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A Servqual and Quality Function Deployment (QFD) Approach in Measuring Total Quality Management at Private Universities in Pekanbaru, Riau, Indonesia

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Abstract

In free trade era, particularly in AEC leading to the education institution should prepare to compete freely in generating graduates who are able to compete in ASEAN's labour market. Therefore, the purpose of this research is to determine the service quality of private universities in Pekanbaru, Riau, based on student's perspective using SERVQUAL and Quality Function Deployment (QFD) approaches. Sampling method employed in this reserach was random sampling technique in four (4) private universities in Pekanbaru. Data was analysed using SERVQUAL gap analysis and QFD. The result shows that there were four (4) customer requirements which will be the priority to be handled by the universities, there are 1. Inquiries, requests and claims of students are handled and resolved timely and promptly, 2. Readiness of academic staffs to serve students and can be contacted easily, 3. Academic staff pays special attention and provides help to students in resolving their problems, 4. Teaching materials are available and up-to-date. From the QFD Matrix, the most technical priority needs to be improved by the universities is Academic staff's training and development.

Keywords: *Quality Function Deployment (QFD), SERVQUAL, Gap Analysis, Private Institutions*

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INTRODUCTION

Education is a factor which playes an important role in the development of science and creates human resources who are able to compete in national and global markets (Katiliūtė 2010). Regarding to the initiation of the ASEAN Economic Community (MEA) era, the institutional based National College should prepare to compete freely in generating alumni who are able to dominate the labor market in ASEAN countries.

Table 1. Global Competitiveness Index Year 2015-2016 (5th Pillar: Education and Training)

Country	5th Pillar 2014-2015	5th Pillar 2015-2016
Singapore	2	1
Malaysia	46	36
Thailand	59	56
Indonesia	61	65
Philippine	64	63
Vietnam	96	96
Cambodia	123	123

Source: World Economic Forum, 2016

Table 1 shows the 5th pillar of education and training in global competitiveness index. For education and training, Indonesia ranked 56 in the period of 2015-2016 which is lower than Singapore, Malaysia and Thailand in the ASEAN Competition. It means that Education and Training in Indonesia needs to be organized well especially in improving education quality which can result in improved global competitiveness ranking.

Higher Education Institutions (HEI) in Indonesia (especially private higher education) currently show a fairly rapid development. Up to year 2016, the number of private higher educations in Indonesia reaches 4178 institutions and this is exactly an opportunity to millions of people in Indonesia to gain higher education. Most private higher education institutes in Indonesia are formed by either a religious foundation or by a corporation (Bangay 2005; Welch 2007). Some private higher education institutes are also established to serve the needs of a particular ethnic minority community or political group, an inevitable outcome of privatisation. Meanwhile, the quality and financial capacity of most private higher education institutes are worse than the public ones (Bedi & Garg 2000).

Quality movement across the world starts with quality improvement project at manufacturing companies. Later, it spreads to other service institutions including banking, insurance, non profit organizations, healthcare, government and educational institutions. (Murad & Rajesh 2010). Total Quality Management (TQM) is a management philosophy that builds a customer-driven learning organization, dedicated to total customer satisfaction through continuous improvement in the effectiveness and efficiency of the organization and its processes. According to Wani and Mehraj (2014), Issues of TQM should be addressed in educational institutions, particularly as they relate to productivity and financing. Those adopting TQM in education have varying perspectives on the approach. TQM can be used to generate proper quality standards to produce competent and competitive graduates. This research will discuss how the implementation of TQM in education using SERVQUAL and also Quality Function Deployment (QFD) based on student's perspective.

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LITERATURE REVIEW

Total Quality Management (TQM)

Total Quality Management (TQM) is a modern subject and contemporary trends in management science. TQM is based on a set of principles that can be adopted by organizations in order to improve the overall performance and to achieve the specific organization goals (Mohammed, *et al* 2013). The implementation process of the TQM requires to make a real change in organization design, operations and the culture in the strategic extent, although actually this change may be a complicated task to many organizations that seek to embrace improvement (Aqili 2001).

Even though there is no a standard definition for TQM, in this paper, the researchers believe that there are five major bases shared by most quality gurus such as Crosby, Deming, Feigenbaum, Kaoru Ishikawa, and Juran on the concept of the Total Quality, as stated as: 1) Producing a qualitative and significant work from the beginning. 2) Focusing on customer satisfaction. 3) A clear strategy for improvement. 4) Continuous improvement by all employees in the organization, and 5) Encouraging the principle of mutual respect and team spirit within the organization.

Service Quality

Service quality can be defined from different expectations of users towards the services provided with the perception of the service received (Munusamy *et al* 2010). The pursuit for service quality improvement leads to the research and development of service quality measurement tools, such as SERVQUAL and services blueprinting (Foster 2007). SERVQUAL is a measurement tool for service quality which aims to measure service quality along several dimensions, namely tangibles, reliability, responsiveness, assurance and empathy. SERVQUAL was developed in 1985 (Parasuraman, Zeithaml, & Berry 1985). SERVQUAL functions by assessing the differences between customer expectations and customer perceptions in the specified quality dimensions. These differences are commonly known as gaps. The gap analysis can be achieved by the administration of a survey to customers before and after the delivery of the intended service. The outcome of SERVQUAL shows the gaps that may exist along the service quality dimensions. These gaps point to the weaknesses that need to be addressed in order to improve customers' satisfaction.

Quality Function Deployment.

Quality Function Deployment (QFD) is a very well-known design method, developed in late 1960s in Japan. QFD was used since the aim was translating customer needs into some sort of technical design requirements and series of matrix, known as the House of Quality (HoQ). The main aim of QFD is in satisfying the customers' expectations and improving the quality level of the product at the same time (Mukaddes *et al* 2010). A complete HoQ includes six parts, namely the analysis of customer desire, technical demand, relationship matrix, competitiveness, roof and technical assessment. In the process of actual applications, the structure of HoQ is flexible depending on different research intensions, for instance, sometimes the roof might not necessary, and also sometimes competitive analysis and technical assessment can be omitted, and so on (Mukaddes *et al* 2010).

METHODOLOGY/MATERIALS

Population and Sampling

The study population includes all students registered in the four (4) private universities in Pekanbaru, those are the Islamic University of Riau, the University of Lancang Kuning, the University of Abdurrab and the University of Muhammadiyah Riau with the total of 44.987 people. The respondents were selected randomly using Slovin Formula as follow :

$n = N/1+Ne^2$

$n = 44.987/1+(44.987x0,1^2)$

$n = 44.987/450,87$

$n = 99.78$

Therefore, this research used 200 respondents as the sample to fit the research more.

Research Intrument

The research used questionnaires as the primary instrument. For the data collection, A four-point Likert scale was used for statement responses in a questionnaire as follow:

Scale 4 = Strongly Agree
Scale 3 = Agree
Scale 2 = Disagree
Scale 1 = Strongly Disagree

Statements related to the evaluation of the service quality in education using five (5) variables: tangible, reliability, responsiveness, assurance and empathy.

SERVQUAL and QFD Method

Furthermore, an integrated analysis of SERVQUAL and QFD were applied by implementing these following steps:

1. Apply SERVQUAL generic questionnaire which consists of 18 question items.
2. Measure the gap between satisfaction (S) and expectation (E) as gap is defined as (S-E)
3. Create the Technical requirements obtained in this research, those are academic staffs training and development, managing education/academic policy, managing infrastructure and facilities and information technology approach in academic process.
4. Measure the target value by comparing the level of student satisfaction towards private and public universities. The result of the assessment is done by benchmark through interviews to the quality assurance unit of private universities.
5. Measure target improvement by using this formula :

$$\text{Target Improvement} = \frac{\text{Target value of customer satisfaction}}{\text{Value of benchmarking}}$$

% Weight = (Target improvement X Level of importance) X 100%

6. Create correlation matrix for body and roof by using the following symbols: a) ●= very strong relationship b) O = strong relationship c) ▲ = weak relationship. Correlation matrix created by relationships between customers' requirements and product requirements.

RESULTS AND FINDINGS

In this point, we intend to discuss the main conclusion of this study. Table 1 shows the results for respondents' profile using analysis of frequency.

Table 2. Respondent's Profile

	Sample Demographics	Frequency	%
Gender	Male	77	38.5
	Female	123	61.5
Age	<21	56	28
	21-23	100	50
	>23	44	22
Study Program	Undergraduate	166	83
	Post Graduate	34	17

Based on table 1, it can be seen that the majority respondents in this research are female (61.5%) with the average age is 21 to 23 years old (50%), meaning they were about to finish their undergraduate program.

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Lastly, in group of study program, most of the students (83%) is undergraduate (divided into diploma and bachelor).

Table 3. Importance-Performance Ratings

Variable	Attributes	Mean Importance Rating	Mean Satisfaction Rating
Tangible	University has contemporary equipment for the education process (PCs, LCDs, beamers, etc.).	3.32	3.55
	Building and premises of university are modern and visually likeable.	2.97	2.86
	Availability of technology and internet facilities	2.93	3.42
	Availability of supporting facilities (mosque, library, clinic, cafeteria, lobby, reading room, etc.)	3.14	2.57
	Teaching materials are available and up-to-date (study programs, brochures, student guides, etc.)	3.02	2.15
Reliability	Students are timely informed about realization of certain activities (exams, presentations, seminars, etc.).	3.22	2.22
	Working hours of Office for student affairs are adequate and in accordance with students' needs .	3.16	2.00
	Academic staff has precise records of students' activities (presence at lectures, exam results, etc.).	3.14	3.36
	Inquiries, requests and claims of students are handled and resolved timely and promptly.	3.32	2.33
Responsiveness	Academic staffs are always ready to serve students and easily contacted	3.23	2.40
	Academic staff pays special attention and provides help to students in resolving their problems.	3.06	2.59
Assurance	Academic staff has the necessary knowledge and skills, and adequate communication skills.	2.90	2.66
	University implements study and educational programs with clear aims for specialization of students.	2.98	3.03
	Conduct of staff fills students with confidence and professional.	3.08	3.61
	Reputation and position of Faculty in the environment is adequate.	2.92	2.65
Empathy	Academic staff shows positive attitudes towards students.	3.03	3.20
	Faculty of Economics values and acknowledges feedback from students for improving processes.	2.92	3.55
	Staffs are polite, kind and professional in communication with students.	3.15	3.16
Total Average		3.08	2.85

From the table above, it is possible to learn the mean rating for both Importance Performance scale, and conclude that students are quite satisfied with the performance (mean of 2.85). Among the atributes that the students are very satisfied are that the University has contemporary equipment for the education process (PCs, LCDs, beamers, etc.), availability of technology and internet facilities, Conduct of staff fills students with confidence and professional, Faculty of Economics values and acknowledges feedback from students for improving processes. The result for importance rating also shows that the students are also assumed that the attributes are quite important (mean of 3.08). Where the attributes (University has contemporary equipment for the education process (PCs, LCDs, beamers, etc.) and Inquiries, requests and claims of students are handled and resolved timely and promptly) are in very important level. The total mean of importance and satisfaction rating shows that the student's satisfaction rating is lower that the importance rating (2.85<3.08).

Result of SERVQUAL based surveys method together with statistical test shows most 3 attributes which have biggest gap (Figure 2):

1. Students are timely informed about the realization of certain activities (exams, presentations, seminars, etc.).
2. Working hours of Office for student affairs are adequate and in accordance with students' needs and Inquiries.
3. Requests and claims of students are handled and resolved timely and promptly.

Furthermore, HoQ matrix also shows that there are five (5) priorities on customer requirements, those are:

1. Inquiries, requests and claims of students are handled and resolved timely and promptly,
2. Academic staffs are always ready to serve the students,
3. Academic staff pays special attention and provides help to the students in resolving their problems
4. Teaching materials are available and up-to-date (study programs, brochures, student guides, etc.).

The integration approach of SERVQUAL and QFD method also provides the improvement must be done by the university which is to improve training and development program to the employees (Academic staffs). Academic staffs in the university have very important role to succeed every step in academic process and they play the role in delivering satisfaction to customers. Academic staffs in this case consists of employees and lecturers. Universities have to manage academic staffs performance such as assisting them to develop the academic and professionality and to provide them with reliable information about institution and also to monitor and assess their performance based on academic rules, procedures and job descriptions. Furthermore, to monitor the academic staff's performance, universities have to develop an evaluation, appraisal or measurement towards their achievement. For example, universities create Key Performance Indicator (KPI) to the employees and lecturers and make an assessment in how they deliver academic service to students. Obviously, this will impact to awarding motivation to academic staffs in order to improve their performance.

SERVQUAL and QFD Integration Analysis

Fig. 2. SERVQUAL Gap and House of Quality Matrices (See Appendix-A for Fig. 2)

CONCLUSION

Total quality management (TQM) is a development of management science designed to improve the quality at every level to achieve their excellence. TQM has a remarkable application on education which the adaption of TQM can help the education institutions to maintain their competitive position, satisfy all stakeholders, focus on the market needs

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and achieve higher performances. Quality Function Deployment (QFD) by integrating SERVQUAL is one of the quality tools that can be used in order to evaluate the current quality towards education institutions which had applied this system. The HoQ matrix obtained some quality improvement points that could be implemented in educations institutions, in this case Pekanbaru's Private Universities. By knowing this research analysis, management universities need to improve their academic policy to control the fitness quality process

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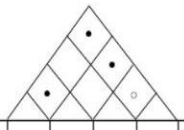
APPENDIX –A

SERVQUAL and QFD Integration Analysis



Variabel	Attrbutes	Academic Staff's training and development	Managing Academic/education policy	Managing Infrastructure and academic facilities	Information technology applied in Academic Process	Importance	Satisfaction	GAP	Public Universities	Private Universities	Target Value	Target Improvement	Weight	% Weight
Tangible	University has contemporary equipment for the education process (PCs, LCDs, beamers, etc.).			●		3.32	3.55	0.23	3.83	3.40	3.83	1.13	3.74	5.52
	Building and premises of university are modern and visually likeable.			●		2.97	2.86	0.12	3.33	2.92	3.33	1.14	3.39	5.00
	availability of technology and internet facilities	●	○		○	2.93	3.42	0.49	3.33	3.47	3.47	1.00	2.93	4.31
	availability of supporting facilities (mosque, library, clinic, cafetaria, lobby, reading room, ect)	○	○			3.14	2.57	0.57	2.50	2.58	2.58	1.00	3.14	4.62
Reliability	Teaching materials are available and up-to-date (study programs, brochures, student guides, etc.)	●	○			3.02	2.15	0.88	3.17	2.34	3.17	1.35	4.08	6.02
	Students are timely informed about realization of certain activities (exams, presentations, seminars, etc.).	●	○		▲	3.22	2.22	1.01	3.33	2.26	3.33	1.48	4.76	7.02
	Working hours of Office for student affairs are adequate and in accordance with students' needs	●	●		○	3.16	2.00	1.17	2.50	2.06	2.50	1.21	3.83	5.66
	Academic staff has precise records of students' activities (presence at lectures, exam results, etc.).	●	○		●	3.14	3.36	0.22	2.67	3.23	3.23	1.00	3.14	4.62
Responsiveness	Inquiries, requests and claims of students are handled and resolved timely and promptly.	●			▲	3.32	2.33	1.00	3.33	2.14	3.33	1.56	5.17	7.62
	Academic staffs always ready to serve students and easily contacted	●				3.23	2.40	0.83	3.67	2.41	3.67	1.52	4.92	7.25
	Academic staff pays special attention and provides help to students in resolving their problems.	●			▲	3.06	2.59	0.48	3.83	2.74	3.83	1.40	4.28	6.32
Assurance	Academic staff has the necessary knowledge and skills, and adequate communication skills.	●				2.90	2.66	0.24	3.33	2.77	3.33	1.20	3.48	5.13
	University implements study and educational programs with clear aims for specialization of students.	○	●			2.98	3.03	0.05	3.33	2.85	3.33	1.17	3.48	5.13
	Conduct of staff fills students with confidence and professional.	●				3.08	3.61	0.53	3.83	3.45	3.83	1.11	3.41	5.03
	Reputation and position of Faculty in the environment is adequate	●	●	▲	▲	2.92	2.65	0.28	3.33	2.58	3.33	1.29	3.78	5.57
Empathy	Academic staff shows positive attitudes towards students.	●				3.03	2.89	0.13	3.33	2.89	3.33	1.15	3.49	5.14
	Faculty of Economics values and acknowledges feedback from students for improving processes.	▲	○		○	2.92	3.54	0.62	3.83	3.54	3.83	1.08	3.16	4.66
	Staff is polite, kind and professional in communication with students.	●				3.15	2.89	0.26	3.33	2.89	3.33	1.15	3.63	5.36
	Priority total	7.10	2.41	1.11	0.95								67.79	100.00
	% Priority	61.33	20.83	9.63	8.22									

Figure 2. SERVQUAL Gap and House of Quality Matrices

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