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Analysis of the Students' Expectations for a Private Higher Education Using Quality Function Deployment Method

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Abstract

Education is a factor that determines an important role in the development of science and technological progress should be increased to encourage institutions to provide education services and good performance to educational users in order to produce quality individuals. Student satisfaction is also determined on the students' perceptions of educational outcomes and learning environments to fulfil their future expectations. Therefore the level of quality of education service system must always be improved. The way that can be done is by trying to know and understand student expectations and perceptions in accordance with the guidelines of the National Standards of Higher Education. This study aims to analyze the quality of services of a Private Higher Education in Medan assessed by 139 students. Analysis of service quality is done by using QFD method, with the method of data collection of questionnaire distribution. Based on the result of research, it is obtained that there are 19 identity of student requirement. Based on the results of QFD, the service variables that become the priority of the campus service system improvement plan in order to improve the service satisfaction is the Reliability variable "A service is done quickly according to the time specified" with weight value 6,148%. In such away, private universities should pay attention to 18 other identities to achieve student expectations.

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Key-word: - QFD, Expectation, Higher Education, Services.

1. Introduction

This globalization era, variety of goods and services is offered due to MEA (ASEAN Economic Community) era and technological developments. This situation leads to ascending consumer expectation and continuous changes in expectations. Education is important for the prosperity, progress and development of a country. Education is a factor that determines an important role in the development of science and technological progress should be increased to encourage institutions to provide education services and good performance to educational users in order to produce quality individuals. In fact, that student satisfaction should be taken seriously. Student satisfaction is also determined on the students' perceptions of educational outcomes and learning environments to meet their future expectations. Therefore the level of quality of education service system must always be improved. The way that can be done is by trying to know and understand student expectations and perceptions in accordance with the guidelines of the National Standards of Higher Education. Quality of service is a very important factor and has become a central issue in this era. In accordance with Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia No. 44 of 2015 on National Standards of Higher Education that in order to achieve national education objectives, through quality improvement efforts, the number, types and the specification based on the ratio of facilities usage in accordance with the characteristic of methods and way of learning, and have to ensure the implementation of the learning process and academic administration services. By this aspect it is known that the government plays an important role in encouraging national education through various rules and provisions in force.

Customer's satisfaction will be achieved if the company's performance meets the desires of consumers and even exceeds those expectations. If customer satisfaction can be fulfilled, consumers will be loyal and will not hesitate to promote the product. GAP analysis is used as a business evaluation tool that focuses on performance gaps. GAP analysis is used to measure the gap between consumer perceptions and expectations and to identify the actions needed to enable companies to reduce inequalities and achieve expected performance in the future.

Private University is educational institution that has principles basic must be able to fulfil the demands and meet the needs of stakeholders including students. Increasing of the productivity of a private University becomes the main benchmark for the progress that achieved by a private university, so that the element of student needs must be fulfilled as a supporter of the results they get. Therefore, an analysis of the quality of private university education services is made in order to gain an understanding of the extent to which student satisfaction on the service of a university. The demands of the minimum standard of higher education become the minimum standard for the management of a university, but private University still has an obstacle to be faced such as service performance (infrastructure facilities, learning management and others). Therefore, through this research is expected to see the students' assessment towards the services of private university.

2. Methodology

Based on the identification of problems that have been explained, the purposes of these studies are as follows, Knowing the characteristics of what educational services are provided by the campus, Formulate the wishes and needs of students and measure the level of student satisfaction of educational services provided by the campus and to know what attributes still require attention based on the National Standards of Higher Education that need to be improved by applying the Quality Function Deployment (QFD) method. The study was conducted at a private Higher Education address at Jalan Amaliun Medan, North Sumatera.

The variables observed in this study are the quality of service applied by the campus to fulfil the National Standards of Higher Education especially on the National Education Standards, the method used is QFD (Quality Function Deployment) method is used to satisfy students as consumers and then translate the consumer demand. This analysis is used to be able to know attributes of customer desire that will be connected with characteristic of service quality so that will produce the correlation between customer desire relationship with service characteristic in relationship matrix, and determine which have strong relation, medium, weak, and do not have Relationship, then in the correlation will be obtained value targets that will be used as a priority level in the development, improvement and control of each characteristics of service quality to customers.

The variables used in the study are based on the provision of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 44 of 2015 on National Standards of Higher Education which specifically discusses only the National Education Standards. Of the eight National Education Standards mentioned, it will then be grouped according to the five dimensions of service quality (Yamit, 2013), namely:

- A. Tangible, (direct evidence)
- B. Reliability, (reliability)
- C. Responsiveness, (catch power)
- D. Assurance, (collateral)
- E. Empathy

The research variables were included in the research instrument that is questionnaire. The questionnaires used are based on the open questionnaire (questionnaire) and the closed questionnaire (rating scale questionnaire). In this research the sample is using Probability sampling method. The probability sampling used is stratify Random Sampling (sample random sample), the sample in this study is 50% of the total population, which is as many as 139 people or ($n = 287 \times 50\% = 139$), then rounded up to 139 people or respondents. The data collection method used is the 2 types of questionnaires to 139 students. To determine the allocation of the sample is balanced with the size of the strata. Calculation of sampling technique using sampling formula (1) Fraction per Stratum (Rusiadi, et all, 2014) that is:

$$f_i = \frac{N_i}{N} \quad (1)$$

Then we get the sub sample per stratum:

$$n_i = f_i \cdot n$$

Where:

f_i = sampling fraction cluster

N_i = the number of individuals in the cluster

N = total population

n = number of members entered into the sample

n_i = number of members entered into sub samples

The size of the sample drawn from each stratum is shown in Table 1

Table 1. Sampel Stratum

No	Class	Sampel
1	I	10 persons
2	II	13 persons
3	III	11 persons
4	IV	10 persons
5	V	14 orang
6	VI	9 persons
7	VII	10 persons
8	VIII	11 persons
9	IX	12 persons
10	X	14 persons
11	XI	10 persons
12	XII	15 persons
Total		139 persons

Data Analysis Method

The development of the House of Quality matrix is based on the development of campus service characteristics, of which the HoQ here will be filled out based on previously obtained data. Development of HoQ matrix is done by stages:

1. Identify customer requirements that contain customer needs variables, which this variable is derived from the results of closed questionnaires.
2. Develop a planning matrix, is the result of calculations of some types of data obtained from the previous process.
3. Determine the characteristics of service, which will be obtained from the results of interviews and discussions with the campus management.
4. Establish the level of relationship between service characteristics and customer needs. The level of relationship in question will start from the scale of strong, medium, weak, and not related at all.
5. Determining design priority service characteristics obtained based on absolute level of weight (TKA) or weight of relative importance level (TKR).
6. Establish the relationship between the characteristics of services provided by the private Higher Education campus.
7. Build a House of Quality matrix developing the characteristics of Private Higher Education services, which the HoQ will populate based on the data already obtained in the previous steps.

3. Results and Discussion

After determining the purpose designing of development service characteristic and the function of terms in service processed, then the next stage is the process of designing the development of service characteristics to improve the quality of service on campus. In the process of designing service characteristics, not all variables of needs are fulfilled immediately, but it must see what service priorities are in the first. This can be seen based on the gap between the level of interests and needs. Method of QFD is the instrument used to make improvement process to developing characteristic of service on campus (Formation of House of Quality matrix). There are several stages that need to be implemented in the process of developing characteristics of service on campus. Here are the steps that will be done in the process of forming the HoQ matrix.

Identify Visitor Needs

Identification of student needs can be seen based on the results of questionnaires spread, can be seen in table 2. Based on the results, it found that there are 19 variables that student's needs, and all of that are mentioned in provision of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 44 of 2015 on National Standards of Higher Education which specifically discusses only the National Education Standards. It shows that facilities and infrastructure and also services are very important things to the students.

Table 2. Identity of Student Needs

No	Variables
1	Comfortable class room for studying
2	Available of WIFI for studying
3	Available of variety foods at Canteen
4	Be secure and comfort for parking area
5	Be easily for computer access at laboratory
6	Available of various books at library
7	Cleaning restroom area
8	Problem response from staffs
9	seriously for service response
10	Quick and high response service
11	Staffs give best response of problem occurrence
12	Accurately and quickly response of information
13	Best service and response for all transaction
14	Guarantee of health and safe
15	Be polite and patient for giving service
16	Give a safely for students
17	Be easy for information service
18	Be attention for students
19	Equal of social status for giving service

Source: Result of data processing

Organize a Planning Matrix

The planning matrix in HoQ is placed in part B of the HoQ matrix. The organizing of the planning matrix is done to get the order of the student's priority variable or needs that will be cultivated by the campus. This planning matrix is the result of calculation of some data types and therefore in organizing it will take several stages, namely: Setting level of Satisfaction (Performance). The mean value of satisfaction level (performance) in variable 1 is calculated based on the formula:

Mean value of performance level of variable-i = (total value of variable-i) / (number of respondent)

Mean value of performance level of variable 1 = 514/139

The mean value of service quality of variable 1 is = 3,698

The result of mean calculation for each service quality variable can be seen in Table 3.

Table 3. Mean calculation of service performance level

No	Variables	Mean
1	Comfortable class room for studying	3,698
2	Available of WIFI for studying	3,535
3	Available of variety foods at Canteen	3,023
4	Be secure and comfort for parking area	3,674
5	Be easily for computer access at laboratory	3,581
6	Available of various books at library	3,419
7	Cleaning restroom area	3,465
8	Problem response from staffs	3,558
9	seriously for service response	3,326
10	Quick and high response service	3,233
11	Staffs give best response of problem occurrence	3,721
12	Accurately and quickly response of information	3,628
13	Best service and response for all transaction	3,488
14	Guarantee of health and safe	3,791
15	Be polite and patient for giving service	3,907
16	Give a safely for students	3,930
17	Be easy for information service	3,605
18	Be attention for students	3,535
19	Equal of social status for giving service	3,977

From the results, it showed that variable number 15, 16 and 19 have the higher mean number compared to the others. It means that excellent service is needed to meet the customer satisfaction. Beside, according to the provision of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 44 of 2015 on National Standards of Higher Education, management and services should be provided by private higher education to meet the requirement of good institution.

Setting Needs Level (Expectations)

Mean value of expectation variable 1 = (total value of variable-i) / (number of respondents)

Mean value of variable expectation level 1 = 633/139

Mean value of expectation variable 1 = 4,554

The result of the calculation of mean expectation level for each variable of service quality on campus can be seen in table 4.

Table 4. Calculation of Mean and Modus Needs Level (Expectations)

No	Variables	Mean	Modus
1	Comfortable class room for studying	4,554	5
2	Available of WIFI for studying	4,442	5
3	Available of variety foods at Canteen	3,814	5
4	Be secure and comfort for parking area	4,558	5
5	Be easily for computer access at laboratory	4,535	5
6	Available of various books at library	4,581	5
7	Cleaning restroom area	4,395	5
8	Problem response from staffs	4,535	5
9	seriously for service response	4,419	5

10	Quick and high response service	4,488	5
11	Staffs give best response of problem occurrence	4,395	5
12	Accurately and quickly response of information	4,442	5
13	Best service and response for all transaction	4,372	5
14	Guarantee of health and safe	4,512	5
15	Be polite and patient for giving service	4,512	5
16	Give a safely for students	4,558	5
17	Be easy for information service	4,581	5
18	Be attention for students	4,419	5
19	Equal of social status for giving service	4,512	5

Setting the Target Value of Service Quality Levels Facing the Campus

The target value in question is the value of the most common mode or value obtained from the results of the questionnaire to the students and is expected to have a higher value from the level of service quality for each variable of the needs. The mode values of each variable can be seen in table 4.

Calculates the Improvement Ratio for each requirement level variable

The value of improvement ratio shows a measure of campus effort to do service quality improvement on each level variable of students needs. As for how to calculate the value of this improvement ratio is as follows:

Value of improvement ratio1 = (target level of upcoming service quality1) / (level of service quality now1)

Value of improvement ratio1 = 5 / 4.554 = 1.097. The calculation result of improvement of ratio value for each requirement variable can be seen in table 5.

Table 5. Improvement Values and Sales Point for Each Required Variable

No	Variables	Value of Improvement Ratio	Sales Point
1	Comfortable class room for studying	1,097	1,2
2	Available of WIFI for studying	1,126	1,2
3	Available of variety foods at Canteen	1,311	1,2
4	Be secure and comfort for parking area	1,097	1,2
5	Be easily for computer access at laboratory	1,103	1,2
6	Available of various books at library	1,091	1,5
7	Cleaning restroom area	1,138	1,2
8	Problem response from staffs	1,103	1,2
9	seriously for service response	1,132	1,5
10	Quick and high response service	1,114	1,5
11	Staffs give best response of problem occurrence	1,138	1,0
12	Accurately and quickly response of information	1,126	1,2
13	Best service and response for all transaction	1,144	1,2
14	Guarantee of health and safe	1,108	1,2
15	Be polite and patient for giving service	1,108	1,0
16	Give a safely for students	1,097	1,0
17	Be easy for information service	1,091	1,2
18	Be attention for students	1,132	1,2
19	Equal of social status for giving service	1,108	1,0

Establish a "sales point" for each requirement variable

In this stage sales point will be obtained to campus service for the future that will bring the satisfaction of the visitors. In this stage, the campus is faced on the decision to choose the most influential variables that have no effect on the profit increase. So then we need a priority scale that used 3 scales, they are:

- 1.5: given to variables that greatly affect the increase in profits for the campus.
- 1.2: given to a variable that if met will affect the increase in profits for the campus.
- 1.0: given to a variable of need which is considered not to have an effect on the campus advantage.

The size of the sales point value for each requirement variable is determined based on considerations, namely:

1. There is a large gap that occurs between the levels of campus service now with the level of needs (expectations) of students.
 2. Strategic plan of the Private Higher Education.
 3. The situation of competition between campuses in the future.
 4. Capability possessed by Private Higher Education.
- The big sales point value for each variable can be seen in table 5.

Calculating the Value of Planning (Absolute) for Each Variable of Requirement

The value of the planning is calculated by multiplying the data of the visitor's expectation value, the value of the improvement ratio and the value of the sales point.

Value of planning1 = (student expectation value - 1) x (value of variable improvement ratio - 1) x (sales point variable -1)

The value of the planning1 = 1.097 x 4.554 x 1.2

Value planning1 = 6.0

The calculation result of absolute value of planning (absolute) for each variable can be seen in table 6.

Table 6. The results of the absolute and Relative values calculation for each variable

No	Variables	Absolute value	Relative Value
1	Comfortable class room for studying	6,0	4,918
2	Available of WIFI for studying	6,0	4,918
3	Available of variety foods at Canteen	6,0	4,918
4	Be secure and comfort for parking area	6,0	4,918
5	Be easily for computer access at laboratory	6,0	4,918
6	Available of various books at library	7,5	6,148
7	Cleaning restroom area	6,0	4,918
8	Problem response from staffs	6,0	4,918
9	seriously for service response	7,5	6,148
10	Quick and high response service	7,5	6,148
11	Staffs give best response of problem occurrence	5,0	4,098
12	Accurately and quickly response of information	6,0	4,918
13	Best service and response for all transaction	6,0	4,918
14	Staffs guarantee of health and safe	6,0	4,918
15	Be polite and patient for giving service	5,0	4,098
16	Give a safely for students	5,0	4,098
17	Be easy for information service	6,0	4,918
18	Be attention for students	6,0	4,918
19	Equal of social status for giving service	5,0	4,098

Calculating Relative Planning Value for Each Level of Needs (expectation)

To calculate the relative values, it can be calculated by using the following formula:

Relative Value Requirement₁ = (Absolute Value Requirement₁) / (Total Absolute Value Requirement) x 100%

For the variable needs 1 = $6/122 \times 100\% = 4.918\%$.

The calculation results of the relative value of planning values for each variable can be seen in table 6.

Based on the calculation of the relative value of the above table to all dependent variable needs, it can be seen that the variables to 6, 9, and 10 are available books in the library is complete, the service provided shows seriousness in handling problems that occurred, the service is done quickly according to the specified time of 6.148% and ranked first. This means that the 6th, 9th, and 10th variables are the main priority for the campus in order to improve the quality of its services.

Organize a Planning Matrix

The next step in HoQ development is to establish the service characteristics needed by Campus to fulfill each variable of the students' needs. The service characteristics required by Campus to fulfil the needs of visitors can be seen in table 7.

Table 7. Service characteristic needed by Campus to fulfil the needs of visitors.

No	Variables	Characteristic
1	Comfortable of Class room	Comfortable of Study process
2	Wi-Fi	Easily for access
3	Condition of Canteen	Cleanliness
4	Secure of parking area	Having security officer
5	Condition of Computer laboratory	Hospitality of Computer Laboratory's Assistant
6	Condition of Library	Fascilities of books
7	Condition of Rest room	Comfortable
8	Staffs response to handling problem	Good communication to consumers
9	Seriously for service response	Hospitality to Consumers
10	Staffs Accurately of service response	Have a good knowledge for problem response
11	Be a problem solver	Take response for a problem rapidly
12	Quick and high response for Information	Easily to access the information
13	Easily transaction	Available of electronic payment
14	Guarantee of Health and safe	Available for insurance
15	Polite and patient staffs	Be patient for service
16	Consumer secure	Available of CCTV
17	Easily for Information	Giving a solution to Consumers
18	The attention of staffs for students	Rapidity towards problem solving
19	Equal of social status for giving service	Staffs hospitality

Established the level of relationship between service characteristics and visitor needs

Level of relationship will start from a strong, moderate, weak, and unrelated scale. Assessments are given under the following rules:

- Value 9: Shows a strong relationship
- Value 3: Shows a moderate relationship
- Value 1: Shows a weak relationship
- Value 0: Shows no relationship at all

The determination of this level of relationship is determined based on interviews and discussions with the campus. The determination of the value that states the degree of relationship can be seen in the HOQ matrix.

Define Priority of Service Characteristic Design

Priority design of service characteristics is obtained based on absolute level (TKA) or relative importance value (TKR) by using the following formula:

$$TKA_i = \text{relation } ij \times \text{relative weight}$$

For more details, calculations for determining TKA from campus can be seen in table 8. Decision tree can be seen in figure 3.

Table 8. Calculation of Foreign Workers For Characteristics

No	Variables	Fast Services	Relative Values	Characteristics x Relative Values
1	Comfortable class room for studying	0	4,918	0
2	Available of WIFI for studying	0	4,918	0
3	Available of variety foods at Canteen	0	4,918	0
4	Be secure and comfort for parking area	0	4,918	0
5	Be easily for computer access at laboratory	0	4,918	0
6	Available of various books at library	3	6,148	18,444
7	Cleaning restroom area	0	4,918	0
8	Problem response from staffs	0	4,918	0
9	seriously for service response	1	6,148	6,148
10	Quick and high response service	9	6,148	55,332
11	Staffs give best response of problem occurrence	0	4,098	0
12	Accurately and quickly response of information	0	4,918	0
13	Best service and response for all transaction	0	4,918	0
14	Staffs guarantee of health and safe	0	4,918	0
15	Be polite and patient for giving service	0	4,098	0
16	Give a safely for students	0	4,098	0
17	Be easy for information service	0	4,918	0
18	Be attention for students	0	4,918	0
19	Equal of social status for giving service	0	4,098	0

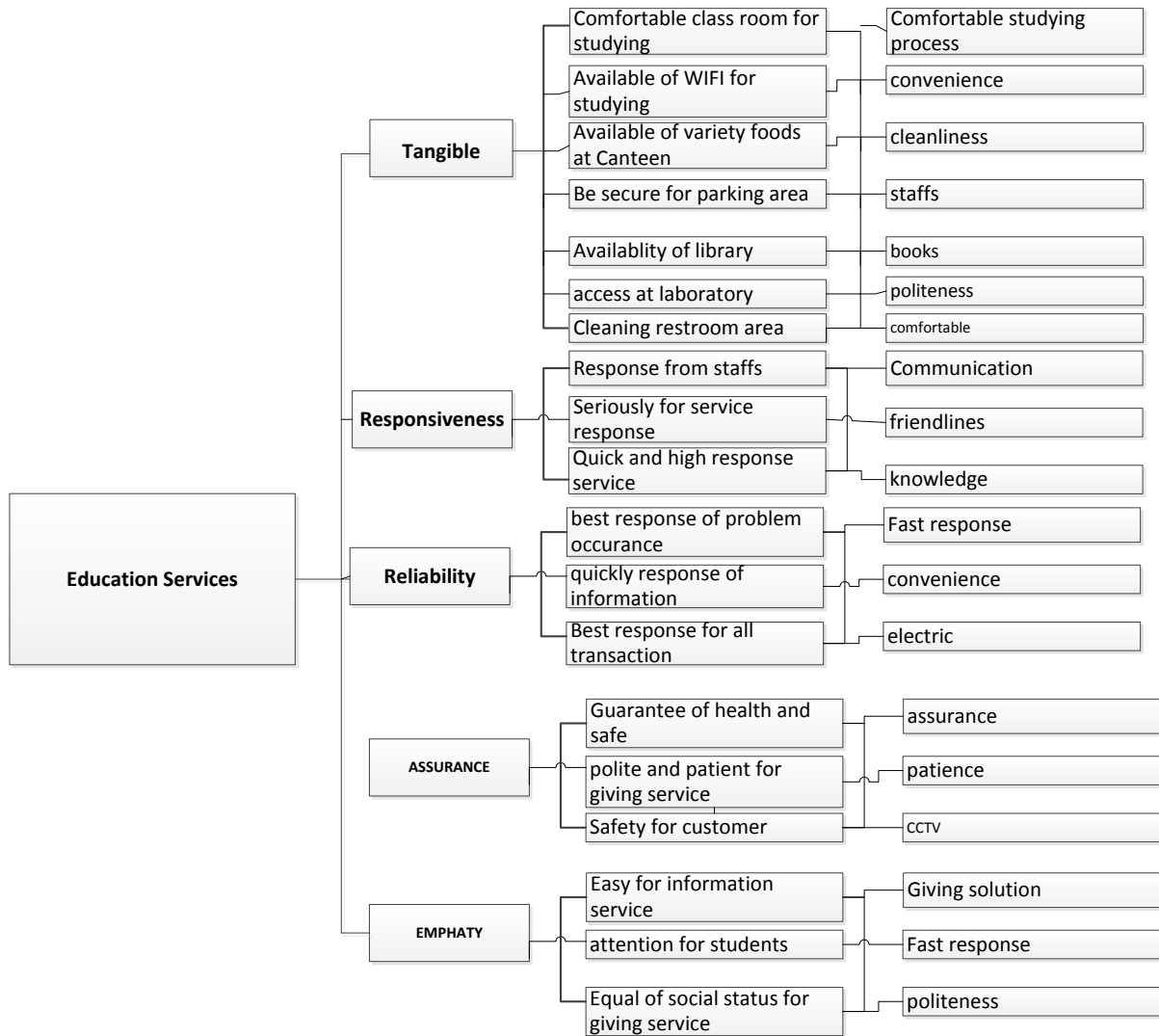


Figure 3. Decision tree

Establish Relationship to Service Characteristics

In this stage is established the relationship of each characteristic to analyze if there is contradictory relationship between the service characteristic (negative).

To illustrate the level of relationship between each of the characteristics of services used symbols as follows:

- : The level of positive relationship is strong
- : Positive relationship level is moderate
- Empty: No relationship
- ▲: The level of negative relationship is strong
- △: Medium negative relationship level

Level of relationship between each service characteristics can be seen in figure 4.

Building a House of Quality Matrix (HoQ) Characteristic Development of Education Services.

Based on the data that has been obtained in the previous step in the formation of this HoQ matrix, then the next HoQ matrix can be made. The HoQ matrix can be seen in figure 4. From the figure 4, it showed that comfortable class room for studying has strong relation with comfortable studying process. In addition, services that have been given such as cleanness, politeness of staffs, availability of books in library, good communication, and knowledge to solve problem, fast response, easy access, availability of electronic payment were strong relation forgetting the minimum requirements of good higher education according to Minister of Research, Technology and Higher Education of the Republic of Indonesia. On the second floor of the house of quality named as technical requirements section take places, it technical requirements show how student expectations can be met in technical sense (Adheye, 2013; Eylem, 2015).

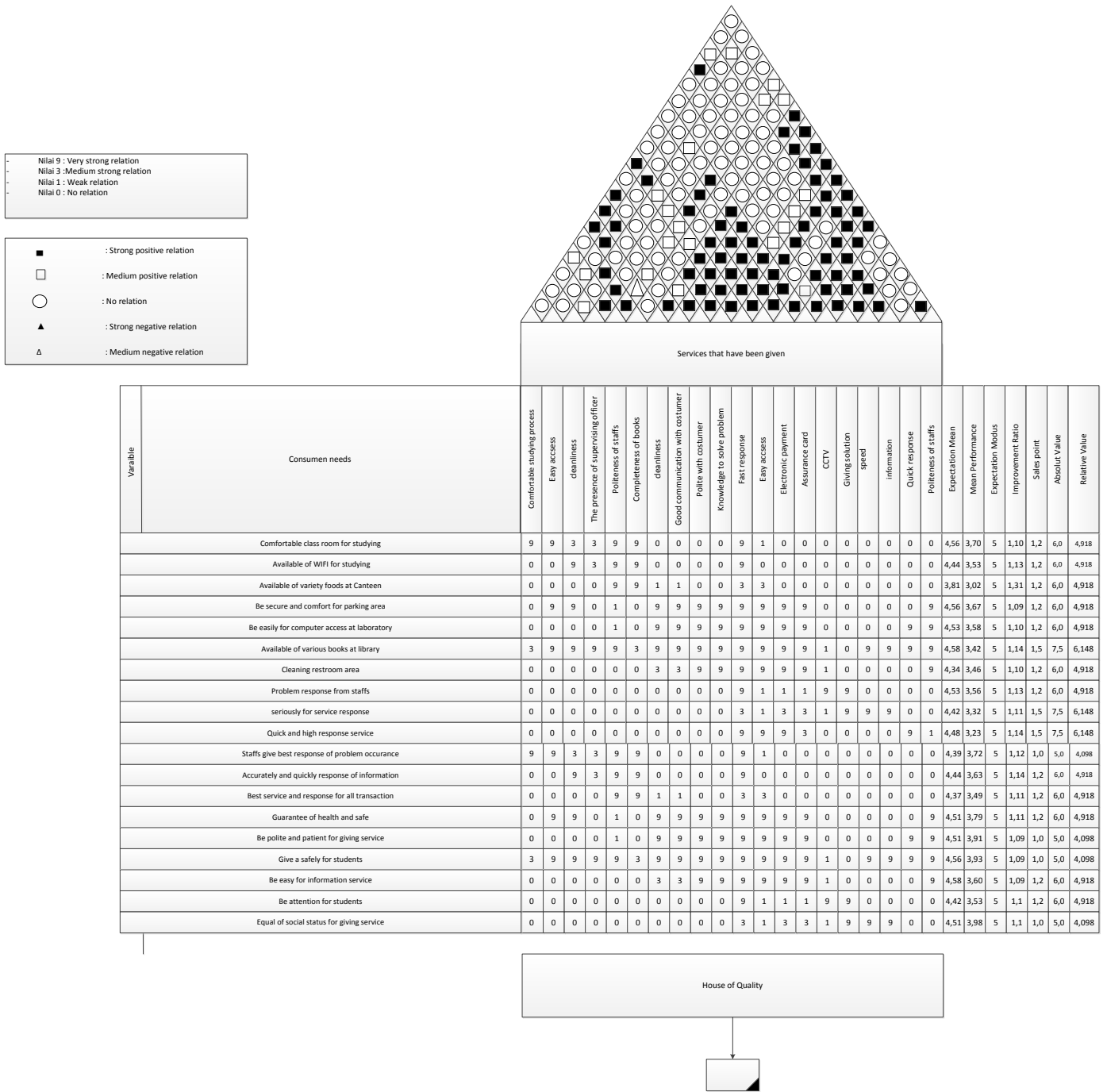


Figure 4. The House of Quality Matrix

4. Conclusion

Based on the results of data processing and analysis carried out, it concluded that there are as many as 19 service variables desired by students to campus services. Based on the results of QFD, service variables that become the priority of the campus service. Improvement plan system in order to improve the service satisfaction is the reliability variables "Service performed quickly according to the time specified" with a relatively high value of 6.148%.

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