



# BUILDING A SCALE FOR EVALUATING FACTORS AFFECTING STUDENT SATISFACTION ABOUT THE QUALITY OF TRAINING AT THEIR SCHOOL

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## ABSTRACT

*In the general development trend of the world today, learners are at the centre, so student satisfaction is one of the indispensable factors in evaluating school quality today. Therefore, this article develops criteria to determine student satisfaction with their school using the literature review and expert method. Cronbach alpha reliability coefficient and exploratory factor analysis were also used in the study. The results showed the original scales, official scales, satisfaction scales, tangible means factors, responsiveness factors, empathy factors, career guidance factors, factors of satisfaction, factors of trust, and factors of service capacity. This result will be the basis for measuring the scale used in assessing student satisfaction in schools.*

**KEYWORDS:** *Quality, satisfaction, school, student, training*

## INTRODUCTION

Scientific research is a way in which people systematically study scientific issues and explain a problem that is not understood, is unclear or no longer relevant to the movement of the economy or non-suitable for a specific context or scope of study that is based on scientific arguments and verified with practice through methods. The ability to determine theories to identify research gaps is an important criterion to evaluate the researcher's capacity and the quality of scientific research. Ability to reason and establish relationships between concepts; scientific arguments are background for the establishment of relationships, demonstrate logic and help solve research objectives and study questions. A study problem or hypothesis must be tested to escape the assumption. Study hypotheses and concepts in that hypothesis must be measurable. Measuring scales must be constructed accurately [1,2]. The accuracy of a scale is expressed through the close relationship between observed variables and the measured research variables. Finally, the scale tests met the requirements. Each type of scale has different statistical analysis tools. The higher the level of measurement, the greater the ability to apply statistical and mathematical tools. For nominal scales, only calculate the ratio (%) and the dominant number. For the quantitative scale, there are more calculations, but it is complicated to find the nature of the problem due to this scale when using the percentage of the population's distribution for each expression of many variables.

Measurement scales can be redesigned to suit measurement purposes in an actual social study is necessary, for example, for the design of interval scales. For example, a hierarchical scale of satisfied/ undecided/ dissatisfied needs is designed into an interval scale of satisfaction by a scale scoring from 0 (completely dissatisfied) to 10 (completely satisfied). The scoring depends entirely on people's feelings, and there is no official standard that forces everyone to follow.

Satisfaction is the consumer's response to having desires met. This definition implies that satisfaction is the consumer's satisfaction in consuming a product or service because it meets their expectations, including the level of satisfaction above and below the desired level [3].



Satisfaction is the level of a person's feeling state that results from comparing the results obtained from a product/service with the person's expectations. The expectation here is considered a human wish or expectation. It originates from personal needs, previous experiences and external information such as advertising, word of mouth, and family, v.v. [4].

In education, the relationship between service quality and customer satisfaction is also confirmed through many studies. Chua (2004) [5] researched and evaluated the quality of university education from many different viewpoints/perspectives: students, parents, lecturers and employers. In most of the components of the SERVQUAL model [6] (empathy, responsiveness, trust, tangibles, service capabilities), students, parents and employers all have higher expectations than those expected. Student satisfaction is an important indicator that reflects the experiences and results achieved by learners in the learning process according to the blended learning model.

Nowadays, the school has numerous issues that need to be solved, such as cutting off subsidized funding to be autonomous and operate according to the laws and regulations of the education market. The mechanism and learner are two factors of dialectical relationship, and the learner factor plays a decisive role [7-9]. Studying the factors affecting student satisfaction with the quality of training services is a priority work that needs to be solved as the basis for adjusting and innovating the school's activities. Therefore, building a scale for evaluation of factors affecting student satisfaction about the quality of training is presented in this article.

## MATERIALS AND METHOD

The original scales, official scales, satisfaction scales, tangible factors, Responsiveness factors, empathy factors, career guidance factors, satisfaction factors, trust factors, service capacity factors, Cronbach alpha reliability coefficient, and exploratory factor analysis were also used in this study. The used method of document review and experts are as background methods for the study.

## RESULTS AND DISCUSSION

### Scale design

#### Building the scale of measurement

This scale is built on the theoretical basis of customer satisfaction with service quality, referring to the developed scales in the world and Vocational Education Law 2014 [10]. After approving the results of group discussions with students, the observed variables will be adjusted and supplemented to suit the study on a 5-point Likert scale ranging from "strongly disagree" to "strongly agree". In addition, the questionnaire also uses a nominal scale to determine the variables of gender, faculty and training system.

#### Preliminary scale

The preliminary scale is obtained by adjusting the SERVPERF scale and adding additional variables for the career guidance component, specifically as follows:

(1) Tangible facilities: including lecture halls, classrooms, practice laboratories, libraries, medical facilities, sports grounds, dormitories, sound systems, lighting, and other equipment. Equipment and tools for teaching, learning, scientific research and uniforms for school officials and employees. Preliminary research has built a tangible media scale including the following variables:

- 1) The theory classroom is spacious and airy
- 2) Modern practice classroom
- 3) The library has wide space and rich documents
- 4) Other support services at the school are well served (canteen, parking lot, health care, dormitory, v.v.)
- 5) Beautiful and appropriate lecturer attire.

(2) Level of trust: includes trust in the school, teachers, and departments.

Preliminary research has built a trust level scale in the study as the following variables:

- 1) The school's training plan, timetable, and exam schedules are stable
- 2) The school's information is always accurate and timely
- 3) Teachers teach according to the published outline and teaching schedule



- 4) The teacher sets exam questions and scores accurately and clearly.
  - 5) Examination organization is serious
- (3) Responsiveness level: demonstrates the enthusiasm and dedication of teachers, the quick solving ability of problems of departmental staff. Preliminary research has developed a response scale including the following variables:
- 1) Dedicated, enthusiastic teachers, ready to answer students' questions
  - 2) Departmental staff quickly and promptly resolve legitimate requests for students.
  - 3) Students can conveniently receive accurate answers to their legitimate questions from relevant departments in the school.
- (4) Service capacity: demonstrates the professional capacity and pedagogical skills of teachers, professional qualifications, and service attitude of department staff. Preliminary research has built a service capacity scale for the study as the following variables:
- 1) Teachers have deep, broad, and practical knowledge about the subjects they teach
  - 2) Teachers have easy-to-understand communication skills.
  - 3) Staff with high professional qualifications
  - 4) Staff have a polite and gentle attitude towards students
- (5) Level of sympathy: shows the school's kindness and concern for each student. Preliminary research has built an empathy level scale including the following variables:
- 1) The school always respect the legitimate interests of students
  - 2) The school regularly solicits student opinions
  - 3) The school has a policy to encourage students to overcome learning difficulties.
- (6) Career guidance: based on regulations on career guidance and employment consulting in vocational education establishments (Issued together with Decision No. 68/2008/QĐ-BLĐTBXH dated December 9, 2008, by the Minister of Labor, Invalids and Social Affairs) [11]. Including job introduction activities, career consulting services, career skills orientation programs, v.v as follows:  
Preliminary research has built a Career Guidance Scale as variables:
- 1) The school has many links with businesses
  - 2) The school organizes internships for final-year students at businesses
  - 3) The school organizes consulting sessions on learning methods and majors.
  - 4) The school has established a career counselling club and regularly organizes counselling sessions for students on job search skills.
  - 5) The school regularly organizes exchange sessions with businesses

### Official scale

The revised scale includes six components with 33 variables, an increase of 5 variables compared to the original preliminary scale, specifically:

(1) For the tangible media component:

Increase two variables compared to the original scale. In particular, according to students' assessments, the explosion of journalism and the operation of school websites is necessary as a channel to provide information to students for schools nowadays. In addition, the area and landscape of the school are also important. Therefore, the scale added two more variables: "The school's website is beautiful, always updated with new and diverse informations" and "Learning facilities are spacious, airy, clean, and safe."

(2) For the reliability component:

The scale retains the original five variables, non-changes or additional variables.

(3) For the Response component: includes four variables, adding the variable "In addition to the main curriculum, the school also has many attractive extracurricular activities (informatics activities, foreign languages, martial arts, dancing, outdoor activities...)"

(4) For the service capacity component: Keep the four variables unchanged.

(5) For the sympathy component:

Including four variables, increased by one variable. In particular, besides feeling the school's sympathy through the school's interest in soliciting student opinions, respecting student interests, and having many policies to encourage learning, students also care about The school arranging a reasonable schedule and study time (to create conditions for



students to work part-time). Therefore, the official scale has added one more variable: "The school arranges a reasonable schedule and convenient study time for students."

(6) For the Career Guidance component: In addition to the initial five variables, creating group work skills for students is also very important. The best thing is for students to work in groups on subjects. Therefore, the scale officially added the variable "Students can work in groups in subjects".

### Satisfaction scale

The satisfaction scale based on Ryglová and Vajčnerová (2005) [12] for the quality of services provided by the school includes three variables, thereby measuring the level of student satisfaction with the school's actual training quality of services compared to student expectations and the tendency to promote and introduce others to study at the school. The scale used is also a 5-point Likert scale. Observed variables in the satisfaction scale includes:

- 1) You are completely satisfied with the quality of training services at the school.
- 2) Quality of training services meets your expectations.
- 3) You will advise your relatives and friends to study at the school.

Thus, the official scale (33 variables) has more than five variables to the preliminary scale. The scale used is a 5-point Likert scale with two extreme points of negative (completely disagree) and positive (completely agree). The official ladder is as follows:

**Table 1. Factors of tangible facilities**

Code	Tangible Means	Resource
HH1	HH1. The school's landscape is spacious, spacious, airy and clean	The scale is obtained by adjusting from the SERVPERF scale
HH2	HH2. The theory classroom is spacious and airy	
HH3	HH3. Modern practice classroom	
HH4	HH4. The library has a large space and rich documents	
HH5	HH5. Other support services at the school are good (canteen, parking lot, health care, dormitory, v.v.)	
HH6	HH6. Teachers' uniforms are beautiful, polite and appropriate	
HH7	HH7. The school's website is beautiful and always updated with new and complete information.	

**Table 2. Response Factors**

Code	Response	Resource
DU1	DU1. Teachers are dedicated, enthusiastic, and ready to answer students' questions.	The scale is obtained by calibrating the scale SERVPERF
DU2	DU2. Department staff quickly and promptly resolve legitimate requests for students.	
DU3	DU3. Students can easily receive accurate answers to their legitimate questions from relevant departments in the school.	
DU4	DU4. In addition to the main curriculum, the school has many attractive extracurricular activities.	

**Table 3. Empathy Factors**

Code	Sympathy	Source
CT1	CT1. The legitimate interests of students are always respected by the school.	The scale is obtained by adjusting from the SERVPERF scale
CT2	CT2. The school arranges convenient study time for students.	
CT3	CT3. The legitimate interests of students are always respected by the school.	
CT4	CT4. The school arranges convenient study time for students.	

**Table 4. Factors in Career Guidance**

Code	Career guidance	Source
NN1	NN1. The school has many links with businesses	The scale is obtained by calibrating from the scale SERVPERF
NN2	NN2. The school organizes internships for final-year students at businesses	
NN3	NN3. The school organizes consulting sessions on learning methods and majors	
NN4	NN4. The school has established a career counselling club and regularly organizes counselling sessions for students on job search skills.	
NN5	NN5. The school regularly organizes exchange sessions with businesses	
NN6	NN6. Students work in groups on subjects	
NN6	NN1. The school has many links with businesses	

**Table 5. Satisfaction Factors**

Code	Satisfaction	Source
HL1	HL1. You are completely satisfied with the training quality at the school.	The scale is obtained by calibrating from the SERVPERF scale
HL2	HL2. Training quality meets your expectations.	
HL3	HL3. You will advise your relatives and friends to study at the school.	

**Table 6. Trust Factors**

Code	Trust	Source
TC1	TC1 The school's training plan, timetable, and exam schedule are stable	Keep the same as the preliminary scale
TC2	TC2. The school's information is always accurate and timely	
TC3	TC3. Teachers teach according to the published curriculum and teaching schedule.	
TC4	TC4. Teachers give exam questions and grade accurately and clearly.	
TC5	TC5. Examination organization is a serious	

**Table 7. Service Capacity Factors**

Code	Satisfaction	Source
NL1	NL1. Teachers have deep, broad, and practical knowledge about the subjects they teach	Keep the same as the preliminary scale
NL2	NL2. Teachers have easy-to-understand teaching methods and communication skills.	
NL3	NL3. Employees have high professional qualifications	
NL4	NL4. Staff have a polite and gentle attitude towards students	

### Preliminary assessment of the scale

The scale evaluation was preliminarily evaluated based on two main tools: The Cronbach alpha reliability coefficient and the EFA exploratory factor analysis method. Use Cronbach alpha coefficient first to remove variables with total correlation coefficients less than 30. The scale selection criteria is an alpha reliability of 60 or higher (Nunnally & Burnstein, 1994).

Next, variables with a factor loading of less than 50 are eliminated based on the method EFA. The coefficient extraction method used is principal components with varimax rotation and stopping point when extracting factors with an eigenvalue of 1. The Do scale is accepted when the total variance extracted is equal to or greater than 50% (Gerbing & Anderson, 1988).

### The Cronbach alpha reliability coefficient

According to Nguyen Dinh Tho (2013), evaluating the reliability scale is based on Cronbach's Alpha coefficient. Use Cronbach's Alpha reliability coefficient method before analyzing the EFA factor to eliminate inappropriate variables because these variables can create spurious factors. The Cronbach's Alpha reliability coefficient only indicates whether



the measurements are linked to each other or not. However, it does not indicate which observed variables need removing or retaining. Then, calculating the correlation coefficient between the total variables will help eliminate observed variables that do not contribute much to the necessary concept description. To evaluate whether a scale is appropriate, based on Cronbach's Alpha coefficient according to Table 8.

**Table 8. Cronbach's Alpha value levels**

Cronbach alpha coefficient	Goodness of fit	Notes
Nhỏ hơn 0,6	Not suitable	Maybe that environment hasn't been felt yet. Brand new problem example
0,6-0,7	Accepted	New study
0,7-0,8	Accept	
0,8-0,95	Good	
Lớn hơn 0,95	Good	Reconsider variable duplication

*Resource: Nguyen Dinh Tho (2013)*

The analysis results show that Cronbach's Alpha coefficient of the scale is higher than 0.6 when the accepted scale. Continues to consider inappropriate variables by using the total variable correlation coefficient. The movement of variables happens when their total variable correlation coefficient is lower than 0.3. The total variable correlation coefficient is higher than 0.3 when the movement of the variable does not act.

In this study, the authors selected factors with reliability above 0.6 and total variable correlation greater than 0.3.

### Exploratory factor analysis

Exploratory factor analysis EFA is commonly used to evaluate scale values or reduce a set of variables that belongs to the group of interdependent multivariate analysis, meaning there are no dependent and independent variables, only relying on the correlation between variables. Factor analysis is applied to summarize the set of observed variables into measuring factors for properties of study concepts. Criteria for applying and selecting variables for EFA exploratory factor analysis include: - KMO coefficient standard (Kaiser – Meyer – Olkin) is an index used to consider the integration of factor analysis. The value of KMO must reach  $0.5 \leq KMO \leq 1$  is a sufficient condition for factor analysis to be appropriate. If  $KMO < 0.5$ , factor analysis is not fit for the study data set (Nguyen Dinh Tho, 2013). The Bartlett criteria help evaluate whether the exploratory factor analysis is good or bad and whether it is appropriate to carry out further steps.

If Sig Bartlett's Test is lower than 0.05, then exploratory factor analysis can be used. If Sig Bartlett's Test is higher than 0.05, then exploratory factor analysis cannot be used (Nguyen Dinh Tho, 2013). Factor extraction criteria include the Eigenvalue index (representing the variation amount explained by factors) and the Cumulative index (the total variance extracted shows how much factor analysis explains and is lost). Factors with Eigenvalue  $< 1$  do not summarize information better than the original variable (latent variable in the scales before EFA). Extract factors at a high Eigenvalue ( $>1$ ) and a total extracted variance higher than 50% are accepted. However, whether or not to eliminate an observed variable is not only based on the factor loading weight but also must consider the content value of that variable. The variable has a low factor loading weight or is extracted into different factors with low weight differences and makes a high contribution to the content value of the concept it measures when elimination is not necessary [13].

In this case, the study sample size is 100 samples. The scales with Cronbach's Alpha value  $\geq 0.6$  should be ensured, eliminating observed variables with total variable correlation  $< 0.3$  to ensure the reliability of the analysis results. In EFA analysis, the authors use the Principal Components extraction method with varimax rotation, eliminating observed variables with factor loading values  $\leq 0.5$  or extracting other factors with the difference in factor loading  $\leq 0.5$  or deducted from other factors where the difference in factor loading between factors is  $\leq 0.3$  according to the standards of Nguyen Dinh Tho (2013). The factors are also impacted by culture [14-16].



### Inclusions

The central role of the learner is featured. Student satisfaction is important and needs the highest priority because they are customers. This study has only built a set of scales to evaluate learners' satisfaction with their school based on the Cronbach alpha reliability coefficient, exploratory factor analysis, original scales, official scales, satisfaction scales, tangible means factors, responsiveness factors, empathy factors, career guidance factors, factors of satisfaction, factors of trust, and factors of service capacity. This result will be valued autonomous schools.

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