

Dental practice-related factors and patient loyalty in dental clinics, Laem Chabang, Thailand : The mediating role of patient satisfaction

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ABSTRACT

This study investigates the mediating effect of patient satisfaction between dental practice related factors and patient loyalty in the dental clinics, Laem Chabang, Thailand. This research identifies the link between measurements regarding their efforts to increase dental practice quality to respond to patients' needs and expectations, influencing patient satisfaction and turn it into patient loyalty. The dental clinics in Laem Chabang explain relationship between these three measurements in this sector. The researchers developed the questionnaire items from previous research that has validity. The elements of dental practice-related factors include dentist services, staff services, prices, and facilities. Stratified random sampling of 385 cases was in a data collection and distribution through printed self-administered questionnaires (Likert's rating scale) to the dental clinic's patients in Laem Chabang, Thailand. The PLS-SEM results showed that patient satisfaction is a significant mediator between dental practice-related factors (prices, facilities, dentist services, and staff services) and patient loyalty. It also reveals that staff services, dentist services, and prices directly affect patient satisfaction.

Keywords: *Dental Practice, Services, Patient Satisfaction, Revisit, Recommendation, Loyalty*

1.0 INTRODUCTION

In recent years, dental clinics have grown in response to Thailand's rapid economic development and the resulting increase in demand for dental care services. As of September 2017, there are 4,556 dental clinics in Thailand. Approximately 35% are in Bangkok, 21% in the central region, 10% in the east. And 33% in other parts of the country, including the north, northeast, west, and south. (CANVASSCO, 2019) The dentist (dentist provides personal attention, the dentist uses most up-to-date techniques, dentist's concern for patient's pain and fear) is one of the elements of dental practice-related attribute that is perceived to be critical. Also, the staff's attitude and willingness to assist. The facilities (the ability to schedule an appointment at a convenient time, a reasonable waiting time, convenient office hours, a convenient physical location, and convenient parking) and the pricing. According to one study, the dental hygienist's services impact patient satisfaction and the likelihood of returning to the hospital. (Kim et al., 2012) Patient satisfaction is associated with

increased compliance and improved health outcomes. The factors that contribute to patient satisfaction, on the other hand, are not entirely understood. (Balhaddad et al., 2018) It is critical to measure patient satisfaction using quality improvement methods to focus on clinical outcomes and improving patient-centered care. (Jensen et al., 2016) Customer satisfaction is a factor in determining whether to recommend a product or service and an indicator of consumer loyalty. (Picón et al., 2014, Han & Hyun, 2015) In the healthcare context, customer satisfaction or patient satisfaction is not solely determined by the quality of the treatment but also by other factors such as staff behavior, facilities, and the essential needs of the patient's surrounding environment. The patient who reported difficulty in scheduling appointments at a convenient time expressed dissatisfaction with the service. Having up-to-date equipment, good facilities, and clean instruments are all factors that contribute to patient satisfaction, the study found. (Al-Abri et al., 2014, Stepurko et al., 2016, Balhaddad et al., 2018) Explaining treatment needs, having well-equipped facilities, and the friendliness of the clinic staff received the highest levels of satisfaction. The items that received the lowest satisfied levels are costs and the explanation of treatment options. (Stewart & Spencer, 2005) Patient loyalty is also increased when patients are pleased with the services provided by the healthcare providers they use. (Anbori et al., 2010)

1.1 Research Questions

RQ1: Do dental practice-related factors positively affect patient satisfaction in dental clinics, Laem Chabang Thailand?

RQ2: Do dental practice-related factors positively affect patient loyalty in dental clinics, Laem Chabang Thailand?

RQ3: Does patient satisfaction positively affect patient loyalty in dental clinics, Laem Chabang Thailand?

RQ4: Is there the mediating effect of patient satisfaction between dental practice-related factors and patient loyalty in dental clinics, Laem Chabang Thailand?

1.2 Research Objectives

RO1: To investigate the relationship between Dental practice-related factors and patient satisfaction in dental clinics, Laem Chabang Thailand.

RO2: To investigate the relationship between Dental practice-related factors and patient loyalty in dental clinics, Laem Chabang Thailand.

RO3: To investigate the relationship between patient satisfaction and patient loyalty in dental clinics, Laem Chabang Thailand.

RO4: To investigate the mediating effect of patient satisfaction between Dental practice-related factors and patient loyalty in dental clinics, Laem Chabang Thailand.

2. REVIEW LITERATURE

2.1 Dental Practice-Related Factors

Table 1. Comparison between factors that are used to evaluate patient satisfaction if adopting the framework of the researchers (2021).

Researchers (2021)	Esa et al. (2006)	Luo et al. (2018)
1) Dentist Services	Friendly Dentist	Attitude Quality Pain Management

		Patient's perceived need for prevention of oral disease
2) Staff Services	Friendly Staff	Attitude Quality Patient's perceived need for prevention of oral disease
3) Prices	NA	Cost
4) Facilities	Modern Equipment	Convenience

NA refers to Not Analysis.

Dental Practice-Related Factors refer to the dentist services, dental practice attributes and related factors. (Kim et al., 2012, Park et al., 2014) In this study, dental practice-related factors comprise Prices, Facilities, Dentist Services and Staff Services based on Esa et al., 2006, Kim et al., 2012, and Luo et al., 2018.

2.2 Patient Satisfaction

Patient Satisfaction refers to determining patient's content for the services they are receiving from healthcare organized and patient-centered delivery of quality healthcare. (Fatima et al., 2017) In this study, patient satisfaction determines patients' content for services they are receiving from dental clinics.

2.3 Patient loyalty

Patient loyalty refers to the customers' potential for revisiting and a relatively accurate predictor of future behavior. (Alaid & Zhou, 2013) Saying positive things about a provider to others and recommending it to them is a desirable behavioral intention. (Zarei et al., 2013) In this study, patient loyalty is the patients' potential for revisiting and recommending (recommendation intention) the clinics. When patients are satisfied with their healthcare providers, they are more likely to recommend them to others. (Anbori et al., 2010) The consumer's aim of maintaining the relationship with the service provider or purchasing the following service from someone is referred to as the intention to revisit or repurchase intention. (Kitapci et al., 2014) The willingness to recommend a service to peers or relatives is referred to as recommendation intention. (Yapp et al., 2018, Odoom et al., 2019). Intention to return and recommendation intention are both indicators of consumer loyalty and behavioral intention. It can be predicted by measuring consumer satisfaction and recommendation intention. (Han & Hyun, 2015, Picón et al., 2014) Behavioral intention (such as the intention to return and the intention to recommend) is an example of customer loyalty or customer retention in the marketing industry. These three terms have also been used to mean the same thing in the past. (Cham et al., 2014)

Although many studies have demonstrated a link between factors, patient satisfaction, and patient loyalty in the healthcare sector, only a few studies have been conducted to examine the impact of patient satisfaction on the intention to recommend. (Jaiswal et al., 2007, Han & Hyun, 2015, KAMRA et al., 2015, Al-Ansi et al., 2019). And a direct effect on repeat purchase intention. (Kuo et al., 2013, Jaiswal et al. 2007) Many studies have found a link between the quality of healthcare services, patient satisfaction, and loyalty (behavioral intention). (Jeon et al., 2014, Demir et al., 2015, Shabbir et al., 2016, Fatima et al., 2018, Meesala & Paul, 2018, Asnawi et al., 2019). Some studies support the idea that patient satisfaction can act as a mediator between factors and patient loyalty in the healthcare sector, such as those conducted by Lonial & Raju, 2015, Fatima *et al.*, 2018, and Asnawi et al., 2019. Despite this, only a minority of studies support the private dental practice framework in the relationship between dental practice-related factors and

patient loyalty. Patient satisfaction serves as the mediator in this relationship. It is the researcher's purpose to contribute quantitative research that will clarify the relationship between these measurements. This study aimed to understand better the relationship between these three measurements in dental clinics in Laem Chabang, Thailand. The findings could be applied elsewhere. It assists clinic owners and managers in improving their marketing strategies in the private dental care industry.

2.4 Research Hypotheses

H₁ Dental practice-related factors significantly affect patient satisfaction in dental clinics, Laem Chabang-Thailand.

H_{1a}: Prices significantly affect patient satisfaction.

H_{1b}: Facilities significantly affect patient satisfaction.

H_{1c}: Dentist Services significantly affect patient satisfaction.

H_{1d}: Staff Services significantly affect patient satisfaction.

H₂ Dental practice-related factors significantly affect patient loyalty in dental clinics, Laem Chabang-Thailand.

H_{2a}: Prices significantly affect patient loyalty.

H_{2b}: Facilities significantly affect patient loyalty.

H_{2c}: Dentist Services significantly affect patient loyalty.

H_{2d}: Staff Services significantly affect patient loyalty.

H₃ Patient satisfaction significantly affect patient loyalty in dental clinics, Laem Chabang-Thailand.

H₄ Patient satisfaction is a significant mediator between Dental practice-related factors and patient loyalty in dental clinics, Laem Chabang-Thailand.

The study's conceptual framework (Figure 1) was based on Al-Qarni et al. (2013), Lonial & Raju (2015), Shabbir et al. (2016), Fatima *et al.* (2017), Meesala & Paul (2018), Asnawi et al. (2019), Saub et al. (2019), Hamdan et al. (2019), Wibowo et al. (2019), Zaid et al. (2020), Akbar et al. (2019), Lwin et al. (2021), Siripipatthanakul & Bhandar (2021).

2.5 Conceptual Framework

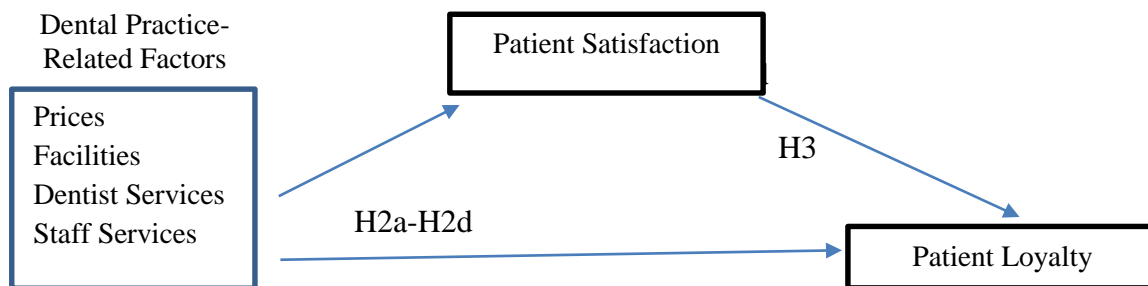


Figure 1. Conceptual Framework of the Study

3.0 RESEARCH METHODOLOGY

3.1 Target Population & Sample Size

The Laem Chabang population is 73,100 (Population. City, n.d.) The study's target population is an unknown number of dental clinic patients in Laem Chabang-Thailand. The study's ideal sample consisted of adults (age 18 years old or older) was recommended by Maichum et al. (2016). A standard survey usually has a confidence level of 95%. (Zikmund, 2003) The required sample size is 385 for error 5% precision level is 95%, and $P=0.5$ by Probability Sampling (Stratified Random Sampling) to collect data in five regions cover ten dental clinics in Laem Chabang, Thailand.

3.2 Research Instrumentation

The researchers developed the questionnaire items based on valid previous research. The construct's reliability and validity are tested using SEM ($n=385$). The results of Factor Loading for each indicator, Prices, Facilities, Dentist Services, Staff Services, patient satisfaction, and patient loyalty, were set to be 0.7. Pavlov et al. (2021) recommend Average Variance Extracted (AVE) were set to 0.50. Thus, the measurements of the construct are valid and appropriate to adopt in this study.

3.3 Data Collection

Self-administered printed questionnaires were used for data collection in five regions covering the study setting of ten dental clinics in Laem Chabang, Thailand, adopting probability sampling (Stratified Random Sampling). It is necessary to explain the study's objectives to the respondents and solicit their participation before handing out printed questionnaires. The data collection period ran from the 28th of June to the 19th of July in 2021.

3.4 Data Analysis

The SPSS-Version 27 Program and the PLS-SEM program (ADANCO 2.2.1) were used to analyze the collected data. The demographic characteristics of the respondents were analyzed using descriptive statistics (frequency and percentage). For each variable and its questionnaire items, mean analysis and standard deviation were used to calculate the results. The Cronbach's Alpha reliability test was used to determine the reliability of the data. The validity test was carried out using component analysis. It was decided to test the hypotheses using an inferential statistic (Partial Least Square Structural Equation Model: PLS-SEM)

4.0 FINDING AND DISCUSSIONS

A total of three hundred eighty-five (385) dental clinic patients in Laem Chabang-Thailand and completed questionnaires were coded and analyzed. The nominal data and interval data from the questionnaires were analyzed using the SPSS version 27 program. The hypotheses were analyzed using PLS-SEM. The result showed that most of the respondents were female, the age was between 18-25 years old, a bit higher in the number of single, held a lower than bachelor's degree, earned income between 10,001-20,000 baht. The respondents' demographics corresponded with the factory's workers profile at Laem Chabang EEC area, such as the electronic components manufacturers that comprise most women, who earn income between 10,001-20,000 baht and without a college degree. This range of patients' age is appropriate for orthodontic treatment. Most of the respondents know the clinics from a recommendation of others. Patients perceived dentist services are the most preferred factors. Moreover, dental patients visited their dental clinic provider at least four times is about 63.1 percent.

4.1 PLS-SEM RESULTS

Table 1. Construct Operationalization

Construct	Type of outer model	Number of indicators	Predefined reliability
Prices	Latent variable (Mode A)	3	1.000
Facilities	Latent variable (Mode A)	6	1.000
Dentist Services	Latent variable (Mode A)	6	1.000
Staff Services	Latent variable (Mode A)	5	1.000
Patient Satisfaction (PS)	Latent variable (Mode A)	4	1.000
Patient Loyalty (PL)	Latent variable (Mode A)	4	1.000

Table 3-8 shows the summarized Item Loadings, Construct Reliability and AVE. According to Hair et al. (2019), the Item Loadings is over 0.7, AVE is over 0.5, and Reliability is over 0.7 followed the recommendation.

Table 2. Item loadings, composite reliability and average variance extracted of Prices

Items	Item Loadings	Construct Reliability	AVE
Prices		0.9523	0.9127
(1) Dental fee costs are not high.	0.9364		
(2) Dental fee costs are reasonable	0.9664		
(3) The dental services fees are related and relevance with the quality provided	0.9630		

* Significant at 0.05 level; AVE= average variance extracted.

Table 3. Item loadings, composite reliability and average variance extracted of Facilities

Items	Item Loadings	Construct Reliability	AVE
Facilities		0.9360	0.7591
(2) The clinic provides up to date equipment	0.7710		
(3) The clinic offers waiting time relative to appointment time or schedule time for a service	0.8892		
(4) The clinic offers materials and equipment were clean	0.9032		
(5) The clinic offers waiting room, toilet, and floor are clean and comfortable	0.9097		
(6) The clinic location was easy to access	0.8567		
(7) The clinic temperature was comfortable	0.8902		

* Significant at 0.05 level; AVE= average variance extracted.

Table 4. Item loadings, composite reliability and average variance extracted of Dentist Services

Items	Item Loadings	Construct Reliability	AVE
Dentist Services		0.9063	0.6821
(1) The doctor clearly my treatment plan	0.8747		
(2) The doctor asks patient's opinion and encourage them to participate in the decisions	0.8687		

(3) The doctor considers the patients' expectations and needs and meets them completely	0.8453
(4) The doctor has sufficient skills and is good at his/her job	0.8476
(5) The doctor has interpersonal skills to reduce the patient's anxiety	0.7088
(6) The reputation of the doctor is important for me	0.7984

* Significant at 0.05 level; AVE= average variance extracted.

Table 5. Item loadings, composite reliability and average variance extracted of Staff services.

Items	Item Loadings	Construct Reliability	AVE
Staff Services		0.9670	0.8840
(1) The clinic staff are always willing to help patients	0.8844		
(2) The clinic staff work together in the patients' best interest	0.9561		
(3) The clinic staff give you for personal attention	0.9503		
(4) The clinic staff provides prompt service to patient	0.9536		
(5) The clinic staff know what patient's needs	0.9545		

* Significant at 0.05 level; AVE= average variance extracted.

Table 6. Item loadings, composite reliability and average variance extracted of Patient Satisfaction

Items	Item Loadings	Construct Reliability	AVE
Patient Satisfaction (PS)		0.9398	0.8471
(1) My feeling towards the clinic is positive	0.9245		
(2) Overall, I am satisfied with the clinic service	0.9153		
(3) I feel good about visiting the clinic whenever I need any dental treatment	0.9437		
(4) The overall feeling about prices, facilities, and services in the clinic is better than I expected	0.8975		

* Significant at 0.05 level; AVE= average variance extracted.

Table 7. Item loadings, composite reliability and average variance extracted of Patient Loyalty

Items	Item Loadings	Construct Reliability	AVE
Patient Loyalty (PL)		0.9265	0.8200
(1) I share positive things about the clinic to others	0.9199		
(2) I encourage friends and relatives to use the clinic	0.9221		
(3) consider the clinic to be my first choice	0.9367		
(4) I recommend the clinic to others	0.8403		

* Significant at 0.05 level; AVE= average variance extracted.

Table 8. Structural Model

Construct	Coefficient of determination (R^2)	Adjusted R^2
Patient Satisfaction (PS)	0.7778	0.7755
Patient Loyalty (PL)	0.8361	0.8339

The coefficient of determination (R^2) results can predict patient satisfaction from dental practice-related factors about 77.78 percent ($R^2 = 0.7778$). The coefficient of determination (R^2) results can explain patient loyalty from dental practice-related elements and patient satisfaction about 83.61 percent ($R^2 = 0.8361$). The coefficient of determination (R^2) to explain the model are higher than 0.75 follows the recommendation of Hair et al., 2019. Thus, the model is suitable to explain the sector phenomenon.

Table 9. Overall Model

Goodness of model fit	
Saturated model	Value
SRMR	0.0536

Goodness of model fit	
Estimated model	Value
SRMR	0.0536

PLS-SEM (ADANCO 2.1.1) results showed that Standardized Root Mean Squared Residual (SRMR) value equal to 0.0536 and less than 0.058 follows Pavlov et al. (2021) recommended. It reflects a low probability of a false-positive phenomenon. Thus, this model is fit and appropriate to explain the model of sector phenomenon.

Table 10. Total Effects Inference

Effect	Original coefficient	Standard bootstrap results					Percentile bootstrap quantiles			
		Mean value	Standard error	t-value	p-value (2-sided)	p-value (1-sided)	0.5%	2.5%	97.5%	99.5%
Prices -> PS	0.1154	0.1136	0.0344	3.3524	0.0008	0.0004	0.0240	0.0491	0.1834	0.2108
Prices -> PL	0.0936	0.0906	0.0343	2.7300	0.0064	0.0032	0.0064	0.0252	0.1593	0.1835
Facilities -> PS	0.0433	0.0475	0.0390	1.1079	0.2682	0.1341	-0.0552	-0.0291	0.1264	0.1627
Facilities -> PL	-0.0254	-0.0173	0.0465	-0.5458	0.5854	0.2927	-0.1242	-0.1002	0.0814	0.1178
Dentist Services -> PS	0.2522	0.2503	0.0434	5.8112	0.0000	0.0000	0.1095	0.1613	0.3370	0.3577
Dentist Services -> PL	0.3271	0.3238	0.0525	6.2287	0.0000	0.0000	0.1792	0.2170	0.4241	0.4533
Staff Services -> PS	0.5977	0.5961	0.0524	11.4069	0.0000	0.0000	0.4577	0.4855	0.6894	0.7177

Staff Services - > PL	0.5644	0.5626	0.0478	11.7954	0.0000	0.0000	0.4389	0.4668	0.6528	0.6797
PS -> PL	0.7102	0.7117	0.0483	14.6984	0.0000	0.0000	0.5980	0.6215	0.8072	0.8360

Total Effects Inference results are shown in Table 4.29 above. Prices can predict patient satisfaction at $p < 0.001$ (Two tails at $p=0.0008$ and one tail at $p=0.0004$). Prices can predict patient loyalty at $p < 0.001$ (Two tails at $p=0.0064$ and one tail at $p=0.0032$). Dentist services can explain patient satisfaction and patient loyalty at $p < 0.001$ (Two tails at $p=0.0000$ and one tail at $p=0.0000$). Staff services can explain patient loyalty at $p < 0.001$ (Two tails at $p=0.0000$ and one tail at $p=0.0000$). Facilities have no effect on patient satisfaction at $p > 0.05$ (Two tails at $p=0.2682$ and one tail at $p=0.1341$). Facilities have no effect on patient loyalty at $p > 0.05$ (Two tails at $p=0.5854$ and one tail at $p=0.2927$). Finally, patient satisfaction can predict patient loyalty at $p < 0.001$ (Two tails at $p=0.0000$ and one tail at $p=0.0000$).

4.2 Summary of Hypothesis Testing

Table 11. Summary of hypothesis testing results.

No.	Hypothesis	Result	Action
1	H _{1a} : Prices significantly affect patient satisfaction.	Beta=0.1154 at $p < 0.001$	Supported
2	H _{1b} : Facilities significantly affect patient satisfaction.	Beta=0.0433 at $p > 0.05$	Rejected
3	H _{1c} : Dentist Services significantly affect patient satisfaction.	Beta=0.2522 at $p < 0.001$	Supported
4	H _{1d} : Staff Services significantly affect patient satisfaction.	Beta=0.5977 at $p < 0.001$	Supported
5	H _{2a} : Prices significantly affect patient loyalty.	Beta=0.0120, $p > 0.05$	Rejected
6	H _{2b} : Facilities significantly affect patient loyalty.	Beta= - 0.0560, $p > 0.05$	Rejected
7	H _{2c} : Dentist Services significantly affect patient loyalty.	Beta=0.1480 at $p < 0.001$	Supported
8	H _{2d} : Staff Services significantly affect patient loyalty.	Beta=0.1400 at $p < 0.001$	Supported
9	H ₃ : Patient satisfaction significantly affect patient loyalty in dental clinics, Laem Chabang Thailand.	Beta=0.7100 at $p < 0.001$	Supported
10	H ₄ : Patient satisfaction is a significant mediator between Dental practice-related factors and patient loyalty in dental clinics, Laem Chabang Thailand.	R-Square=0.778 and R-Square=0.836	Supported

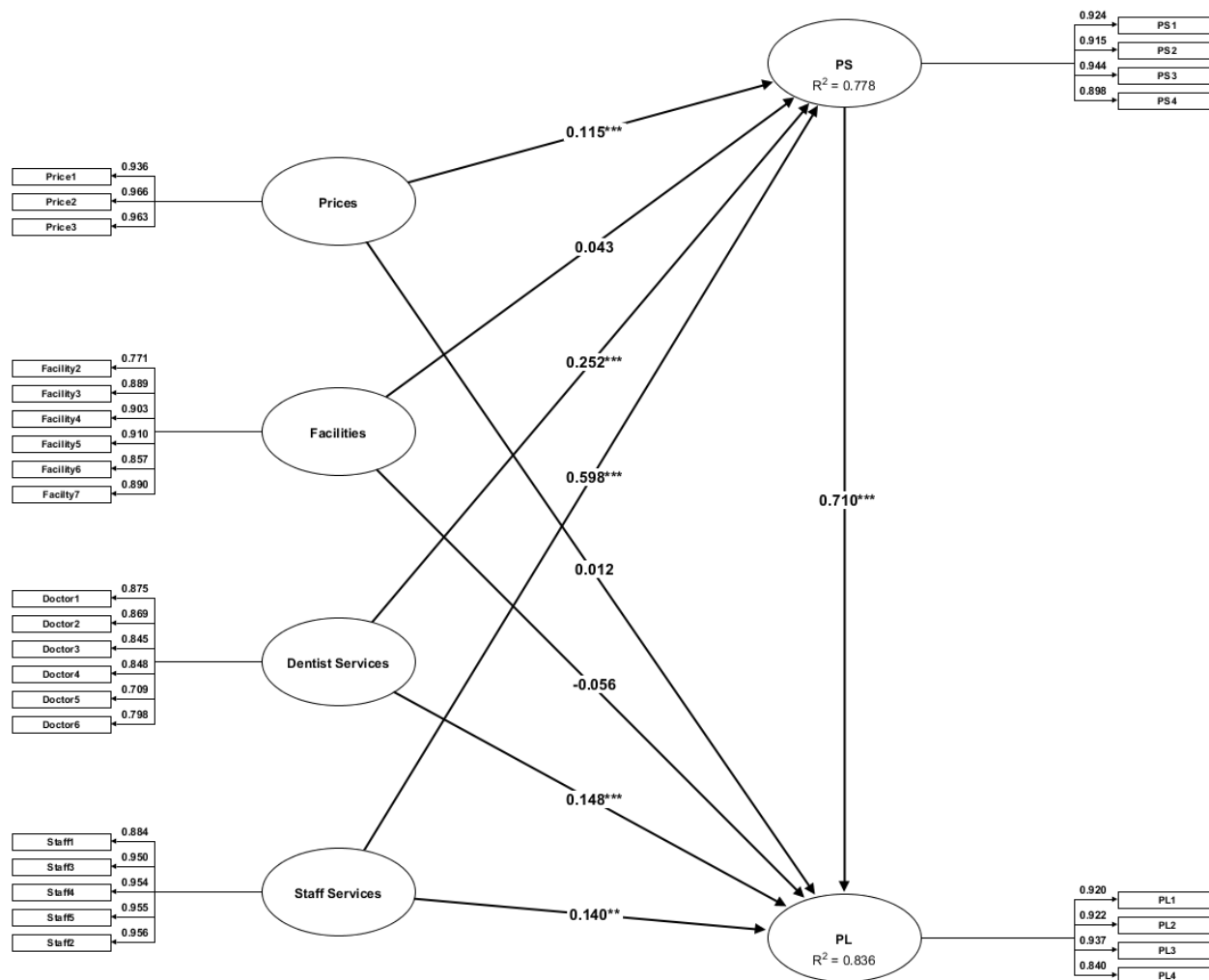


Figure 2. shows PLS-Structural Equation Model of the study.
 ** significant at $p < 0.01$, *** significant at $p < 0.001$.

5. CONCLUSIONS

The study’s objective was mainly to investigate the relationship between dental practice-related factors and patient loyalty by mediating patient satisfaction in dental clinics, Laem Chabang, Thailand. The results corresponding with the marketing research, this study explained the predictive power of dental practice-related factors (prices, facilities, dentist services, and staff services) on patient loyalty. The PLS-SEM model confirmed the proposed conceptual framework. It shows the significant mediator role of patient satisfaction between dental practice-related factors and patient loyalty. It may help the decision managers develop a marketing plan and strategies in the private dental healthcare sector and related healthcare sectors such as pharmacy and medicine. Moreover, the study results could confirm that managers improve their management’s quality, affecting customer satisfaction and loyalty in any service company. Prices significantly impact patient satisfaction because dental fee costs are reasonable, not be high, and versus quality. Dentist services substantially influence patient satisfaction because of doctor’s reputation, skills, and good

in their jobs. Staff services significantly affect patient satisfaction because they are always willing to help patients and prompt in services. Facilities have not considerably influenced patient satisfaction because their perceived facilities are the least important to their satisfaction and loyalty. However, only dentist services and staff services significantly affect patient loyalty regarding their respect for patients' needs and expectations.

6. LIMITATIONS AND RECOMMENDATION

Numerous studies support the antecedents of patient satisfaction. Other factors such as brand equity could influence patient loyalty (Al-Borie et al., 2016), marketing mix (Al-Qarni et al., 2013, Dorbos & Katsaliaki, 2017, Siripipatthanakul & Puttharak, 2021), gender, and age differences (Akbar & Ayuandyka, 2018), trust (Al-Ansi et al., 2019). Also, dental services marketing (Asefzadeh et al., 2012, Siripipatthanakul, 2021, Siripipatthanakul & Chana, 2021), image (Cham et al., 2014, Yet et al., 2018, Asnawi, et al., 2019, Köseoğlu & Mutlu, 2019). Physician communication style (Cousin et al., 2012, Verma & Jauhari, 2013), service quality (Li et al., 2011, Vargus et al., 2012, Jeon et al., 2014, Han & Hyun, 2015, Kitapci et al., 2014, Shabbir et al., 2016, Rocha et al., 2017, Meesala & Paul, 2018, Hamdan et al., 2019), emotional intelligence (Bhalerao et al., 2017), healthcare branding (Odoom et al., 2019, Yet et al., 2018, Siripipatthanakul & Sixl-Daniell, 2021), and corporate social responsibility: CSR. (Martinez & Del Bosque, 2013, Matysiewicz & Sztangret, 2017 and Hossain et al., 2019), and advertising (Sasiganth & Prabakaran, 2018). These other factors are recommended for further study.

The study focuses on the dental healthcare service sector in Laem Chabang area, Thailand. It would not include other destinations. Comprehensive coverage of healthcare services should be considered in other field setting such as pharmacies and medical clinics. It could provide more insights into this sector.

The nature of this study is a self-administered questionnaire to identify the relationship between dental practice-related factors, patient satisfaction, and patient loyalty. Qualitative research such as interviews and focus groups could give more insight into future research.

The novel coronavirus (COVID-19) could impact consumer behavior and buying decision in any industry, including the healthcare sector. (Barabari & Moharamzadeh, 2021, Barocco et al., 2021) Also, healthcare quality management is related to infection control to create patients' trust in their practitioners and clinics. The researcher recommended further study about the impact of COVID-19 on healthcare quality management and consumer behaviors in clinics.

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