



Hospital Choice in Cardio Health Care in Vietnam

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HOSPITAL CHOICE IN CARDIO HEALTH CARE IN VIETNAM

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Abstract: This study examines the factors affecting hospital choice decisions of 440 patients in Tam Duc hospital in Vietnam and attempts to determine their importance level. Determination of these variables is critical for focusing management efforts on these critical areas and developing successful marketing strategies to maintain and grow hospital patient bases in the future. Our findings highlight the importance of service performance as well as the quality of expertise, cost of treatment and effectiveness of medical examination and treatment in informing such choices. Vietnamese health care managers may utilize these results to get a better understanding of how patients make cardiac health care facility selections and to create marketing strategies that will help them promote their facilities more successfully.

Keywords: hospital choice, private cardio health care hospitals, choice factors, customer behavior.

1. Introduction

There is a combination of public and private services in the healthcare system. Although the number of private hospitals is growing, just 6% of all healthcare institutions were privately held in 2014. However, private hospitals today offer more than 60% of total of outpatient care and have developed into an integral part of the national healthcare system.

In recent times, despite large investment of money and resources, many private hospitals have been getting a lot of reports about the low utilization rate. The lack of patients resulted in their insufficient revenue, which cannot compensate for the cost of personnel, medicines and equipment depreciation.

The health care sector is a sector of the national economic system and belongs to the service sector, serving social health needs and contributing to the national GDP.

After a period of conducting the medical socialization policy, Vietnam has had large and medium-sized private hospitals, setting up their own distinctive brands of high quality services, such as Hanoi French Hospital and An Sinh Hospital, etc., and even towards the scale of a more extensive, comprehensive strategy, achieved by building a chain of hospitals, clinics. For instance, Hoan My Medical Corporation (is available in HCMC, Da Nang, Dong Nai, Da Lat, Can Tho and Ca Mau), Vinmec (is available in Ha Noi, HCMC, Phu Quoc), and especially Tam Duc Heart Hospital. Ever since its establishment on March 08, 2006, Tam Duc Heart Hospital has quickly become a hopeful promise for people who are suffering from heart diseases, needing a heart operation to survive,

to install a pacemaker, to fix a leaky valve. However, Tam Duc Heart Hospital also has to deal with these problems that other private hospitals have undergone recently.

Improving the quality of Health Care Services is regarded as the key strategic objective in Vietnam's Socio-Economic Development Plan. A wide range of solutions to enhance the health services is initiated: "Consolidation, development in basic health systems and medical facilities can help reinforce the initial healthcare and backup medical facilities; Development of The Health sector's organization; Enhanced training and advanced expertise, medical ethics, improved attitude of medical staff towards patients; Active health education".

Therefore, it is important to understand the factors that influence patients' hospital choice. Previous hospital choice studies explored the variables that influence patients to utilize particular inpatient services.

This study extends previous work which examined the impact of factors such as quality of expertise, treatment costs, quality of service and quality of treatment examination on hospital choice in Tam Duc hospital on hospital choice of patients. This study aims to contribute more scientific and practical basis to help hospital's administrators have more information to determine the policies and decisions in improving the quality of the hospital more accurately.

This study is presented in 5 sections. Next section presents the review literature in hospital choice. Section 3 describes an exploratory model that explains cardiac care hospital patients' choice. In section 4, the statistical results are discussed. Section 5 concludes and provides some practical implications for heart health care management and policy.

2. Literature Review:

It is critical to understand the variables that contribute to patients' hospital selection. Earlier hospital choice research examined the factors that affect patients' decisions to choose specific inpatient treatments. The authors suggest that rural patients would not forego their local healthcare facilities in order to get treatment at other institutions if they considered the care to be better. However, previous research has identified the following significant predictors of patients' hospital choice behavior: (1) patient characteristics such as gender, age, race, and financial resources (Adam, 1991; Bronstein, 1991; Roh (2005); Tai (2004); and (2) hospital characteristics such as bed capacity, distance between the patient's residence and hospitals, and the hospital's network with other health care facilities (Adams, 1991; Buczko 1992; Chernew, 1998; Luft, 1986, 1990; Bronstein, 1991; Roh, 2005; Tai, 2004).

Numerous previous studies have discovered that hospital competition has resulted in lower hospital prices, lower hospital cost growth rates, lower margins, and changes in the adoption and use of technology (Baker, 2002; Bamezai, 1999; Bundorf, 2004; Robinson, 1991; Gaskin, 1997; Zwanziger, 1988 – 1994 – 2000). Several further studies showed that hospitals in more competitive markets and in regions with a greater HMO penetration offered a better level of treatment to adult patients with medical problems (Rogowski, 2007; Sisk, 1998). Kessler and McClellan (2002) discovered that hospital competition reduced hospital expenditures and poor outcomes in cardiac treatment. According to Kessler and Geppert (2005), hospital competition enhanced resource usage matching to patient acuity level. They found that hospitals situated in a

more competitive health care market provided higher quality services suitable for the severity or complexity of their patients' situations (24). (Kessler, 2005).

Goldstein et al. (1994) identified the factors influencing hospital choice by analyzing the inpatient discharge data of 2172 rural Illinois patients. They discovered that patient age, payment source, the community's per capita income, the number of hospital services, the existence of a psychiatric service, and the financial health of the hospital were all important predictors of hospital choice.

Yaghubi (2011) notes that patients now have a larger part in decision-making and hospital selection than they did in the past. According to Soleimani (2003), consumer behavior research is critical for marketing since effective marketing requires a thorough understanding of consumers' wants and desires.

Taylor et al. (2004) shown that criteria such as ease of access, quality of treatment, hospital reputation, and wait time all play a role in hospital selection. They discovered that giving patients with enough information may assist them in making an educated choice.

Geber Michael et al. (2007) performed a research in Eritrea including 1657 patients. They discovered that significant variables like as education, the quality of health care services, salaries, the severity of illness, social standing, and the patient's location all have a role in choosing healthcare providers statistically.

According to Coulter et al. (2005), factors such as the likelihood of a successful surgery, waiting time, hospital reputation, follow-up capabilities, doctor reputation, doctor-hospital relationships, hygiene standards, and service quality are likely to influence patients' hospital selection decisions.

Boshoff (2004) demonstrated that the quality of service, the nursing staff's empathy, and the private section's insurance coverage all have an effect on the loyalty and happiness of consumers as marketing objectives. In Vietnam, both the private and governmental sectors provide healthcare services, and with the private sector accounting for 60% of healthcare organizations, the key issue is why people choose private companies.

We draw a number of implications on the basis of analysis of survey results to help Tam Duc Heart Hospital attract more patients to use their services. The research topic used qualitative research method in order to determine concepts used in the measurement scale of factors affecting the selection of Tam Duc Heart Hospital of people in HCMC. The investigation was done in a form of group discussion, 01 group consisting of 10 health specialists working at Tam Duc Heart Hospital and 01 group consisting of 10 patients who used medical services at the hospital.

In addition, quantitative research method was also applied to this investigation through personal interviews - the patients and their families were requested to fill the questionnaire developed by the researchers.

In the research "Factors affecting patients' choice of whether to use public hospital or private hospital in Tabriz, Iran" by Mohammad (2013), "Andaleeb et al. (2007), Wong EL, et al. (1987) and Jenkinson C et al. (2005), and research by Phạm and Phùng (2011), factors Quality of service

or Facilities and environment of hospitals have a positive impact on people's selection of hospital. Therefore, we proposed hypotheses for these factors:

Hypothesis H1: The quality of service factor correlates to the selection of Tam Duc Heart Hospital in HCMC.

The cost of medical examination and treatment factor plays an important role in most studies on patients' satisfaction and choice of hospital (Mohammad Amin Bahrami, 2013; Andaleeb & ctg, 2007; Dor and ctg (1987); Phùng Thị Hồng Hà & Trần Thị Thu Hiền, 2012; Phạm Xuân Lan & Phùng Thị Hồng Thắm, 2011). The patients' income factor in other investigations also relates to the cost factor. The selection of hospital will depend on patients' income with the possibility of paying high or low fees.

Hypothesis H2: Treatment Cost factor correlates to the selection of Tam Duc Heart Hospital in HCMC.

Theo Anderson & ctg (1994) emphasized that the feeling of the cost plays an important role for customer satisfaction which leads to the decision on selecting services, because customers often think about the cost when value the service .

Hypothesis H3: Effectiveness of medical examination and treatment factor correlates to the selection of Tam Duc Heart Hospital in HCMC.

For the Effectiveness of medical examination and treatment factor, studies of Mohammad Bahrami (2013), McMullan et al. (2004), Phùng & Trần (2012), Phạm & Phùng (2011) all emphasize this as one of the factors determining whether people choose to use the hospital services or not. The better the hospital's treatment, the more patients choose the hospital. Therefore, the author proposed this following hypothesis:

Hypothesis H4: Quality of expertise factor correlates to the selection of Tam Duc Heart Hospital in HCMC.

The competence of doctors and nurses in research of Andaleeb & ctg (2007), Phùng & Trần (2012) and Phạm & Phùng (2011) is the reflection of the professional quality of the hospital's staff. Hospitals with a highly skilled medical team will be able to bring high medical examination and treatment effectiveness to patients. The hypothesis for this factor in the author's research model as follows:

For the draft questionnaire, the author has conducted a test interview with a group of 10 people to check the contents, the words of the scale and continued to adjust the scale and decide the last official questionnaire.

Thus, from observation variables that measure the factors affecting the selection of Tam Duc Heart Hospital and variables that decide the overall choice, after discussing the authors group left the remaining 21 observation variables, including:

The quality of service is measured by 5 observation variables.

- The quality of expertise is measured by 4 observation variables.
- Effectiveness of medical examination and treatment is measured by 5 observation variables.

- The cost of medical examination and treatment is measured by 4 observation variables.
- The overall choice decision is measured by 3 observation variables.

Table 1: Preliminary scale

Variables	Denote
Quality of expertise	
You believe that Tam Duc Heart Hospital is always on schedule	CLDV1
You believe that Tam Duc Heart Hospital's waiting rooms are comfortable	CLDV2
Anh/Chị cho rằng bệnh viện Tim Tâm Đức có đầy đủ trang thiết bị y tế hiện đại You believe that Tam Duc Heart Hospital is fully equipped with modern medical equipment	CLDV3
Anh/Chị cho rằng quy trình thủ tục hành chính tại bệnh viện Tim Tâm Đức nhanh chóng You believe that Tam Duc Heart Hospital has quick administrative process and procedure	CLDV4
You believe that Tam Duc Heart Hospital's medical staff always treat patients with friendliness	CLDV5
Effectiveness of medical examination and treatment	
You believe that the professional qualifications of doctors at Tam Duc Heart Hospital create a sense of trust in the patient	CM1
You believe that the quality of the tests on cardiovascular diseases is guaranteed	CM2
You believe that the treatment regimens for cardiovascular diseases of doctors at Tam Duc Heart Hospital make patients feel secure.	CM3
You believe that Tam Duc Heart Hospital's doctors provide adequate information about medical records to cardiovascular patients	CM4
Medical examination and treatment effectiveness	
You choose Tam Duc Heart Hospital because it brings trust to cardiovascular patients	HQKCB1
You believe that your health is improved after your course of treatment	HQKCB2
You believe that Tam Duc Heart Hospital guarantees the exact determination of the patient when providing services	HQKCB3
You believe that Tam Duc Heart Hospital does a good job of preventing the risks, the development of cardiovascular diseases that may occur to patients	HQKCB4
You believe that the treatment of cardiovascular diseases of the hospital has been effectively operated	HQKCB5
The cost of medical examination and treatment	
You believe that the fee matches the quality of service provided by Tam Duc Heart Hospital	CPKCB1
You believe that Tam Duc Heart Hospital's fee corresponds with your treatment method	CPKCB2
You believe that Tam Duc Heart Hospital's fee is acceptable	CPKCB3
You believe that Tam Duc Heart Hospital's fee is suitable to you income	CPKCB4
Hospital choice decision	

You will choose Tam Duc Heart Hospital to solve your cardiovascular health problems	LUACHON.1
You are willing to recommend Tam Duc Heart Hospital to other people when they have a need for cardiovascular examination and treatment	LUACHON.2
Tam Duc Heart Hospital is your fist choice	LUACHON.3

Cronbach's Alpha analysis

Cronbach's Alpha reliability coefficient method was used before analyzing the exploratory factor EFA to eliminate unsuitable variables because these variables can generate false elements.

Cronbach's Alpha reliability coefficient only shows the variables that are associated with each other, but do not indicate which variables need to be removed and which variables to keep. Therefore, the author used a combination of the variable correlation coefficient – total to eliminate the variables not contributing. Cronbach's Alpha reliability coefficient method was used before analyzing the exploratory factor EFA to eliminate unsuitable variables because these variables can generate false elements.

Exploratory factor EFA analysis

Exploratory factor EFA analysis is used to verify the conceptual value of the scale. The execution and evaluation criteria in EFA analysis are as follows

Method: For the multi-directional scale, using the factor extraction method is the Principal Axis Factoring with Varimax rotation and the stoppage when extracting the Eigenvalues factor greater than or equal to 1. This method is believed to reflect better data when using Principal Components with Varimax rotation.

For the single-directional scale, use the Principal Components extraction method. The scale is acceptable when the total variance extracted is equal to or greater than 50%.

Criteria: The load factor coefficient must be greater than or equal to 0.4 to ensure the practical significance of EFA. The value levels of the load factor coefficient are: greater than 0.3 is the minimum accepted, greater than 0.4 is important, greater than 0.5 is practically meaningful. The criteria for selecting the value level of the load factor coefficient are: a sample size of at least 350 could select a load factor coefficient greater than 0,3; If the sample size is about 100, should select the load factor coefficient greater than 0,55; If the sample size is around 50, the load factor coefficient should be greater than 0,75 (Hair and Associates, 1998).

The Barlett test is used to verify the correlation between variables in the overall and examine the KMO numerical value. If KMO ranges from 0.5 to 1 then the factor analysis is appropriate for the data, in contrast, if KMO is less than 0.5, the factor analysis could be not suitable for data.

Sample size

According to Hair, Anderson, Tatham & Black (1998), the sample size used in the factor analysis must be at least five times the total number of observation variables. In this study, there are 19 observation variables in total so the minimum sample size needed is $19 \times 5 = 95$ subjects.

According to Theo Tabachnick & Fidell (1996), the minimum sample size used in multi-variable regression is calculated by the formula: $n \geq 50 + 8 \times m$ (n is the sample size, m is the

independent variable number of the model). In this study, there are 4 independent variables, then the minimum sample size is $50+8*4 = 82$ subjects.

Conclusion: the minimum survey sample size is 100 subjects. In this study, the author will survey 440 subjects who use medical examination and treatment services of Tam Duc Heart Hospital.

The survey was carried out by interviewing method through 440 questionnaires.

Method: Each day randomly give 20 questionnaires to 20 patients and their family (10 inpatients and 10 outpatients), for 22 working day, a total of $20*22=440$ questionnaires. The number of questionnaires collected from the survey was 419, after processing left the remaining of 400 complete questionnaires. The author entered this data from 400 questionnaires into SPSS software to use for subsequent analysis steps.

4.1.Survey Sample characteristics

Table 2: Demographic statistics

	Sample information	Frequency	Percentage %
Gender	Female	134	33.5
	Male	266	66.5
Age	18 – 24	46	11.5
	25 – 34	194	48.5
	35 – 44	96	24.0
	45 and over	64	16.0
Income	Less than 5 million	23	5.8
	5 – less than 10 million	62	15.5
	10 – less than 15 million	151	37.8
	15 million and over	164	41.0

Descriptive data statistics shows that:

- About gender: 266 people are male (comprise 66.5%), 134 people are female (comprise 33.5%)
- About age: There are 46 people aged 18-24 (comprise 11.5%), 194 people aged 25-34 (comprise 48.5%), 96 people aged 35-44 (comprise 24%), 64 people aged 45 or over (comprise 16%). The common age group is 25-44 (comprise 72.5%)
- About income: There are 23 people earning less than 5 million/month (comprise 5.8%), 62 people earning 5 – less than 10 million/month (comprise 15.5%), 151 people earning 10 – less than 15 million/month (comprise 37.8%), 164 people earning above 15

million/month (comprise 41%). The common income group is 10 million/month or over (comprises 78.8%).

Thus, the survey participants are mainly male, between the ages of 25 and 44, with incomes from 10 million/month or more.

Cronbach's Alpha coefficient was used in advance to eliminate garbage variables. Accordingly, observed variables with the variable correlation coefficient – total less than 0.3 will be eliminated and the criteria for selecting the scale is Cronbach's Alpha from 0.6 or higher (Nunnally and Burnstein, 1994).

Table 3: Cronbach’s Alpha result - The Service quality Scale

The Service quality Scale: Cronbach’s Alpha = 0.814				
Observation variable	Average scale if removing variable	Scale variance if removing variable	Correlation total variables	Alpha if removing this variable
CLDV.1	16.1450	10.320	.572	.788
CLDV.2	16.2050	10.429	.638	.768
CLDV.3	16.2225	10.239	.662	.761
CLDV.4	16.1800	10.394	.605	.777
CLDV.5	16.2775	10.657	.546	.795

Table 4: Cronbach’s Alpha result - The Expertise quality Scale

The Expertise quality Scale: Cronbach’s Alpha = 0.753				
Observation variable	Average scale if removing variable	Scale variance if removing variable	Correlation total variables	Alpha if removing this variable
CM.1	8.6175	7.580	.560	.691
CM.2	8.3125	7.789	.494	.724
CM.3	8.7100	6.753	.586	.675
CM.4	8.1925	7.053	.561	.689

Table 5: Cronbach’s Alpha result - The Medical examination and treatment cost Scale

The Medical examination and treatment cost Scale: Cronbach’s Alpha = 0.832				
Observation variable	Average scale if removing variable	Scale variance if removing variable	Correlation total variables	Alpha if removing this variable
CPKCB.1	9.6900	9.307	.543	.840

CPKCB.2	9.7550	8.797	.701	.772
CPKCB.3	9.6075	8.590	.690	.775
CPKCB.4	10.0300	8.190	.720	.761

Source: Survey result, 2019.

Table 6: Cronbach's Alpha result - The Medical examination and treatment effectiveness Scale

The Medical examination and treatment effectiveness Scale: Cronbach's Alpha = 0.838				
Observation variable	Average scale if removing variable	Scale variance if removing variable	Correlation total variables	Alpha if removing this variable
HQKCB.1	12.1075	12.878	.638	.806
HQKCB.2	11.9425	12.385	.710	.785
HQKCB.3	11.8975	12.709	.716	.784
HQKCB.4	11.4375	13.505	.638	.806
HQKCB.5	11.2550	14.596	.504	.840

Source: Survey result, 2019.

Table 7: Cronbach's Alpha result – The choice decision Scale

The choice decision Scale: Cronbach's Alpha = 0.838				
Observation variable	Average scale if removing variable	Scale variance if removing variable	Correlation total variables	Alpha if removing this variable
Choice.1	5.8100	4.214	.587	.829
Choice.2	6.2950	3.787	.731	.688
Choice.3	6.5000	3.589	.699	.719

Cronbach's Alpha test results showed that these scales were all greater than 0.6 therefore achieved reliability. This shows that variables are closely related to each other in the same component concept. The variable correlation coefficient – total of variables are all satisfactory > 0,3 indicate that the variables have many contributions to the general scale.

All 21 observation variables were retained for further analysis of the exploratory factor EFA.

EFA method was used for 18 observation variables of 4 independent factors, with Principal component analysis method, Varimax rotation and the stoppage when extracting the Eigenvalues factor of 1.

Table 8: Independent Factors EFA Analysis

Kaiser-Meyer_Olkin Measure of Sampling Adequacy	.888
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1	6.738	37.431	37.431	6.738	37.431	37.431	3.113	17.297	17.297
2	2.133	11.852	49.283	2.133	11.852	49.283	2.952	16.397	33.694
3	1.375	7.638	56.920	1.375	7.638	56.920	2.807	15.595	49.290
4	1.060	5.889	62.809	1.060	5.889	62.809	2.434	13.520	62.809
5	.784	4.357	67.167						
6	.758	4.209	71.375						
7	.686	3.809	75.184						
8	.621	3.449	78.633						
9	.577	3.204	81.837						
10	.508	2.820	84.657						
11	.486	2.701	87.359						
12	.418	2.323	89.682						
13	.390	2.166	91.847						
14	.355	1.971	93.818						
15	.341	1.894	95.712						
16	.284	1.579	97.291						
17	.258	1.435	98.726						
18	.229	1.274	100.000						

Extraction Method: Principal Component Analysis.

There are 4 factors extracted at Eigenvalue is equal to 1,060 (satisfactory must be >1)
KMO coefficient equals to 0.888 (satisfactory must be ≥ 0.5) so EFA factor Analysis corresponds with the data.

Chi-square statistics of Bartlett's test reach a 3252,280 value with significance level Sig. = 0,000 (satisfactory must be $\leq 0,05$). Therefore, these observation variables are correlated to each other in the overall range.

The load factor coefficients >0,5 is satisfactory so there is a practical significance.

The sum of extracted variance is 62,809% (satisfactory must be $\geq 50\%$) indicates that 4 drawn factors can explain 62,809% of the data's variation. The scales, therefore, are accepted.

Thus, the scales after analyzing still remain the same observation variables.

Dependent Factor EFA Analysis

The EFA method was used for 3 observation variables of dependent factors, using the Principal component analysis method with Varimax rotation and the stoppage when extracting the Eigenvalues factor of 1.

Table 11. Dependent Factor EFA Analysis

Kaiser-Meyer_Olkin Measure of Sampling Adequacy	.689
Bartlett's Test of Approx Chi-Square	448.671

Sphericity	Df	3
	Sig.	.000

Table 12. Variance extracted from Dependent EFA Analysis

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.202	73.404	73.404	2.202	73.404	73.404
2	.510	17.012	90.416			
3	.288	9.584	100.000			

Extraction Method: Principal Component Analysis

There is 01 factor extracted at Eigenvalue of 2.202 (satisfactory must be >1)

KMO coefficient equals to 0.689 (satisfactory must be ≥ 0.5) so EFA factor Analysis corresponds with the data.

Chi-square statistics of Bartlett's test reach a 448.671 value with significance level Sig. = 0.000 (satisfactory must be ≤ 0.05). Therefore, these observation variables are correlated to each other in the overall range.

The sum of extracted variance is 73.404% (satisfactory must be $\geq 50\%$) indicates that 01 drawn factor can explain 73.404% of the data's variation. The scales, therefore, are accepted.

Thus, the scales after analyzing still remain the same observation variables.

4.1. Testing research models and hypotheses

4.4.1. Correlation Analysis

The result of correlation matrix run shows that the factors "CLDV", "OP", "CM" are correlated in the same direction with the choice decision in quite strong levels, the correlation coefficient is statistically significant with significance level < 0.01 . And the factor "CPKCB" is negatively correlated with the choice decision with significance level > 0.01 . In addition, the independent variables are also correlated with each other, so when analyzing regression, researchers need to pay attention to the probability of multicollinearity phenomenon.

Table 13: Correlation coefficient matrix

		CLDV	CPKCB	HQKCB	CM	LUACHON
CLDV	Pearson Correlation	1	.010	.559**	.319**	.609**
	Sig. (2-tailed)		.846	.000	.000	.000
CPKCB	Pearson Correlation	.010	1	.020	.027	-.078
	Sig. (2-tailed)	.846		.697	.586	.122

HQKCB	Pearson Correlation	.559**	-.020	1	.349**	.549**
	Sig. (2-tailed)	.000	.697		.000	.000
CM	Pearson Correlation	.319**	.027	.349**	1	.532**
	Sig. (2-tailed)	.000	.586	.000		.000
LUACHON	Pearson Correlation	.609**	-.078	.549**	.532**	1
	Sig. (2-tailed)	.000	.122	.000	.000	
*** The correlation is significant at the 0.01 level						
** The correlation is significant at the 0.05 level						
* The correlation is significant at the 0.1 level						

Regression equation:

$$Y = \beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3 + \beta_4 * X_4$$

Where:

Y: the choice desion (LUACHON)

X1: quality of service (CLDV)

X2: cost of medical examination and treatment (CPKCB)

X3: effectiveness of medical examination and treatment (HQKCB)

X4: quality of expertise (CM)

Table 14: Regression Analysis

R	R ² R Square	Adjusted R Square	Std. Error	F Change	Sig. F Change	Durbin- Watson
.732 ^a	.536	.531	.61740	114.159	.000	2.173

Table 15: Regression Analysis Results

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinear Statistics	
	beta	Std. Error	Beta			Allowable Level	VIF
(Constant)	.009	.149		.063	.950		
CLDV	.388	.043	.381	9.095	.000	.669	1.494

CPKCB	-.055	.022	-.086	-2.513	.012	.998	1.002
HQKCB	.229	.045	.216	5.107	.000	.654	1.529
CM	.346	.038	.337	9.088	.000	.855	1.170

The model has an adjusted R^2 coefficient = 0.531, means that 53.1% of the variation of Choice Decision variable (LUACHON) is explained by the variation of the 4 components with a reliability of 95%.

Durbin-Watson = 2,173 satisfies the requirement $1 < \text{Durbin-Watson} < 3$

Assess the suitability of the model: The adjusted R^2 coefficient = 0.531 shows that the suitability of the model is quite high. The independent variables can explain 53.1% of LUACHON variable. Durbin-Watson = 2,173 satisfies the requirement $1 < \text{Durbin-Watson} < 3$
 Multicollinearity examination: Variance magnification coefficient $VIF = 1/\text{Tolerance}$ satisfies the condition $1 \leq VIF < 10$, indicating there is no multicollinearity phenomenon.

4.4.2. Test the implicit assumptions of linear regression

Assumption about linear relation: graphs representing standardized predicted value according to standardized residual indicate random dispersion.

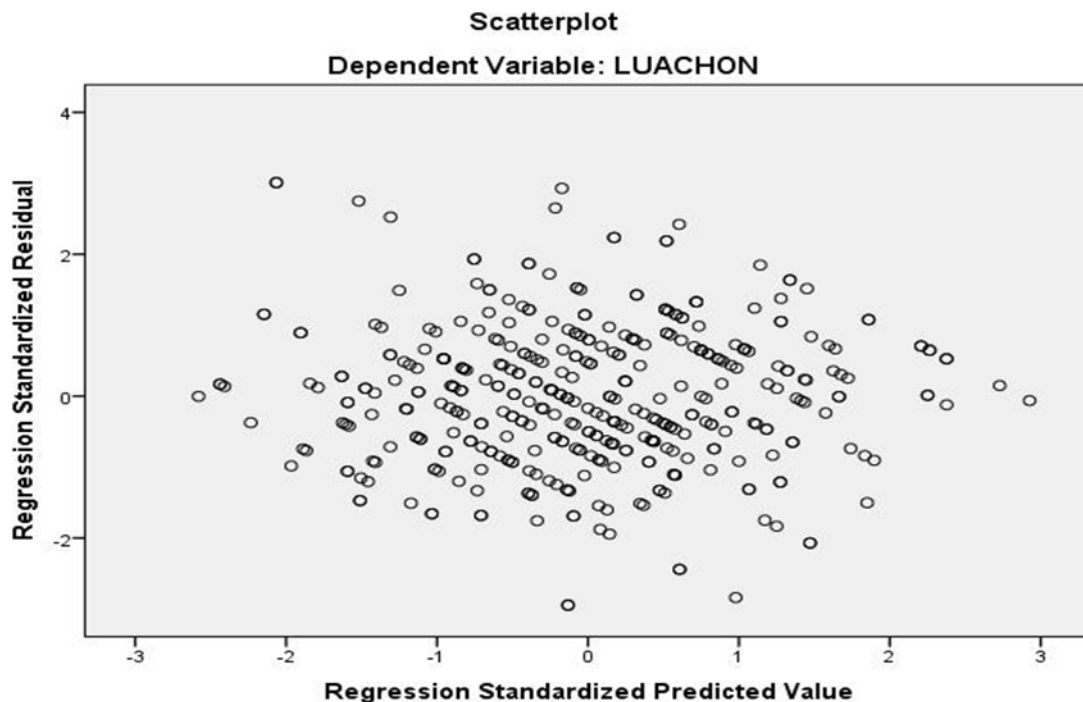


Figure 1 Scatterplot dispersion

Assumption about the normal distribution of residuals: According to the standardized residual frequency diagram, the mean value $\text{Mean} = -1,42 \times 10^{-15}$ (near 0) and standard variance =

0,995 (approximately 1). The normal distribution graph of the residuals also shows that the distribution of the residuals has a normal distribution form.

Observing the Q-Q Plot graph of the residuals, the observation points of the residuals are mainly concentrated near the expectation line, so the distribution of residuals is normally distributed and satisfies the requirement of the normal distribution of the residuals.

*Assume there is no correlation between the residuals: The Durbin-Watson statistical quantity value = 2,17, varies from 0 to 3, so we accept the hypothesis of no first-order autocorrelation.

4.4.3. Regression results

4.4.4.1. Quality of service (CLDV)

Hypothesis H1: The quality of service has a positive (+) impact on Choice Decision. The standardized regression coefficient $\beta_1 = 0,381$, sig. (β_1) = 0,000 < 0,05: support the hypothesis

Cost of medical examination and treatment (CPKCB)

Hypothesis H2: The cost of medical examination and treatment has a negative (-) impact on Choice Decision. The standardized regression $\beta_2 = -0,086$, sig. (β_2) = 0,012 < 0,05: support the hypothesis

4.4.4.2. Effectiveness of medical examination and treatment (HQKCB)

Hypothesis H3: The effectiveness of medical examination and treatment has a positive (+) impact on Choice Decision. The standardized regression coefficient $\beta_3 = 0,216$, sig. (β_3) = 0,000 < 0,05: support the hypothesis.

4.4.4.3. Quality of expertise (CM)

Hypothesis H4: The quality of expertise has a positive (+) impact on Choice Decision. The standardized regression coefficient $\beta_4 = 0,337$, sig. (β_4) = 0,000 < 0,05: support the hypothesis

The test results of the hypotheses are summarized in the following table:

Table 16: Test the hypotheses

Hypothesis	Results
H1: The quality of service has a positive impact on Choice Decision.	Accept
H2: The cost of medical examination and treatment has a negative impact on Choice Decision.	Accept
H3: The effectiveness of medical examination and treatment has a positive impact on Choice Decision.	Accept
H4: The quality of expertise has a positive impact on Choice Decision.	Accept

Research results Discussion

From the linear regression equation, we see that 4 components effect on the selection of Tam Duc Heart Hospital of people in Ho Chi Minh City with various degrees, the gap difference is considerable, from 0,086 to 0,381, demonstrates the different effects of these components on people's choice of Tam Duc Heart Hospital. The author will analyze the components based on the beta coefficient from high to low. Therefore, the quality of service has the largest beta coefficient of 0,381; followed by the quality of expertise with 0.562 beta coefficient; the effectiveness of medical examination and treatment 0,337 and the cost of medical examination and treatment has the smallest beta coefficient -0,086.

The quality of service has the strongest impact on the selection of Tam Duc Heart Hospital of people in HCMC. By increasing one unit of Quality of service, the selection of Tam Duc Heart Hospital increases by 0,381 units.

The second strongest impact on the selection of Tam Duc Heart Hospital of people in HCMC is the quality of expertise. By increasing one unit of Quality of expertise, the selection of Tam Duc Heart Hospital increases by 0,337 units.

The effectiveness of medical examination and treatment has the third strongest impact on the selection of Tam Duc Heart Hospital of people in HCMC. By increasing one unit of Effectiveness of medical examination and treatment, the selection of Tam Duc Heart Hospital increases by 0,216 units.

Finally, the factor the cost of medical examination and treatment has a negative impact on the selection of Tam Duc Heart Hospital of people in HCMC. By decreasing one unit of Cost of medical examination and treatment, the selection of Tam Duc Heart Hospital increases by 0,086 units. This is reasonable because the higher the cost of treatment, the more it affects the selection of the hospital.

Through testing the scale based on Cronbach's Alpha reliability coefficient and the factor analysis EFA, it is shown that the scales have reached the required reliability. The regression analysis results indicate that the research model is suitable for the data. In addition to assessing the scale and testing the theoretical model, we also analyzes the level of importance of the factors affecting the selection of Tam Duc Heart Hospital, including 4 factors respectively: Quality of service (CLDV) with $\beta = 0.381$, Cost of medical examination and treatment (CPKCB) with $\beta = -0.086$,

Effectiveness of medical examination and treatment (HQKCB) with $\beta = 0.216$, Quality of expertise (CM) with $\beta = 0.337$. The research model can explain 53.1% of the variation of the selection of Tam Duc Heart Hospital of people in HCMC.

The factor "Quality of service" with $\beta = 0,381$ indicates that the selection of Tam Duc Heart Hospital of people in HCMC is most strongly affected by it.

According to the survey results, the patients feel satisfied with "The hospital is always on schedule", "The waiting rooms of Tam Duc Heart Hospital is comfortable", "Tam Duc Heart Hospital is fully equipped with modern medical equipment", "Administrative process and procedure of Tam Duc Heart Hospital are quick", "Tam Duc Heart Hospital's medical staff always treat patients with friendliness". Thus, this is a current strategic competitive factor and also the basis for boosting the remaining factors, so Tam Duc Heart Hospital continues to promote the quality of service in order to attract patients.

The quality of expertise

The factor "Quality of expertise" with $\beta = 0,337$ indicates that it is the second strongest impact on the selection of Tam Duc Heart Hospital of people in HCMC after the factor Quality of service. At the same time, according to the survey results, "The professional qualifications of doctors at Tam Duc Heart Hospital create a sense of trust in the patient", "The treatment regimens of doctors at Tam Duc Heart Hospital make patients feel secure" are underestimated (Mean < 3,0). It means that the patient still has a feeling of distrust and the treatment regimen of doctors at Tam Duc Heart Hospital has not yet created the peace of mind for the patient.

The factor "Effectiveness of medical examination and treatment" with $\beta = 0,216$ indicates that it is the third strongest impact on the selection of Tam Duc Heart Hospital of people in HCMC. According to the survey results, patients still do not highly value "The sense of trust in the patient", "Your health is improved after the treatment period" with Mean <3, while "The hospital does a good job of preventing the risks, the development of cardiovascular diseases that may occur to patients". "The treatment of cardiovascular diseases of the hospital has been effectively operated" are regarded as average (Mean >3). That is the biggest challenge for Tam Duc Heart Hospital because this factor can be said to be their long-term strategic competitive factor.

The factor "Cost of medical examination and treatment" with $\beta = -0,086$ indicates that this factor does not significantly affect the selection of Tam Duc Heart Hospital of people in HCMC. According to the survey results, patients agree "Tam Duc Heart Hospital's fee matches the quality of the provided service", "Tam Duc Heart Hospital's fee corresponds with your treatment method", "Tam Duc Heart Hospital's fee is acceptable", "Tam Duc Heart Hospital's fee is suitable to you income". However, Tam Duc Heart Hospital needs to research how to reduce costs in order to attract more customers and create a competitive advantage in the future.

Professional quality

The factor "Professional quality" with $\beta=0,337$ shows that the decision to choose Tam Duc Hospital of people in Ho Chi Minh City is influenced by this factor second after the service quality factor. At the same time, according to the survey results, "The professional qualifications of the

doctors at Tam Duc Heart Hospital create a sense of trust for the patients", "The treatment protocol of the doctors at Tam Duc Heart Hospital creates a peace of mind for patients" was underestimated (GTTB < 3.0). That is, the patient still has a feeling of not trusting, the treatment regimen of the doctor of Tam Duc Hospital has not given the patient peace of mind.

The effectiveness of medical examination and treatment

The factor "Effectiveness of medical examination and treatment" with $\beta=0.216$ shows that this factor has the third strongest influence on the decision to choose Tam Duc Heart Hospital of people in Ho Chi Minh City. According to the survey results, health care workers still do not appreciate "the trust in the patient", "your health has improved after the last treatment" has an average value of <3, and "the hospital does it" good prevention of risks, bad events happen to patients", "the hospital's treatment of cardiovascular diseases has worked effectively" is rated as medium (GTTB>3). This is the biggest challenge for Tam Duc Heart Hospital because it can be said to be a competitive long-term strategic factor. Therefore, Tam Duc Heart Hospital needs to ensure that medical care is provided continuously.

Medical examination and treatment costs

The factor "Cost of medical examination and treatment" with $\beta=-0.086$ shows that this factor has little impact on the decision to choose Tam Duc Heart Hospital of people in Ho Chi Minh City. According to the survey results, the medical staff accepts "the hospital fee of Heart Tam Duc hospital in accordance with the quality of service provided by the hospital", "the hospital fee of Heart Tam Duc hospital in accordance with the British method of treatment". /Ms.", "Tim Tam Duc hospital fees can accept", "Tim Tam Duc hospital fees are suitable to your income". However, Tim Tam Duc Hospital needs to research to reduce costs to attract more medical staff and create competitive advantages in the future.

5. Conclusion

According to the regression results, we found that the factors proposed to be included in the model all showed a large impact on the decision to choose Tam Duc Heart Hospital of people in Ho Chi Minh City. Including: Quality of service ($\beta=0,381$), Cost of medical examination and treatment ($\beta=-0.086$), Efficiency of medical examination and treatment ($\beta=0,216$), Professional quality ($\beta=0,337$).

The normalized regression equation is as follows:

$$LUACHON = 0.381*CLDV - 0.086*CPKCB + 0.216*HQKCB + 0.337*CM$$

From the linear regression equation, we can see that 4 components affect the choice of Tam Duc Heart hospital of people in Ho Chi Minh City with different degrees. We analyzed the components based on the beta coefficient. Therefore, Quality of Service has the largest beta coefficient of 0.381; next Professional quality 0.337; The efficiency of medical examination and treatment is 0.216 and finally the cost of medical examination and treatment – 0.086.

Service quality has the strongest impact on the choice of Heart Tam Duc hospital of people in Ho Chi Minh City. When increasing by one unit Service quality will increase the decision to choose Heart Tam Duc hospital by 0.381 units.

Next, Professional quality has the second strongest impact on the choice of Heart Tam Duc hospital of people in Ho Chi Minh City. When Professional quality variable increase one unit, the hospital decision variable will increase to 0.337 units.

The effectiveness of medical examination and treatment has the third strongest impact on the choice of Tam Duc Heart Hospital of people in Ho Chi Minh City. When increasing by one unit the efficiency of medical examination and treatment will increase the decision to choose Heart Tam Duc hospital by 0.216 units.

Finally, the cost factor of medical examination and treatment has a negative influence on the choice of Heart Tam Duc hospital of people in Ho Chi Minh City. When reducing one unit The cost of medical examination and treatment will increase the decision to choose Heart Tam Duc hospital by 0.086 units. This is reasonable because the higher the patient's cost; the more it affects the choice of hospital for treatment.

Unlike in the past, patients are no longer oblivious to the services they get at hospitals. They understand the worth of their money and want higher-quality services. Patients want the highest quality healthcare treatments accessible. Given patients' increasing knowledge and sensitivity to their illnesses and treatment procedures, each hospital's service framework must be modified in accordance with appropriate models.

Hospital administrators must be aware of the requirements for a good hospital and the expectations of patients. They should ascertain which factors are more significant to patients and which problems result in their complaints. To succeed in a competitive setting, managers must consider all of these variables and make the best possible use of available resources.

Although care was taken to ensure the data collection was useful and credible, the study has some limitations, including the following: the sample size is small and non-random (to maximize respondent relevance); the study area is limited to the relatively Tam Duc hospital in HCM city, which means that the insight gathered cannot be extrapolated to patients in North and Central Vietnam, or in smaller towns;

Due to time and budget constraints, we could not be gathered from areas outside of HCM. The results should be evaluated carefully, and no sweeping conclusions should be drawn. Nonetheless, taking geographical variables and patient sample variety into account, the results should be applicable to different demographic groupings.

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