International Journal of Research in Engineering, Science and Management
Volume-2, Issue-1, January-2019
www.ijresm.com | ISSN (Online): 2581-5792

An Efforts to Improve Service of Angkasa Aviation Academy Flying School Using Quality Function Deployment Method

Denny Hadianto[1], Alfa Omega Hutagalung[2], Humiras Hardi Purba[3]
[1,2,3]*Master of Industrial Engineering, Mercu Buana University, Jakarta, Indonesia*

***Abstract*: This study aims to identify the characteristics of service quality that expected by students of Angkasa Aviation Academy flying school who have graduated in stage ground training and have been studying in stage flight training in getting services before and during the education period. It determines the gap between perceived quality and service quality expected by students also make a plan to improve service quality at the Angkasa aviation academy flying school in order to build continuous improvement. Survey research methods for pilot school services to be input about students' wishes and expectations and the level of satisfaction experienced by students. Furthermore, technical parameters are prepared to respond to the wishes and expectations of students. The data and information are processed and analyzed using the Quality Function Deployment method using the House of Quality matrix. Based on the results of the QFD analysis, it can be concluded that there are five priorities that can be done to improve and develop the services of Angkasa Aviation Academy. They are 1) Improving school facilities and infrastructures, 2) Establishing health services or establishing cooperation with external health agencies, 3) Establishing counseling and integrated services, 4) Improving graduation production programs for student pilots, 5) Establishing of service excellent training for instructors and staff, 6) Improving supervision and evaluation the compliance of syllabus with the Training Procedure Manual.**

***Keywords*: Quality Function Deployment, House of Quality, Flying School, Service Quality**

1. Introduction

The rapid advancement of flying schools in Indonesia is increasingly tight in attracting prospective pilots. Flying schools must be able to provide quality services in satisfying the needs and desires of pilot students to compete with other flying schools. According to Brata (2004), good quality service is to have a professional workforce, the availability of good facilities and infrastructure, the availability of the desired products (services), and the ability to serve quickly [1]. Angkasa Aviation Academy is one of the flying schools in Indonesia established in 2010. It was created with a strategy to design and market a variety of flying school products. The first product group was oriented to three airlines incorporated in one Group. Angkasa Aviation Academy have three offices, one head office for stage ground training and two base offices for stage flight training located at the office of the class III Airport of Cirebon Cakrabhuwana Airport and the office of the class I Airport Tjilik Riwut Airport, Palangka Raya. Until 2018, Angkasa Aviation Academy has graduated 483 student pilots and they signed contracts with one of the largest airline groups in Indonesia. Angkasa Aviation Academy committed to provide quality services in a professional, innovative, and caring manner also completing the effectiveness of the quality management system continuously. However, there are still some problems and complaints from student pilots towards the services in the Angkasa Aviation Academy. Based on the result of students' interview, their problems are during stage ground training and stage flight training. They are including the shuttle service from their dormitory to the Airport, health service during flight training stage, suitability of education period, and so on. Therefore, in the continuous improvement efforts towards school services, Angkasa Aviation Academy requires a process of continuous improvement, planning, and service improvement that oriented towards customer satisfaction to improve school services. The Quality Function Deployment method is appropriate to implement since it suitable with the principles that mentioned above. Quality Function Deployment is a quality improvement method that oriented to customers' needs. This method identified Voice of Customers used as the main input in the preparation of House of Quality. The implementation of the Quality Function Deployment method is expected to greatly assist the Angkasa Aviation Academy management in carrying out quality functions of service for student pilots.

2. Literature review

A. Service quality

According to Parasuraman et, al., (1994), services define economic activities that produce time, place, form or psychological use. Furthermore, the quality of service is the customer's perception of the superiority of a service. Only customers assess the quality of service of a quality company or not. [2]. Based on the definition above, it can be said that service quality can be measured by good quality through a comparison between services offered and the perception of

customer acceptance whether it is in accordance with customer expectations or not. The perception of quality of service depends on the ability of service providers to satisfy the expectations of their customers consistently.

B. Dimension of service quality

Leonard Berry, A. Parasuraman, and Valerie Zeithmal found that there are five factors of service quality in the order of the level of customer importance as follows [4]:

- *Reliability:* This means the ability of educational institutions to carry out the promised services accurately and reliably.
- *Responsiveness:* This means the willingness and ability to help service users (students, stakeholders, and the community) and respond to their requests quickly.
- *Assurance:* Assurance include knowledge, competence, politeness, and respect for students. Assurance are trustworthy, free from danger and doubt, workers' knowledge and politeness and their ability to generate assurance and trust in service users (students, stakeholders, and society).
- *Empathy:* This means that educational institutions are willing to care for service users and giving personal attention to service users (students, stakeholders, and the community) and have comfortable operating hours.
- *Tangibles:* This means to the appearance of physical facilities, equipment, personnel, and communication materials

C. Quality function deployment

Leonard Berry, Generally, Quality Function Deployment is a tool or method used to focus attention on things that become the needs and desires of consumers in preparing service standards. According to Cohen (1995), Quality Function Deployment is a method used to develop and plan products in order to make the developer team can specify in detail customer needs and desires [5]. According to Daetz (1995), Quality Function Deployment is a systematic planning process created to help companies manage all the elements needed to define, design, and create products or provide services that can meet customer needs [6]. Ermer (1995) stated that Quality Function Deployment in a quality improvement method that is based on the search for input directly from consumers for further consideration of how to meet these inputs [7]. Quality Function Deployment is used to capture the voice and desires of the customer, then convert them into the right strategy and the products and processes needed. Customers' expectations are put into specific needs into strategic planning and engineering actions. Technical actions performed in Quality Function Deployment include four main processes. They are product planning, design planning, process planning, and production planning. These processes are a structured and systematic process arrangement, which makes it easy for the technician to realize the customers' desires correctly. Each process is sequential and continuous each other since it cannot be done separately. QFD is not only implemented in the manufacturing industry. Some researchers suggest that QFD as tools to develop the quality of a product. Jaiswal (2012) analyzed a case study by using Quality Function Deployment (QFD) [8].

D. House of quality

Generally, House of Quality is the first stage of the application of the Quality Function Deployment method which is an attempt to convert Voice of Customer directly to the technical specifications of the product or service produced. House of Quality is used to render consumer requirements, results of research, and data benchmarking into priority technical targets [9].

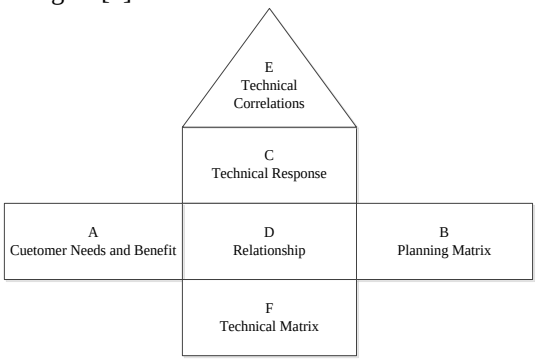

Fig. 1. House of quality

E. E. Likert Scale

Sugiyono (2010) defines likert scale is used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena [10]. For each answer given a score, the respondent must describe, support the statement for the selected answer. By using a likert scale, the variables to be measured are explained into variable indicators. Then the indicator is used as a benchmark point to compile instrument items in the form of questions or statements.

Table 1
Likert scale

No	Category	Positive Score	Negative Score
1	Strongly Agree	5	1
2	Agree	4	2
3	Undecided	3	3
4	Disagree	2	4
5	Strongly Disagree	1	5

3. Population and data

A. Population and Sample

Identifying population and sample is the first step in this research that aimed to know who will be the respondents. The subjects in this study were active students at angkasa aviation academy. They were Batch 14 A, 15 A, 16 A, and 17 A who have graduated from the ground training stage and have been studying in flight training stage.

Table 2
Batch and No. of student pilot

No	Batch	Number of Student Pilot
1	Batch 14 A	18
2	Batch 15 A	23
3	Batch 16 A	17
4	Batch 17 A	21

B. Research design

The design this study can be described as follows:

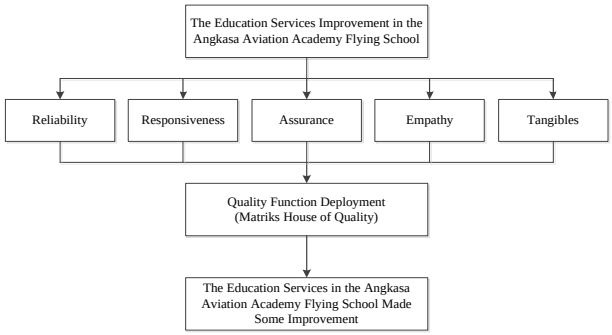

Fig. 2. Research Design

C. Data collecting

In this study, the qualitative data collected through an interview and questionnaire. Student pilots interviewed by using service quality approach. Questionnaire administered to the students to collect the data from service users regarding their assessment and desire for services at the angkasa aviation academy. The questionnaire contained three main information, namely:

- The classification of respondents' personal data.
- The level of importance used to measure how important a service attribute towards Aviation Students
- The level of satisfaction that is a measure of the level of students' satisfaction on service attributes.

In taking data, the level of importance and level of satisfaction data collected using a Likert Scale namely (1) very unimportant, (2) not important, (3) quite important, (4) important, and (5) very important. While the data for service satisfaction are (1) very bad, (2) bad, (3) bad enough, (4) good, and (5) very good.

D. Data Testing

1) Validity

According to Sugiyono (2000: 177) validity is the degree of accuracy between the data that actually occurs in the object of research and the data reported by the researcher. Validity testing is used to measure the validity of an instrument (variable). In this study, the validity test is done by correlating each statement with the total score with the following formula [11]:

$$r_{xy} = \frac{n\sum xy - \left(\sum x \sum y\right)}{\sqrt{\left[n\sum x^2 - \left(\sum x\right)^2\right]\left[n\sum y^2 - \left(\sum y\right)^2\right]}}$$

Where:

r : Pearson Product Moment correlation
n : Total respondents
x : Sum of scores
y : Sum of scores

2) Reliability

Reliability testing is done after the data taken has been declared valid. It aimed to see the consistency of the instrument in revealing the phenomenon of a group of individuals even though it is done in an unequal time. The instrument can be declared reliable if the instrument is valid in this study. According to Husein (2000), a construct or variable is said to be reliable if it shows a value of Cronbuch > 0.60 [12].

E. Data Testing

Data processing techniques in this study are sorted based on charts on the House of Quality.

1) Part A: Customer Needs

- Looking for as much information about service attributes that will be used as customer needs
- Questionnaire
- Arrange systematically based on service quality dimensions
- The final result is put into Chart A

2) Part B: Planning Matrix

- Determine the level of importance of the customer using a questionnaire with a likert scale with values ranking from 1 to 5
- Determine the satisfaction level of customer expectations

3) Part C: Technical Response

- Finding out the response given by the company to each customer needs in House of Quality part A through questionnaires and observations
- Determine the improvement from each technical response

4) Part D: relationship

Looking for the relationships occurred between customer needs and technical response. Relationships that occur can be no relationship, weak, moderate, and strong.

5) Part E: Technical Correlation

Look for the relationships occurred in the technical responses. There are five levels of technical influence in this section, namely: strong positive, moderate positive, no relationship, and moderate negative and strong negative.

6) Part F: technical matrix

- Determine absolute importance by adding the multiplication between the conversion values in part D and the values in part B
- Determine the relative importance by converting data absolute importance into percentages. The higher the level of importance, the better this data became the last part included in section F of the House of Quality.

4. Result and discussion

A. *Validity test*

This test is performed using the Pearson Correlation test by comparing the value of r and the r table III. If the value of r > the r table, it means the statement is declared valid, if the value of r < the r table, it means the statement is declared invalid. Below is a measure of the validity of each item statement in this study.

Source: The result of data processed using SPSS

B. *Validity test*

The measure of reliability used is the Cronbach Alpha

Table 3
The result of validity test

Statement	R Table	R Value	Categories
1	0,2213	0,638	valid
2	0,2213	0,534	valid
3	0,2213	0,710	valid
4	0,2213	0,510	valid
5	0,2213	0,573	valid
6	0,2213	0,410	valid
7	0,2213	0,398	valid
8	0,2213	0,546	valid
9	0,2213	0,485	valid
10	0,2213	0,518	valid
11	0,2213	0,378	valid
12	0,2213	0,647	valid
13	0,2213	0,634	valid
14	0,2213	0,684	valid
15	0,2213	0,519	valid
16	0,2213	0,273	valid
17	0,2213	0,598	valid
18	0,2213	0,721	valid
19	0,2213	0,584	valid
20	0,2213	0,480	valid
21	0,2213	0,549	valid
22	0,2213	0,600	valid

coefficient > 0.60 indicating a variable or construct that is reliable. The following table shows the results of research reliability.

Source: The result of data processed using SPSS

In table 4 above the value of Cronbach's Alpha obtained is 0.887 > 0.60 that indicates the degree of reliability of the

Table 4
The result of reliability test

Cronbach's Alpha	Number of Items
0,887	22

questionnaire items answered by the respondents.

C. *Analysis of data using quality function deployment*

The implementation of QFD in this study is as an effort to identify customers' wants and needs using a matrix format arranged in a form.

- *Quality Matrix House:* Voice of Customer is a list of customers' desires and needs, which are qualitatively obtained through descriptive approaches or interviews with customers. The customers' desires are based on the quality attributes of services wanted by consumers for the services provided by Angkasa Aviation Schools that are arranged in the form of questionnaire. The questionnaire was distributed to 79 students. The results of the needs and interests of the services of the Angkasa Aviation School were presented in the table.
- *Planning Matrix:* These stages aimed to measure customers' needs and determine the objectives of satisfaction performance that consisted of: level of importance attribute service, attribute performance service, target value attribute service, reparation ratio determination, sales point determination, quality service determination, and normalization of quality.

Table 5
The result of reliability

No.	Attributes	Level of Important Attribute Service	Attribute Performance Service	Target Value Service	Improvement Ratio Determination	Sales Point Determination	Quality Service Determination	Normalization of Quality
1	CBT rooms facilities are available for student pilot	4,582	4,088	4	0,978	1,5	6,722	3,930
2	Quality of Cessna 172	4,734	4,937	4	1,016	1,5	7,215	4,218
3	Shuttle services at flight training stage	4,557	4,646	5	1,371	1,5	9,371	5,478
4	Health services at flight training stage	4,595	3,025	5	1,653	1,5	11,393	6,661
5	Comfortable classroom	4,506	3,962	4	1,010	1,5	6,827	3,991
6	Instructors can communicate well	4,620	4,228	4	0,946	1,5	6,556	3,833
7	Instructors have high flight hours	4,367	4,418	4	0,905	1,5	5,928	3,466
8	Instructor's teaching is suitable with the specified schedule	4,418	4,215	4	0,949	1,5	6,289	3,667
9	Instructor's ability is suitable with the field	4,544	4,266	4	0,938	1,5	6,393	3,738
10	Compatibility of education period with a schedule training	4,405	3,987	5	1,254	1,5	8,286	4,844
11	Instructors can provide material clearly and understandable	4,159	4,380	4	0,913	1,5	5,696	3,330
12	School provides the best services to student pilot	4,519	3,532	5	1,416	1,5	9,588	5,611
13	School provides a solution to the student pilot's problems	4,468	3,671	4	1,090	1,5	7,305	4,271
14	School is responsive in dealing with student pilot's problems	4,481	3,823	5	1,308	1,5	8,792	5,140
15	Staff gives quick response in providing services to the pilot students	4,418	3,797	5	1,317	1,5	8,728	5,102
16	Compatibility of education costs with facilities obtained	4,367	3,544	5	1,411	1,5	9,243	5,404
17	Ground school and flight training process are suitable with syllabus and TPM	4,620	4,089	5	1,223	1,5	8,475	4,955
18	Recuitment process is suitable with the specified schedule	4,329	3,848	5	1,299	1,5	8,435	4,931
19	Staff overcomes information needed by student pilots	4,304	3,962	5	1,262	1,5	8,417	4,763
20	Instructors have good communicate style	4,595	4,228	4	0,946	1,5	6,520	3,812
21	Instructors have good attitude	4,506	4,278	4	0,946	1,5	6,320	3,695
22	Objective tratment of all student pilots	4,582	3,899	5	1,282	1,5	8,811	5,151

- Technical Parameter: The technical parameters are the technical language of management to design a service quality improvement that is generally a technical description of the consumers' needs and desires, as shown in Table 6.
- The relationship between technical parameters and customers' desires: This section included information that showed the level of relationship between customer desires and needs and the

Table 6
Technical parameter

No.	Attributes
1	CBT Room Facilities are available for all student pilots
2	The Cessna 172 is feasible and in good condition
3	Making a driver schedule to 24 hours
4	Establishing health services or establishing cooperation with external health agencies
5	Officers carry out classroom checks before the class begins
6	Delegating instructors for upgrading skill
7	Instructors are not allowed to change the predetermined schedule unless there is an urgent need
8	Improving graduation production programs for student pilots
9	Establishing of service excellent training for instructors and staff
10	Establishing counseling and integrated services
11	Making the system well integrated
12	Providing the training, development of soft skills, and excellent service systems to staff
13	Improving school facilities and infrastructures
14	Improving supervision and evaluation the compliance of syllabus with the Training Procedure Manual
15	Organizing the Frequently Asked Question for staff
16	Instructors are able to provide objective assessment of all student pilots

company's ability to fulfill them that shows strong, medium, and weak correlations as shown in Table 7.

Table 7
Relationship between technical parameters and customers' desires

Row #	Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Functional Requirements / Customer Requirements	CBT Room Facilities are available for all flight students	The Cessna 172 S is feasible and in good condition	Making a driver schedule to 24 hours	Establishing health services or establishing cooperation with external health agencies	Officers carry out classroom checks before the class begins	Delegating instructors for upgrading skill	Instructors are not allowed to change the predetermined schedule unless there is an urgent need	Improving graduation production programs for Student Pilots	Establishing of service excellent training for instructors and staff	Establishing counseling and integrated services	Making the system well integrated	Providing the training, development of soft skills, and excellent service systems to staff	Improving school facilities and infrastructures	Improving supervision and evaluation the compliance of syllabus with the Training Procedure Manual	Organizing the Frequently Asked Question for staff	Instructors are able to provide objective assessment of all student pilots
1	CBT rooms facilities are available for student pilot	9				1								3			
2	Quality of Cessna 172		9						1					3	1		
3	Shuttle services at flight training stage			9										9			
4	Health services at flight training stage				9									9			
5	Comfortable classroom					9								3			
6	Instructors can communicate well									9							1
7	Instructors have high flight hours						9										
8	Instructor's teaching is suitable with the specified schedule							9									
9	Instructor's ability is suitable with the field						9								1		
10	Compatibility of education period with a schedule training								9						3		
11	Instructors can provide material clearly and understandable								3						9		
12	School provides the best services to student pilot				9						9						
13	School provides a solution to the student pilot's problems										9						1
14	School is responsive in dealing with student pilot's problems										9						1
15	Staff gives quick response in providing services to the pilot students												9			1	
16	Compatibility of education costs with facilities obtained		1	3	9									9			
17	Ground school and flight training process are suitable with syllabus and Training Procedure Manual								9						9		
18	Recuitment process is suitable with the specified schedule											9				1	
19	Staff overcomes information needed by student pilots												9			9	
20	Instructors have good communicate style									9							1
21	Instructors have good attitude									9							1
22	Objective tratment of all student pilots																9

- Correlation Technique is a correlation between the characteristics of technical capabilities of a company that divided into positive and negative.
- House of Quality Chart: This chart explained how the technical parameters could meet the costumers' desires and needs as shown in Fig. 3.

Row #	Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
	Functional Requirements / Customer Requirements	CBT Room Facilities are available for all flight students	The Cessna 172 S is feasible and in good condition	Making a driver schedule to 24 hours	Establishing health services or establishing cooperation with external health agencies	Officers carry out classroom checks before the class begins	Delegating instructors for upgrading skill	Instructors are not allowed to change the predetermined schedule unless there is an urgent need	Improving graduation production programs for Student Pilots	Establishing of service excellent training for instructors and staff	Establishing counseling and integrated services	Making the system well integrated	Providing the training, development of soft skills, and excellent service systems to staff	Improving school facilities and infrastructures	Improving supervision and evaluation the compliance of syllabus with the Training Procedure Manual	Organizing the Frequently Asked Question for staff	Instructors are able to provide objective assessment of all student pilots	Target Value	Sales Point	Ratio Improvement	Quality	Normalization of Quality
1	CBT rooms facilities are available for student pilot	35,370				3,930								11,790				4	1,5	0,978	6,722000	3,930
2	Quality of Cessna 172		37,962						4,218					12,654	4,218			4	1,5	1,016	7,215000	4,218
3	Shuttle services at flight training stage			49,302										49,302				5	1,5	1,371	9,371000	5,478
4	Health services at flight training stage				59,949									59,949				5	1,5	1,653	11,393300	6,661
5	Comfortable classroom					35,919								11,973				4	1,5	1,010	6,826590	3,991
6	Instructors can communicate well									34,497							3,833	4	1,5	0,946	6,555780	3,833
7	Instructors have high flight hours						31,194											4	1,5	0,905	5,928023	3,466
8	Instructor's teaching is suitable with the specified schedule							33,093										4	1,5	0,949	6,289023	3,677
9	Instructor's ability is suitable with the field						33,642								3,738			4	1,5	0,938	6,393408	3,738
10	Compatibility of education period with a schedule training								43,596						14,532			5	1,5	1,254	8,285805	4,844
11	Instructors can provide material clearly and understandable								9,990						29,970			4	1,5	0,913	5,695751	3,330
12	School provides the best services to student pilot				50,499						50,499							5	1,5	1,416	9,598356	5,611
13	School provides a solution to the student pilot's problems										38,439						4,271	4	1,5	1,090	7,305180	4,271
14	School is responsive in dealing with student pilot's problems										46,260						5,140	5	1,5	1,308	8,791722	5,140
15	Staff gives quick response in providing services to the pilot students												45,918			5,102		5	1,5	1,317	8,727759	5,102
16	Compatibility of education costs with facilities obtained		5,404	16,212	48,636									48,636				5	1,5	1,411	9,242756	5,404
17	Ground school and flight training process are suitable with syllabus and Training Procedure Manual								44,595						44,595			5	1,5	1,223	8,475390	4,955
18	Recuitment process is suitable with the specified schedule											44,379				4,931		5	1,5	1,299	8,435057	4,931
19	Staff overcomes information needed by student pilots												42,867			42,867		5	1,5	1,262	8,147472	4,763
20	Instructors have good communicate style									34,308							3,812	4	1,5	0,946	6,520305	3,812
21	Instructors have good attitude									33,255							3,695	4	1,5	0,935	6,319665	3,695
22	Objective tratment of all student pilots																46,359	5	1,5	1,282	8,811186	5,151
		35,370	43,366	66,514	159,084	35,919	64,836	33,093	102,399	102,060	135,198	44,379	88,785	182,514	97,053	52,900	67,110	1309,58			171,0507	
		0,027	0,033	0,050	0,121	0,027	0,049	0,025	0,078	0,077	0,103	0,033	0,067	0,139	0,074	0,040	0,051					
		15	13	9	2	14	10	16	4	5	3	12	7	1	6	11	8					

Fig. 3. House of Quality

Based on the Fig 3. House of Quality, management can determine efforts to improve service quality at the "Angkasa Aviation Academy" flying school. The following is an explanation of the research results of the Quality Function Deployment (QFD) method using the House of Quality matrix:

- *Levels of Interest Attribute:* Based on the result of the questionnaire, there are eight service attributes that have the most important sequence. They are Cessna Aircraft Quality (4,734), Ground School Activity Process and Flight Training in accordance with Syllabus and Manual Training Procedure (4,620), Instructors can communicate well (4,620), Health services at Stage Flight Training (4,595), Instructors have a good communication style (4,595), CBT Room is always available for Aviator Students (4,582), Objective treatment of all Aviation Students (4,582), Shuttle service at Flight Training stages (4,557).
- *Attribute Performance:* Based on the results of the questionnaire, there are eight service attributes that have very good performance. They are Instructors have high flight hours (4,418), instructors can provide material well and clearly (4,380), Instructors have a good attitude (4,278), Instructors' abilities in accordance with their fields (4,266), Instructor can communicate well (4,228), Instructors have a good communication style (4,228), Instructors teach in accordance with the specified schedule (4,215), Ground School Activity Process and Flight Training in accordance with Syllabus and Manual Training Procedure (4,089).
- *Target Value:* The target value shows the objectives that management wants to achieve towards the service attributes that asked to the respondents. Each service attribute is given points 4 and 5 so that the service can be given well even to very good.
- *Improvement Ratio Value:* Based on the comparison between the target set by the school and the performance experienced by the students, the value of the improvement ratio for some attributes shows that the performance exceeds the target. They are CBT Room which is always open for student pilots (0,978), Instructor teach in accordance with the specific schedule (0,949), Instructors can communicate well (0,946), Instructor has a good communication style (0,946), Instructors' ability in accordance with their field (0,938), Instructors have a good attitude (0,935), Instructors have high flying hours (0,905). For attributes that need improvement because the improvement ratio is above 1.4, namely: Health services at Stage Flight Training (1,653), Schools provide services to student pilots well (1,416), Conformity to education costs with facilities obtained (1,411).
- Sales Point: The sales point given for service attributes by maximum value of 1.5 in expectations of providing maximum results for service to students.
- Quality of Service Attributes and Normalization Quality of Service Attributes

Based on the balance and normalization of the quality of service attributes, priority can be sorted sequentially as follows:

- *Consumers Desire Interaction Matrix and Technical Parameters:* Technical parameters are the school response to the willingness of the students so that they can meet those expectations. There are 16 types of technical parameters determined by the school with

the aim of improving the quality of services provided to students. The relationship between technical parameters and the desires of students are expressed in strong, moderate, or weak relationships. For example, there is a strong relationship between the desire of students to get a shuttle service at the stage flight training (attribute 3) with the technical parameters number 4 and 13. The desire of these students have the potential to be fulfilled when the driver schedule is 24 hours so that the students no longer complain about the absence of transportation especially at night. Shuttle services are also part of school facilities and infrastructures so that their improvement, including the availability of cars will improve students' pick-up services.

- *Relationship about Technical Parameters:* Relationships that describe the interaction between technical parameters are considered to determine the priority of improvement. There are 3 relationship criteria that occur between the technical parameters, namely: a) Strong positive relationship that the nature of the relationship is very strong and each of the two attributes support each other in its implementation, b) Moderate positive relationship that the relationship is moderate between the nature and the two technical parameters in its implementation, and c) There is no relationship that two attributes have no relationship at all. For instance, the relationship between technical parameters that have a strong positive relationship is the first technical parameter (CBT Room facilities are available for all flight students) with the fifth technical parameter (Classroom checks are carried out by officers before the class begins). Instructors are expected to get input and understanding in order to be able to apply objective assessment to students.
- *Development of Technical Parameters Priority:* By considering the absolute value of the technical parameters of service attributes as the main guideline and interaction about technical parameters, it can be determined which technical parameters are prioritized to be developed first as shown in table IX.

Table 8
Improvement priority

No.	Attributes	Normalization of Quality (%)
1	CBT rooms facilities are available for student pilot	6,661
2	Quality of Cessna 172	5,611
3	Shuttle services at flight training stage	5,478
4	Health services at flight training stage	5,404
5	Comfortable classroom	5,151
6	Instructors can communicate well	5,140
7	Instructors have high flight hours	5,102
8	Instructor's teaching is suitable with the specified schedule	4,955
9	Instructor's ability is suitable with the field	4,931
10	Compatibility of education period with a schedule training	4,844
11	Instructors can provide material clearly and understandable	4,763
12	School provides the best services to student pilot	4,271
13	School provides a solution to the student pilot's problems	4,218
14	School is responsive in dealing with student pilot's problems	3,991
15	Staff gives quick response in providing services to the pilot students	3,930
16	Compatibility of education costs with facilities obtained	3,833
17	Ground school and flight training process are suitable with syllabus and Training Procedure Manual	3,812
18	Recruitment process is suitable with the specified schedule	3,738
19	Staff overcomes information needed by student pilots	3,695
20	Instructors have good communicate style	3,677
21	Instructors have good attitude	3,466
22	Objective treatment of all student pilots	3,330

Table 9
Development of technical parameter priority

No.	Attributes	Normalization of Quality (%)
1	Improving school facilities and infrastructures	182,514
2	Establishing health services or establishing cooperation with external health agencies	159,084
3	Establishing counseling and integrated services	135,198
4	Improving graduation production programs for student pilots	102,399
5	Establishing of service excellent training for instructors and staff	102,06
6	Improving supervision and evaluation the compliance of syllabus with the Training Procedure Manual	97,053
7	Providing the training, development of soft skills, and excellent service systems to staff	88,785
8	Instructors are able to provide objective assessment of all student pilots	67,11
9	Making a driver schedule to 24 hours	65,514
10	Delegating instructors for upgrading skill	64,836
11	Organizing the Frequently Asked Question for staff	52,9
12	Making the system well integrated	44,379
13	The Cessna 172 is feasible and in good condition	43,366
14	Officers carry out classroom checks before the class begins	35,919
15	CBT Room Facilities are available for all student pilots	35,37
16	Instructors are not allowed to change the predetermined schedule unless there is an urgent need	33,093

5. Conclusion

Based on the finding results and discussion in this research, the conclusions can be drawn as follows:

- Based on the level of importance, service attributes that are considered important by students are: quality of Cessna 172 (4,734), instructors can communicate well (4.6), process of ground school activities and flight training in accordance with syllabus and Training Procedure Manual (4,62), health services at stage flight training (4,595), instructors have good communication style (4,595), CBT room facilities are

available for students (4,582), objective treatment of all student pilots (4,582), shuttle service at flight training stage (4,557), instructors' ability are suitable with the field (4,544), school provides the best services for students (4,519), comfortable classrooms (4,506), instructors have good attitude (4,506), school is responsive in dealing with students' problems (4,481), school provides solutions to students' problems (4,468), instructors teach according to a specified schedule (4,418), staff gives quick response to provide services to Students publishing ground school activities and flight training activities in accordance with Syllabus and Training Procedure Manual (4,418), staff is quick in providing services to student pilots (4,418), compatibility of education period with a schedule training (4,405), instructor has high flight hours (4,367), suitability of education costs with facilities obtained (4,367), recruitment process is suitable with the specified schedule (4,329), staff overcome the information needed by Flight Students (4,304), Instructor can provide material clearly and understandable (4,159).

- The level of customer satisfaction with the performance of school service attributes is based on the order of performance evaluation as follows: Instructors have high flight hours (4,418), instructors can provide material clearly and understandable (4,380), Instructors have good attitude (4,278), Instructors' ability are suitable with their field (4,266), Instructors can communicate well (4,228), Instructors have good communication style (4,228), Instructors' teaching are suitable with the specified schedule (4,215), process ground school activity and flight training are suitable with Syllabus and Training Procedure Manual (4,089), CBT room facilities are available for student pilots (4,088), compatibility of education period with a schedule training (3,987), comfortable classrooms (3,962), Staff overcome information needed by student pilots (3,962), quality of Cessna (3,937), objective treatment of all student pilots (3,899), recruitment process is suitable with the specified schedule (3,848), School is responsive in dealing with student pilot's problems (3,823), staff gives quick response in providing services to the students (3,797), school provides a solution to the students' problems (3,671), shuttle services at flight training stages (3,646) , compatibility of education costs with facilities obtained (3,544), school provides the best services to student pilots (3,532), health services at stage flight training (3,025).
- The sequences of priority for school service improvements expected by students is based on service attributes as follows: Improving school facilities and infrastructures, establishing health services or establishing cooperation with external health agencies, establishing counseling and integrated services, improving graduation production programs for student pilots, establishing of service excellent training for instructors and staff, improving supervision and evaluating the compliance of syllabus with the Training Procedure Manual, providing the training, development of soft skills, and excellent service systems to staff, Instructors are able to provide objective assessment of all student pilots, making a driver schedule to 24 hours, delegating instructors for upgrading skill, organizing the Frequently Asked Question for staff, making the system well integrated, the Cessna 172 is feasible and in good condition, classroom checks are carried out by officers before the class begins, CBT room facilities are available for all student pilots.

References

[1] Brata, A. A, "Dasar - Dasar pelayanan Prima 2". Jakarta: PT. Elex Media Komputindo, 2004.
[2] Parasuraman, A., Zeithaml V., & Berry, L. "SERVQUAL: An Multiple item Scale for Measuring Customers Perceptions of Service Quality: Journal of Retailing", 1998, 64 (1), 41-50.
[3] Suzanto, B, "Pengaruh Kualitas Jasa Pelayanan Terhadap Kepuasan Pasien Pada Rumah Sakit Umum Kota Banjar. Jurnal Ekonomi, Bisnis dan Enterpreneurship", 2011, 5(1), 28-44.
[4] Fandy Tjiptono, "Service Manajement Mewujudkan Layanan Prima", Yogyakarta: Andi Yogyakarta, 2008, 95.
[5] Cohen, L, "Quality Function Deployment: How to Make QFD Work for you", Addison-Wesley, Inc., Massachusetts, 1995.
[6] Daetz, D.B. Barnard, R. Norman, "Customer Integration: The Quality Function Deployment (QFD) Laders Guide for Decicion Making", John Wiley & Sons, Inc., New York, 1995.
[7] Ermer, S., "Using QFD Becomes an Educational Experience for Student and Faculty", Madison: University of Wisconsin-Madison, 1995.
[8] Wardah Rizlan, Humiras Hardi Purba, Sudiyono, Performance Maintenance Analysis Using QFD Method: "A Case Study in Fabrication Company in Indonesia", ComTech: Computer, Mathematics and Engineering Applications, 9(1), June 2018, 25-35.
[9] Cohen, L, "Quality Function Deployment: How to Make QFD Work for you", Addison-Wesley, Inc., Massachusetts, 1995.
[10] Sugiyono, "Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D". Bandung: Alfabeta, 2010.
[11] Sugiyono, "Statistika untuk Penelitian", Bandung: Alfabeta, 2000.
[12] Husein Umar, "Metode Penelitian Untuk Skripsi dan Tesis Bisnis, Cetakan 3". Jakarta, PT. Raja Grafindo Persada, 2000.