to examine whether two different factors are statistically distanced, a discriminant validity test was employed. Table 2 lists the average variance extracted (AVE), composite reliability (CR), the outer loading, and Cronbach Alpha value. As shown in the table, after eliminating Satisfaction₅, Trust₂, and Cost₃ due to their insufficient outer loading value (smaller than 0.7), the retained items loading value are larger than 0.7, all AVEs surpassed the standard of 0.5, and all CRs surpassed the standard of 0.7. Therefore, the scale safely passed the convergent validity test (Bagozzi & Yi, 1988; Gefen, *et al.* 2000). Moreover, as seen in the table, all the Alpha values are greater than the standard of 0.7, which displaying the good reliability of the scale (Nunnally, 1978). Table 3 lists and factor correlation coefficients and the square root of the AVE. As shown in the table, the square root of AVE for each variable is higher than the highest correlation with any other variables. Therefore, the measurement scale safely passed the discriminant validity test (Fornell & Larcker, 1981; Gefen *et al.*, 2000).

Second, we applied structural equation modeling (SEM) and bootstrapping to examine the proposed model. Figure 2 lists the factor's path coefficients and their significance. As shown in the figure 2, the p value indicates that all the Hypotheses are statistically significant with the p-values smaller than 0.05. Overall, the model predicts about 22% of the variance in Satisfaction, 41.5% of the variance in trust, 45.8% of the variance in Commitment. When it comes to the final dependent variable, the result indicates that about 67% of the variance in customer loyalty can be predicted from the variables, commitment, satisfaction, trust, switching cost and reputation. Basing on the path coefficients, among five factors affecting customer loyalty, customer commitment is the most important factor, followed by customer satisfaction, then trust and reputation, finally is the switching costs.

Table 2
Assessment of reliability and convergent validity

	Outer loading	AVE	Composite Reliability	Cronbach's Alpha
Commitment	0.7693-0.8652	0.6749	0.9119	0.879
Price fairness	0.7693-0.8697	0.687	0.9163	0.884
Loyalty	0.7869-0.8703	0.6764	0.9126	0.876
Reputation	0.7754-0.8035	0.6523	0.8823	0.77
Satisfaction	0.7465-0.7637	0.6268	0.8704	0.795
Switching cost	0.7415-0.8621	0.658	0.8847	0.835
Trust	0.7339-0.87	0.7505	0.9002	0.831

Table 3
Assessment of Discriminant Validity

	Commitment	Price fairness	Loyalty	Reputation	Satisfaction	Switching cost	Trust
Commitment	0.675						
Price fairness	0.3952	0.687					
Loyalty	0.7115	0.4642	0.6764				
Reputation	0.5598	0.3263	0.6632	0.6523			
Satisfaction	0.6055	0.4648	0.7129	0.6157	0.6268		
Switching cost	0.5261	0.3563	0.5591	0.4251	0.4791	0.658	
Trust	0.6374	0.2235	0.6566	0.6019	0.6473	0.3195	0.6666

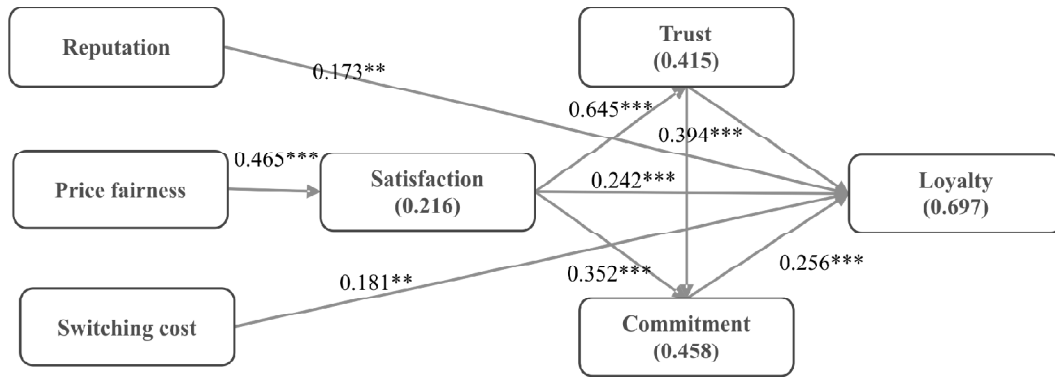


Figure 2: Final research model (* $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$)

5. DISCUSSION

In general, as from tables above, all the hypothesis are supported, and all factors have positive influence on loyalty as proposed model. The results have shown that the most important factor affecting dentist loyalty toward dental product suppliers is customer commitment, followed by customer satisfaction, then trust and reputation and finally is the switching cost.

Morgan and Hunt (1994) have shown that commitment was recognized as one key element, which helps to strengthen the relationship between customers and supplier, leads to customer loyalty. Similarity to that research, and this research finding, Hamid *et al.* (2013) also debated that commitment is the most important factor affecting customer loyalty because of its influence on the intention of expanding and continuing the relationship with suppliers. It is easily suggested that the customer are more loyal to the supplier when they feel like committed to that supplier since commitment is considered as a precondition of repeat purchase behavior. Customers' need to retain in a relationship with a supplier is according to his or her commitment, therefore, committed customers tend to have a greater propensity to act (Liang & Wang, 2005). In this sense, in any industry or in any country, commitment plays a crucial role on the customer's attachment to the supplier and leading to the development of stable, long-term relationships. In addition, numerous empirical researches have demonstrated a similar result that customer satisfaction has a significant and positive impact on customer loyalty (Krishnamurthi and Raj, 1991; Fornell, 1992; Mittal *et al.*, 1998; Oliver, 1999; Clarke 2001; Mittal and Kamakura, 2001). Fornell (1992) has proclaimed a high level of loyalty of customer is primary a result from high customer satisfaction. Dubroski (2001) assumed in his research that satisfied customers have a higher probability in continuing with the suppliers and commend to others their favorable experience while dissatisfied customers are more likely to disseminate negative appraisal about the products or services and change to another supplier or spread unfavorable word of mouth.

The research found out that satisfaction is positively related to trust. More specific, with a degree of 0.645, customer satisfaction has a strong impact on trust. This result is similar to many researchers, for instance, Dwyer *et al.* (1987); Geyskens *et al.* (1999); Chiou (2004), Caceres and Paparoidamis (2007). In the long term, in any industry, it is a fact that a consumer is likely to reduce their trust to the suppliers if they feel dissatisfied with the products or services or other factors depend on the previous experience. The link between satisfaction and commitment has been considering by many practitioners and academicians, such as Ganesan (1994), Bejou *et al.* (1998), Sharma and Patterson (2000), as its ability to achieve wishful results, for instance, long-term orientation and cooperation. Similarity to the research result, Caceres and Paparoidamis (2007) proved that satisfaction and commitment are positively related. It is generalized that customers prefer to purchase from the supplier who offers higher levels of satisfying and are more likely to grow committed to the supplier. After the analysis, the findings demonstrate that trust significantly influences customer loyalty. Many previous studies done by Moorman *et al.* (1993), Morgan and Hunt (1994), Singh and Sirdeshmukh (2000) Sirdeshmukh *et al.* (2002) also support the results. Trust, with its characteristics, is believed to decrease the risk in the procedure of establishing exchange relationship. Customers who trust their supplier, as argued by Chaudhuri and Holbrook (2001), have a higher probability in staying loyal to that supplier, they will be more willing to pay at a higher price as well as trying the new products, and are willing to recommend the supplier to others.

The results generally support the proposed model, confirming the significant roles of trust over customer commitment. In this research, it is indicated there is a fairly strong connection between trust and commitment with the Path estimated of 0.394. Moorman *et al.* (1992), Morgan and Hunt (1994), Geyskens *et al.*, (1999), Caceres and Papatoidamis (2007), in their research, have stated that trust has a positive impact on commitment. Ganesan (1994) emphasized in his research that the degree of commitment of the customers depends on the level of trust for the suppliers. That is, the more trustworthy the supplier gains, the more committed the customers become. This statement is in accordance with the reality. The customer will grow more committed to a supplier when they feel that they are committing in a trustworthy relationship. In addition, numerous empirical studies have offered that reputation positively affects the development of sales as well as market share on one hand (Shapiro, 1982), and creates a superior customer loyalty on the other (Andreassen and Lindestad, 1998; Robertson, 1993, Sandvik and Duhan, 1996). In many industry contexts, when the customers first purchase or want to repurchase a product or service, they often use the interpretations of reputation as proxies for trustworthiness due to their cautious behavioral.

Moreover, the findings indicated that switching cost has a significant and positive impact on customer loyalty. The result is similar to many previous researches, such as Storbacka *et al.* (1994), Jones *et al.* (2000), Sharma and Patterson (2000), Lewis (2002), Albert (2002), Whitehead (2003), Aydin *et al.* (2005). Switching cost creates a barrier and restrains the customer from demanding other suppliers and weakens the sensitivity of customer towards the price and satisfaction to the current supplier. It declines the probability of changing and increases the possibility of staying in the existing relationship with current supplier regarding any industry or any products and services. Furthermore, compatible with many researches done by Anderson *et al.* (1994), Parasuraman *et al.* (1994), Zeithaml and Bitner (2000) which have shown the positive impact of perceived price fairness on customer satisfaction, our research has shown the same results. Obviously from the analysis above, with a regression weight of 0.465, customer satisfaction is strongly affected by perceived price fairness. Either regarding to quality or quantity, when a customer has to pay at a premium or received a fewer amount of products compared to expectation, it can lead to the dissatisfaction. On the other hand, when a customer obtains a larger amount of product with the similar price or when he can pay at a lower price with a same amount of product compared to others, he will feel more satisfied.

6. PRACTICAL AND THEORETICAL IMPLICATION

The study once more time confirms the customer loyalty model for dental product supply industry. While previous research concentrates on service quality, this research tries to examine other factors such as switching cost, perceived price fairness and reputation. The proposed model demonstrates both behavioral determinants, such as switching cost, and attitudinal factors, such as commitment in order to

examine customer loyalty towards dental product suppliers both subjectively and objectively.

This study not only contributes to the theoretic side, but it also proposes many implications for practice. The applications of these implications can help dental product suppliers in increasing their service and applications. As mentioned in Chapter 1, the number of people who care about oral health problems has increased steadily in recent years. The dental product supply market is expanding each year with a high growth rate attracting more and more players. The number of new dental distribution companies is expanding rapidly, and the competition is so fierce. Obtaining high market share and great profit are the purposes that make the dental product suppliers, both from overseas and local, try to gain loyalty from customers (Wang *et al.*, 2004). Keeping existing customers can lead to a number of benefits such as increase profitability, reduce operational costs and marketing (Hu & Hwang 2006). This study, therefore, provides dental product suppliers valuable and insights knowledge to understand what factors they need to focus on to get more and more loyal customers. In the context of developing business for the long-term success, this study also significantly helps dental product suppliers in determining how to keep the existing customers.

Switching cost, trust, customer satisfaction, supplier's reputation, commitment are critical factors in encouraging the positive loyalty of dentists towards purchasing from dental product suppliers. For this reason, dental product suppliers should focus on drawing much attention of customers to focus on listening and receiving customer's ideas via customer feedback to improve and develop better services for customers. Furthermore, in this study, the importance of loyalty helps dental product suppliers to understand the perception of their customers towards the switching cost, trust, customer satisfaction, supplier's reputation, commitment. A better understanding of the findings from the analysis has supported dental product suppliers in prioritizing their attempt to meet the demand of the customers. For more detail, through the study, it was found that customers care about service commitment rather than other factors ($e = 0.256$). As for commitment as a critical factor in building customer loyalty, dental product suppliers should pay more attention to this aspect and create as well as keep the commitment from the customers to their current providers (Hur *et al.*, 2010; Agrawal *et al.*, 2012; Wu *et al.*, 2012). There are ways to enhance the level of customer commitment. As from above proposed, customer commitment is affected by the level of customer satisfaction and how much the customers trust their suppliers. Therefore, the dental product suppliers should improve their services as well as the product quality to raise the satisfaction of customers and gain more of their trust.

Besides that, the Switching cost, trust, customer satisfaction, supplier's reputation play important roles in retaining loyal customers. Nowadays, dental product suppliers encounter strong competition from other competitors. If one dental product suppliers does not attract the attention of customers, many customers tend to switch to other dental product suppliers instead of staying with their current providers. Building up supplier reputation is to create a picture of customer's mind and keep the competitive

advantage in a fierce market. In addition, dental product suppliers should keep in mind that the switching cost can prevent the customers from changing to other dental product suppliers. Therefore, dental product suppliers should try to make the customers think that cooperating with them is worth and is the best solution for customers. Establishing an absolute trust for the customer to dental product suppliers is an urgent need to keep customer staying with current supplier. The suppliers should ensure that whatever services they promise should be fully provided to the customers in order to increase their trust. The dental product suppliers should put efforts on making the feelings that they care about customers' needs, and they are honest to their customers. By doing these things, they will be able to improve the level of the perceived trust of customers in them. It cannot be denied that if the level of customer satisfaction is higher, it results in higher level of loyalty towards to existing providers. This statement is proven in many previous researchers (Rowley, 2005, Vesel and Zabkar, 2009). Suppliers must ensure that customer complaints are addressed with top most priority so that they can enhance the level of customer satisfaction. In addition, suppliers should constantly concern about the products and service's quality that they provide to highlight customer value. Moreover, if the dental product suppliers can improve or pay more attention to the price fairness, it can increase the satisfaction level of the customer, which can also increase the level of customer loyalty. It means that supplier should focus more on delivering the precise quality at the right price and treat the customers equally fair instead of focusing on the competitors' prices. For this reason, suppliers should always put across price differentials as discounts rather than surcharges. Finally, by supporting in drawing customer intention into the operations of the business, these practical implications help dental product suppliers in constituting a basis to enhance the strategies of retaining existing customers, which in turns decrease the expenditure of obtaining new customers.

APPENDIX. MEASUREMENT ITEMS AND THEIR SOURCES

<i>Factor</i>		
<i>Satisfaction</i>	My choice you use this service provider was a wise one I am always delighted with the service provider's service Overall I am satisfied with this service provider I think I did the right thing when I decided to use this service provider I feel good about using this service provider	Dagger and O'Brien (2010)
<i>Commitment</i>	I feel involved with my supplier's company I defend my supplier in front of other colleagues and external partners I am very proud to have this company as a supplier I believe the service provider and I are both committed to the relationship I believe the service provider and I view our relationship as a long-term partnership	Caceres and Pappadimitriou (2005) Dagger and O'Brien (2010)

Trust	My supplier really takes care of my needs as a customer	Caceres and Paparoidamis (2005) Dagger and O'Brien (2010)
	I trust completely my supplier	
	This service provider has high integrity	
	This service provider is trustworthy	
Loyalty	This service provider keeps their promises	Dagger and O'Brien (2010)
	I would continue doing business with my supplier	
	I consider the service provider my first choice when I purchase the services they supply	
	I say positive things about the service provider to other people	
	I recommend the service provider to someone who seeks my advice	
Reputation	I encourage friends and relatives to do business with the service provider	Yee and Faziharudean (2010)
	I believe that this firm has top quality management	
	This supplier has a good image and reputation compared to other rival suppliers	
	This supplier inspires me confidence	
	This supplier has a reputation for offering good services and products	
Switching cost	This supplier has a reputation for being fair in its relationship with its customers	Lam <i>et al.</i> (2004)
	Switching to another supplier would be very disruptive to our business	
	There would be a high degree of risk associated with quitting this supplier in favour of another	
	It would cost me a lot of money to switch from this supplier to another supplier	
	I would feel uncertain if I have to choose a new supplier	
Price fairness	Switching to another supplier involves a risk in choosing another supplier which might turn out not to satisfy my need	Dai (2010) Srikanjanarak <i>et al.</i> (2009)
	I paid a fair price for the product	
	I consider the supplier's pricing policy as fair	
	The price I paid was justified compare to the product quality	
	The price I paid was honest with what received from supplier	
	I consider the supplier's pricing policy as acceptable	

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