Service quality of preventive medicine and public health training facilities

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ABSTRACTS
From a customer-oriented perspective, service quality can be simply understood as the ability of a firm, unit, or individual providing a service to meet the expectations and satisfy the needs of customers. This study was conducted with the aim of identifying, analyzing, and measuring customer satisfaction with the service quality of preventive medicine and public health training facilities by using qualitative and quantitative research methods. Quantitative research methods were carried out with SPSS software, including descriptive statistics, Cronbach's alpha analysis, and EFA analysis. On the basis of an overview of previous studies and after interviewing experts, the study identified and analyzed twenty-two scales (component attributes) of customer satisfaction with service quality of preventive medicine and public health training facilities. Based on the research results, we propose some recommendations to improve the service quality of preventive medicine and public health training facilities, thereby contributing to improving business performance and quality of education at preventive medicine and public health training facilities.

Keywords: Service quality, business performance, preventive medicine and public health training facilities, business administration, economics
JEL codes: M10, L21, L25, L26

1. INTRODUCTION
From a customer-oriented perspective, service quality can be simply understood as the ability of a firm, unit, or individual providing a service to meet the expectations and satisfy the needs of customers. Therefore, service quality is determined by the customer, as the customer desires.

With the mission of training high-quality human resources, developing science and technology, and providing preventive medicine and public health services to protect, care for, and improve people's health. The Institute of Preventive Medicine and Public Health Training has been constantly improving and developing to affirm its position as the leading unit in training, science, and technology, providing preventive medicine and public health services in Vietnam. In recent years, service activities have played an important role, accounting for a large proportion of the unit's revenue.

There has been some research on service quality conducted worldwide. According to Aryani et al. (2023), there are still a number of local governments that need to urgently enhance their medium- or even low-quality public services. The relationship between customer satisfaction and service quality has been the subject of numerous studies carried out in Vietnam across a range of industries, including tourism (Nguyen et al., 2022); restaurant business (Pham & Mai, 2022); website (D. T. Nguyen, 2022); education service (Nguyen & Vu, 2022); accounting information systems (Huynh, 2021); agricultural extension services (T. T. Nguyen, 2020); electronic tax service (Nguyen & Le, 2020); auditing service (Do et al., 2023), etc. However, there has been no comprehensive study evaluating the service quality of the Institute of Preventive Medicine and Public Health.

2. LITERATURE REVIEW

Quality of service is defined by Parasuraman et al. (1985) as a notion distinct from satisfaction that reflects the relationship between performance and customer expectations. Customer satisfaction increases with performance appraisal, and quality is equivalent to the subtraction of expectations from performance appraisal.

One of the most notable models, the service quality model, was first presented by Parasuraman et al. (1988) and has been utilized by numerous researchers to examine the level of service provided by businesses and organizations. After conducting numerous tests, Parasuraman et al. (1988) came to the conclusion that the following factors contribute to the quality of service: (i) reliability, or the capacity to complete the task correctly and on time the first time; (ii) responsiveness, or the desire and willingness of the staff to serve customers promptly; (iii) service capacity, or the professional qualifications and courteous and caring manner toward customers; (iv) empathy, or the concern for each individual customer; and (v) tangible, or the appearance, clothing, or equipment used by the service personnel.

Le and Nguyen (2013) used the Servqual model to measure hospital service quality in Da Nang city. The study helps hospital managers to perceive the structure of service quality from the "customer" perspective to serve as a basis for basic research as well as practical research in measuring, analyzing, and planning competitive strategies based on service quality. In addition, the study also contributes to supplementing the measurement scale system in the healthcare sector in Vietnam, contributing to the development of measurement scales in the hospital sector to serve as a basis for future applied research.

Le et al. (2021) conducted a quantitative study using the Servperf tool with 600 people coming for outpatient examination and treatment at the High-tech Laser-Aesthetic Surgery Department, 108 Central Military Hospital. The Servperf model measures service quality based on customer perceptions and evaluates it through 5 aspects: trust, responsiveness, assurance, empathy, and tangible factors. The results showed that customers rated the quality of medical examination and treatment services at the High-Tech Laser-Aesthetic Surgery Department, Surgery on Demand Department, 108 Central Military Hospital as very good. The service quality of tangible factors had the highest average score, and the lowest was the service quality of empathy.

Dao (2021) used the Servqual toolkit to evaluate patient satisfaction with medical services at the on-demand treatment department, Central Obstetrics Hospital, in 2021, using variables including 5 aspects: trust; response; service capacity; empathy; and tangible factors. The research results showed that the overall satisfaction level of patients at the on-demand treatment department of the Central Obstetrics Hospital was quite good, much lower than the research results 5 years ago, especially tangible factors. Therefore, the group of authors proposed research solutions to improve patient satisfaction in the coming time: renovating infrastructure; repairing and replacing equipment serving patients.

Nguyen et al. (2022) used the scale of Parasuraman et al. (1988) to measure the quality of training services at Binh Dinh Medical College. The results showed that the quality of training services at the school was highly appreciated.

Building on previous studies and expert opinions, this study focuses on evaluating the quality of vaccination services, nutritional examinations and training according to the needs of the Institute of Preventive Medicine and Public Health Training in the period of 2020 - 2023, including 22 observed variables (scales), specifically as follows:

Reliability includes 5 observed variables, denoted from TC1 to TC5. Reliability is expressed through the ability to perform the service appropriately and on time the first time.

Responsiveness includes 4 observed variables, denoted from DU1 to DU4. Responsiveness is expressed through the desire and readiness to help and provide services quickly and promptly to customers.

Assurance consists of 4 observed variables, denoted from PV1 to PV4. Service competence is expressed through professional level and level of politeness, friendliness towards customers, and the ability to convey their trust and confidence.

Empathy consists of 5 observed variables, denoted from CT1 to CT5. Empathy shows concern and care for each individual and customer.

Tangibility include 4 observed variables, denoted from HH1 to HH4. Tangible means are shown through the appearance, uniform of employees, facilities, and equipment serving the service.

3. RESEARCH METHODS

3.1. Scale and design of questionnaires

The scale used in this study is a 5-point Likert scale ranging from 1 to 5. 1 totally disagree with 5. strongly agree. The statements in each scale are inherited from previous studies and expert opinions to correct the wording and then adjusted to suit the context of School of Preventive Medicine and Public Health, Vietnam, at the present time, based on the results of expert interviews and group discussions. Preventive Medicine and Public Health Training Institute service quality is measured by 22 observed variables.

3.2. Samples and data collection

The study sample was selected according to the convenience method. After designing the questionnaire, we conducted the survey through online design on Google Docs and in person. Of the collected questionnaires, after cleaning, 229 remained for analysis.

The author conducted a survey of 229 customers using vaccination services, nutritional examinations, and students attending short-term training courses at the Institute of Preventive Medicine and Public Health. After cleaning the data, 220 questionnaires were eligible for use in subsequent analyses.

Regarding gender: out of a total of 220 research samples, there were 131 female customers and 89 male customers. Thus, the number of female customers accounted for 59.5%, while the number of male customers only accounted for 40.5%. This reflects the reality at the service facilities of the Institute of Preventive Medicine and Public Health Training: the proportion of women using the service is higher than that of men. The reason is that the customers at the vaccination room are mainly women and mothers whose children and grandchildren are vaccinated or female customers of reproductive age. The customers at the training facilities of the institute are also mainly female students.

Regarding age: 116 surveys were from customers aged 25 to 40, accounting for 52.7%; followed by 57 surveys from customers aged 18 to 25, accounting for 25.9%; the remaining 47 surveys, accounting for a total of 21.4%, were from customers aged 40 and over. This also reflects the reality because customers of vaccination services are mainly parents of children and adults of childbearing age, while customers of short-term training courses are often working people who want to study to improve their qualifications.

3.3. Data analysis method

The author uses qualitative research methods through techniques such as document review, expert interviews, analysis, and synthesis. The quantitative research method is carried out with SPSS software.

4. RESULTS

4.1. Descriptive statistics

The statistical results of the min and max values of each observed variable in Table 1 show that the evaluation of the survey subjects with the statements about the observed variable (scale) has a big difference. For the same statement, there are survey subjects who strongly agree, but there are also survey subjects who strongly disagree. The average value The mean shows the average value of the variable compared to the minimum and maximum value thresholds. The standard deviation of the variable Std. Deviation measures the statistical variability of the value. The smaller this value is, the less difference there is in the answers of the respondents. On the contrary, if this value is high, it shows that the survey subjects have very different opinions about that variable, so the scores given are quite different.

Table 1. Statistical description of observed variables

	N	**Min**	**Max**	**Mean**	**Std. Deviation**
Reliability (TC)					
TC1	220	3	5	3.55	0.517
TC2	220	2	5	3.59	0.538
TC3	220	2	5	3.56	0.582

TC4	220	2	5	3.55	0.575
TC5	220	3	5	3.66	0.616
Responsiveness (DU)					
DU1	220	1	5	3.65	1.020
DU2	220	1	5	3.54	0.981
DU3	220	1	5	3.61	1.065
DU4	220	1	5	3.63	1.046
Assurance (PV)					
PV1	220	1	4	2.25	0.730
PV2	220	1	4	2.29	0.687
PV3	220	1	4	2.26	0.730
PV4	220	1	4	2.41	0.693
Empathy (CT)					
CT1	220	1	5	3.93	0.721
CT2	220	2	5	3.87	0.766
CT3	220	2	5	3.87	0.731
CT4	220	2	5	3.85	0.788
CT5	220	2	5	4.05	0.763
Tangibility (HH)					
HH1	220	1	5	2.80	0.836
HH2	220	1	5	2.90	0.886
HH3	220	1	5	2.82	0.860
HH4	220	1	5	2.80	0.955

Source: SPSS software and authors' synthesis

4.2. Cronbach’ alpha analysis

Table 2. Results of reliability analysis of scales through Cronbach's alpha coefficient

Code	**Scale Mean if Item Deleted**	**Scale Variance if Item Deleted**	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
Reliability (TC): Alpha = 0.897				
TC1	14.37	4.170	0.587	0.906
TC2	14.33	3.755	0.783	0.866
TC3	14.35	3.489	0.851	0.849
TC4	14.36	3.583	0.811	0.859
TC5	14.25	3.640	0.705	0.885
Responsiveness (DU): Alpha = 0.846				
DU1	10.78	7.151	0.621	0.831

DU2	10.89	6.804	0.745	0.779
DU3	10.82	6.624	0.697	0.799
DU4	10.80	6.809	0.674	0.809
Assurance (PV): Alpha = 0.850				
PV1	6.96	3.268	0.668	0.818
PV2	6.92	3.235	0.751	0.783
PV3	6.95	3.139	0.731	0.790
PV4	6.80	3.503	0.609	0.841
Empathy (CT): Alpha = 0.922				
CT1	15.65	7.034	0.858	0.893
CT2	15.70	7.068	0.782	0.907
CT3	15.71	7.203	0.790	0.906
CT4	15.73	6.839	0.820	0.900
CT5	15.52	7.219	0.742	0.915
Tangibility (HH): Alpha = 0.852				
HH1	8.52	5.210	0.729	0.798
HH2	8.42	5.185	0.675	0.820
HH3	8.50	5.338	0.658	0.827
HH4	8.52	4.789	0.715	0.803

Source: SPSS software and authors' synthesis

The results of the reliability analysis of the scale (observed variables) in Table 3 show that the value of the Cronbach's alpha coefficient is >0.6; all component variables (scales) have a correlation with the total >0.3. Thus, the 22 observed variables (scales) meet the requirements and are meaningful (Hoang & Chu, 2008; Hair et al., 2009; Hair et al., 2014).

4.3. Exploratory factor analysis analysis

Table 3: KMO and Bartlett's Test

KMO and Bartlett's Test		
KMO (Kaiser-Meyer-Olkin of Sampling Adequacy)		0.782
Bartlett's Test of Sphericity	Approx, Chi-Square	2893.648
	Df	231
	Sig	0.000

Source: SPSS software and authors' synthesis

The results of Table 3 show that KMO = 0.782 > 0.5, Bartlett's Test sig = 0.000 < 0.05, so the EFA exploratory factor analysis is appropriate. With the eigenvalue at the 5th factor (component) of service quality being 2.469 > 1, at the 6th factor being 0.712 < 1, the extraction process will stop at the 5th factor, with 5 factors extracted with a total cumulative variance of 72.168%. Thus, the 5 extracted factors explain 72.168% of the data variation of the 22 observed variables participating in EFA.

The method chosen here is the Varimax procedure, which rotates the entire angle of the factors to minimize the number of observations with large coefficients on the same factor. Therefore, it will enhance the ability to explain the factors. We want to select quality observed variables, so we will use the factor loading threshold of 0.5 instead of choosing the corresponding factor loading according to the sample size. After rotation, we will also remove observations with factor loading coefficients less than 0.5 from the model. Exploratory factor analysis (EFA) will retain observed variables with factor loading coefficients greater than 0.5 and arrange them into main groups. Comparing this threshold with the results in the rotation matrix, all 22 observed variables meet the requirements.

After rotating the factors, it is quite clear that the concentration of observations on each factor is quite clear. The analysis results table shows that there are a total of 22 observations creating 5 factors.

5. DISCUSSION AND IMPLICATIONS

Most customers have quite good reviews about the quality of services at the Institute of Preventive Medicine and Public Health Training. Over the years, there has been almost no customer feedback or complaints regarding the quality of services, as well as doubts about the service provision at the institute's service facilities.

The Institute has implemented the procedures, registration procedures, and service implementation quickly, creating conditions to flexibly resolve all legitimate requests of customers. To achieve that, the Institute always requires medical staff to comply with professional procedures, not to make mistakes, and especially to publicly post the procedures as well as the handling of emergency situations at the unit.

The professional level of the staff at the medical center is relatively high and even. Most of the staff are professionally trained with high levels of education at the university and postgraduate levels. From there, meeting the needs and building trust with customers when coming to the center, especially in the field of public health.

In recent years, the Institute has also repaired and invested in new facilities to improve the quality of customer service. Spacious, airy, well-lit classrooms, fully equipped with learning facilities; the institute has experimental and practice centers to fully meet the needs of learners; Flexible training methods, including online and in-person training, are suitable for the training program.

For vaccination, examination, and nutrition consultation services, which have been the Institute's training expertise for many years, the Institute has many advantages to implement services such as:

(i) Medical staff with high professional qualifications and compliance with procedures have screened and detected many cases of illness and promptly notified families to conduct specialized tests for timely treatment;

(ii) Emergency response equipment is publicly listed, ready to provide peace of mind for customers;

(iii) Service information is publicly announced to help customers easily access the service;

(iv) The hotline operates effectively, medical staff are ready to listen to customers' opinions, promptly answer questions, and meet customers' information needs in emergency cases;

(v) The attitude of medical staff and service staff at service points is enthusiastic and appropriate, creating a comfortable feeling for customers;

(vi) The institute has a spacious campus, a parking area with enough space, convenient and secure for customers;

The number of medical staff at vaccination, examination, and nutrition consultation facilities is limited, so sometimes they cannot handle customer requests in a timely manner, mainly on weekends. Therefore, the institute should organize short-term and long-term training courses regularly, continuously updating knowledge from expertise to soft skills for the medical staff at the center. From there, each staff member will be trained to respond quickly and promptly to resolve urgent situations that may arise during the process of serving customers. In addition, those working in the staff work also need to improve on possible situations, organize meetings and exchanges to popularize and increase the experience of staff, and be ready for any situation when necessary.

It is necessary to enhance the responsibility and attitude of medical staff and service staff in the performance of their duties by organizing training sessions to improve communication and behavioral skills for staff and to develop and standardize a code of conduct for staff, because just one inappropriate attitude of staff can lead to a bad experience for customers.

Information technology has not been effectively applied to the service activities of the Institute. For example, there is no app or vaccination application for customers to look up their vaccination history when necessary; taking queue numbers is still done manually, leading to a situation where they have to wait for each other at the reception desk. Therefore, the Institute of Preventive Medicine and Public Health Training needs to apply new software and skillfully use information technology in training content and customer management. Through tangible solutions, combine measures to improve the process to shorten the service delivery time while still ensuring the quality of the service provided. Continue to promote the operation of the hotline; the use of the center's hotline is extremely necessary in resolving all customer inquiries about the center or the process of using services at the center.

The Institute should provide more seats and reasonable zoning to accommodate the increasing number of customers at vaccination rooms and clinics and arrange clean, comfortable seats in the waiting room to reduce feelings of fatigue and discomfort while waiting for services;

The institute should have strong enough wifi coverage and wide coverage throughout the area to serve teaching and learning in the process of providing short-term courses online, while at vaccination facilities and clinics, wifi coverage is to serve customers who have not had their turn to access the internet to read newspapers and entertain themselves, reducing impatience during the waiting time. In addition, install and provide some relaxation facilities, such as children's play areas, television, newspapers, etc., and rationally rearrange the space of the vaccination room.

The institute does not yet have a lifetime vaccination package, so when customers need to get vaccinated but lack vaccines, they will have to go to other vaccination centers or institutes to use the service, thereby affecting the institute's revenue.

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References

Aryani, Y. A., Gantyowati, E., Nurrahmawati, A., Arifin, T., & Sutaryo, S. (2023). Determinants of local government public service quality: Evidence from the developing economy [Special issue]. Journal of Governance & Regulation, 12(1), 218–229. https://doi.org/10.22495/jgrv12i1siart2

Dao, D. Q., Nguyen, T. H., Le, T. T. H., Nguyen, V. T., Tran T. V. Patient satisfaction with medical services at the on-demand treatment department, Central Maternity Hospital in 2021". Vietnam Medical Journal, Volume 512, March, No. 1, 2022

Do, D. T., Dang, V. S., Pham, V. D., Le, V. L., & Dang, V. T. (2023). Influence of local independent audit firms' service quality on customer satisfaction [Special issue]. Corporate Governance and Organizational Behavior Review, 7(3), 307–317. https://doi.org/10.22495/cgobrv7i3sip7

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall International.

Hair, J. F., Henseler, J., Dijkstra, T., Sarstedt, M., Ringle, C., Diamantopoulos, A., Straub, D., Ketchen, D., GTM, H., & Calantone, R. (2014). Common beliefs and reality about partial least squares: comments on Rönkkö and Evermann. *Organizational Research Methods,* 17(2), 182-209.

Hoang, T., & Chu, N. M. N. (2008). *Analyzing researched data with SPSS* (2nd ed.). Ho Chi Minh City, Vietnam: Hong Duc Publishing House.

Le, V. H., & Nguyen, D. Q. (2013). Hospital service quality scale, Journal of Economic Development, 278, 50-63.

Le, T. T. H., Ban, N. T. H., Vu, H. V. (2021). Evaluation of the quality of outpatient medical examination and treatment services at 108 Central Military Hospital. Vietnam Medical Journal, 500, March, No. 01, 2021.

Nguyen, H. Q., Le, T. H. M., & Le, H. D. (2022). Impact of the tourism supply chain on service quality of tour operators and tourist satisfaction: Evidence from evaluated by domestic tourists in Vietnam. Journal of Economics and Development, 297, 31–40. https://ktpt.neu.edu.vn/tap-chi/so-297/muc-luc-134/tac-dong-cuachuoi-cung-ung-du-lich-den-chat-luong-dich-vu-cua-doanh-nghiep-lu-hanh-va-su-hai-long-cua-khach-du-lichbang-chung-tu-danh-gia-cua-khach-du-lich-noi-dia-o-viet-nam.380624.aspx

Nguyen, D. T. (2022). The relationship between website usability and consumer purchase attitude and intention: The intermediate role of satisfaction. Journal of Economics and Development, 299, 73–82. https://ktpt.neu.edu.vn/tap-chi/so-299/muc-luc-728/moi-quan-he-giua-tinh-kha-dung-cua-trang-web-voi-thai-do-va-ydinh-mua-cua-nguoi-tieu-dung-vai-tro-trung-gian-cua-su-hai-long.380649.aspx

Nguyen, T. L., & Le, T. L. H. (2020). Enterprises' satisfaction toward electronic tax service: The case study in Hanoi. Journal of Economics and Development, 271(2), 96–105. https://ktpt.neu.edu.vn/tap-chi/so-271-ii/mucluc-948/su-hai-long-cua-doanh-nghiep-doi-voi-dich-vu-thue-dien-tu-nghien-cuu-tren-dia-ban-ha-noi.379259.aspx

Nguyen, H. V., & Vu, T. D. (2022). The influence of higher education service quality on the satisfaction of students from public universities of economics and business management in Vientam. Journal of Economics and Development, 295, 83–93. https://ktpt.neu.edu.vn/tap-chi/so-295/muc-luc-311/tac-dong-cua-chat-luongdich-vu-giao-duc-den-su-hai-long-cua-sinh-vien-cac-truong-dai-hoc-cong-lap-khoi-kinh-te-va-quan-tri-kinhdoanh-tai-viet-nam.380609.aspx

Nguyen, T. T. (2020). The impact of the quality of agricultural extension services on farmers' satisfaction: Research in the Red River Delta. Journal of Economics and Development, 282, 84–93. https://ktpt.neu.edu.vn/tap-chi/so- 282/muc-luc-391/tac-dong-cua-chat-luong-dich-vu-khuyen-nong-toi-su-hai-long-cua-nong-dan-nghien-cuu-o-vungdong-bang-song-hong.379412.aspx

Nguyen, T. H. V., Bui, L. V. C., Do, Q. D., Chung, K. K., To, N. N. N. Y., Le, Q. N. (2022). Building a scale to measure student satisfaction with the quality of training services at Binh Dinh Medical College. Vietnam Medical Journal, Volume 519, October, No. 2, 2022.

Parasuraman, A., Zeithaml, V.A. & Berry, L.L. (1985), 'A conceptual model of service quality and its implications for future research', Journal of Marketing, 49(4), 41-50.

Parasuraman, A., Zeithaml, V.A. & Berry, L. (1988), 'SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality', 1988, 64(1), 12-40.

Pham, T. H., & Mai, T. H. L. (2022). Determinants influencing on human senses and satisfaction of vegetarian restaurant customers: A study in Hanoi. Journal of Economics and Development, 300, 64–73. https://ktpt.neu.edu.vn/tap-chi/so-300/muc-luc-88/cac-yeu-to-tac-dong-vao-giac-quan-va-su-hai-long-cua-thuc-khachvoi-cac-nha-hang-chay-nghien-cuu-tai-ha-noi.380670.aspx