The priority scale of Service Quality Dimensions at PPs UMT by AHP Method

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Abstract. A decade of University of Muhammadiyah Tangerang (UMT) has carried out its mission and reached its vision. In those 10 years, it has been established Postgraduate Program (PPs) majoring Magister Management (MM) study programs and last year Islamic Religious Education has been established. Like other institutions, at the beginning of its establishment, many parties involved in the process either directly or indirectly to succeed this PPs regardless of procedure. With high idealism, PPs are starting to improve their program. This improvement program is guided by rating of the Service Quality (ServQual) Program from Parasuraman et al., as a tool for the management to implements the program based on their importance and limitations. By using the AHP (Analytical Hierarchy Process) method from Thomas L. Saaty, the conclusion of the ServQual sequence in PPs UMT is Reliability first, then 2nd Responsiveness, while Assurance, Emphaty and Tangible are ranked 3, 4, and 5.

1. Introduction

When the author started to become a lecturer in the early Postgraduate Program (PPs) of University of Muhammadiyah Tangerang (UMT) in 2009, the academy community, such as management, lecturers, employees, students and even office boy were fully of high morale, despite the fact that the classroom, lecturer room, and other facilities are below the common standard of the educational facilities. Everyone has the same goal, focused on one direction to succeed the PPs-UMT program. After 10-year performance, the authors assess this PPs-UMT program has been successful. One of the reasons is because the leaders can mobilize its human capital and resources in the same spirit to achieve a bright PPs-UMT future. Even in the initial phase there is no good system, everyone's share the same efforts focused in one direction for the success of PPs-UMT.

The initial phase or usually in business term called the emergent phase, has been passed through by PPs-UMT. For the next 10 years in the second stage of development, PPs-UMT will enter the Rational phase. In this phase everyone has a clear job description in the system to achieve definitive goal. The potential risk of downside trend on this phase is everyone focus about their sectoral job, how to achieve their key performance indicator and solving their own problem, rather than concern about PPs-UMT problem. Consequently, unconsciously people become imprisoned by the system. Before that happens, in this second 10-year phase on Rational phase, the authors suggest to improve the quality of services, based on Service Quality or ServQual knowledge from Parasuraman, where a service quality will be good if all dimensions of ServQual (Reliability, Assurance, Tangible, Empathy

and Responsiveness) are owned by PPs-UMT in accordance with the expectations of students and or other stakeholders.

Each institution wants to carry out quality improvement (ServQual) in a short time, but each institution also has constraints or limitations (such as budget, human resources, Information Technology and Communication (ICT), etc.). In this situation, the interaction between desire and limitations will be occurred and then the compromise between desires and limitations will be happened as the end result. Considering the limitations and the desire to improve service quality in PPs-UMT, the authors write this research with the title The Priority Scale of Service Quality Dimensions at PPs UMT by AHP Method

2. Research Methodology

To do this research, the author begins with a preliminary survey by reading some literature regarding business cycle, such as Sustainable Marketing Enterprise, Service Marketing, etc., then interviewing several core management to collect data and gather problems for the analysis and get conclusions. The research methodology is illustrated below.
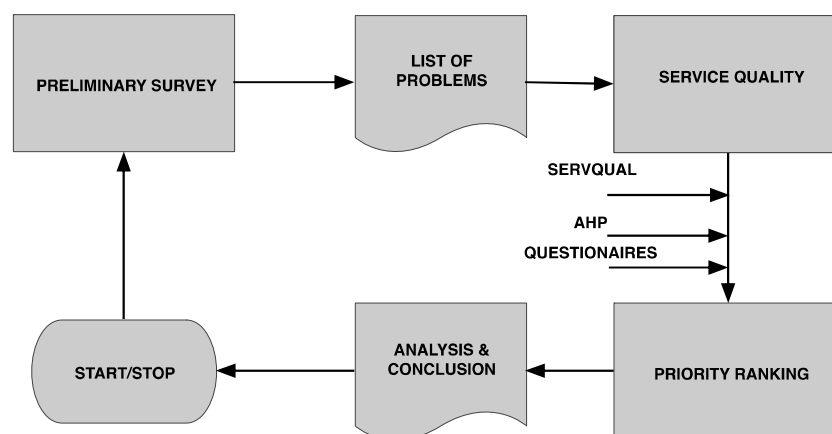
Figure 1. Research Methodology

From the list of problems that have been collected, it was revealed that the most dominant problem to be solved was Service Quality.

2.1 Service Quality (ServQual):
The service quality model from Parasuraman is used, because this model is most popular at the academic level. In this model, service quality can be measured from 5 main dimensions, namely (Fandi Tjiptono, 2018):

2.2 Reliabity.
Reliability is the ability to provide services as required and to satisfy stakeholders.

2.3 Assurance.
Assurance or security is the ability to provide services consisting of knowledge, competence, courtesy, and trustworthiness, free from danger, risk and doubt.

2.4 Tangible.
Tangible is the ability of institutions to facilitate infrastructure including physical evidence, equipment, employees, and communication facilities.

2.5 Empathy.

Empathy is the ability of communication including ease in establishing relationships, good communication, personal attention, and understanding of the individual needs of stakeholders.

2.6 Responsiveness.
Responsiveness is the ability to provide quick accurate responses to stakeholders.

Those five dimensions are less optimal delivered by PPs-UMT management. Therefore, entering the next 10 years in the second stage, those five dimensions of ServQual shall be improved.

2.7 Analytical Hierrarchy Process (AHP).
AHP method is a functional hierarchy whose main input is human perception. AHP method can be used to solve complex and unstructured problems. With AHP, complex problems are broken down into groups and then organized into a hierarchy, then given a number value in subjective considerations about the importance of each dimension.

According to Saaty, there are several principles in solving problems in AHP, which is the principle of compiling a hierarchy (Decomposition), the principle of determining priority (Comparative Judgment), and the principle of logical consistency (Logical Consistency). In order to rank problems of ServQual in PPs-UMT, the hierarchy has been formed as follows:
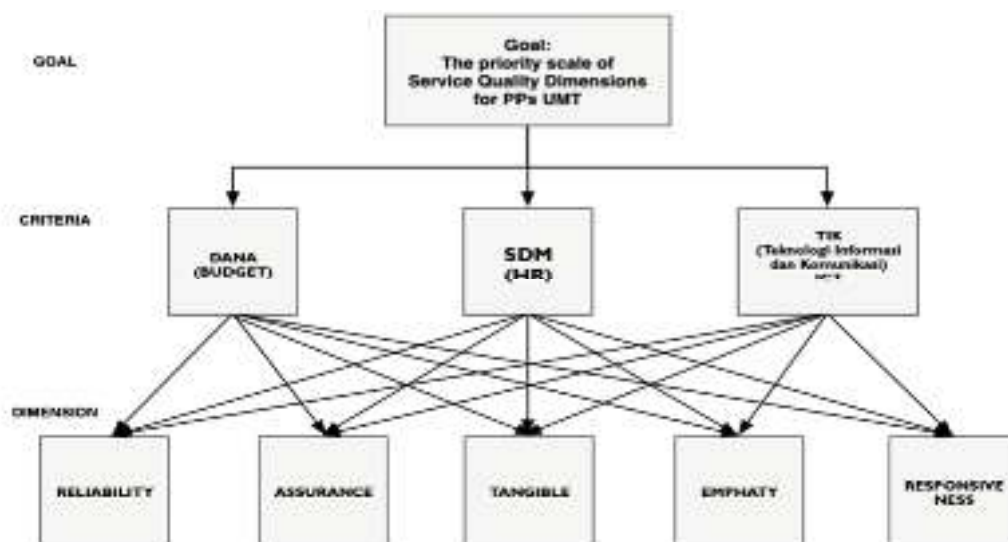
Figure 2. Hirarki Pemeringkatan Service Quality di PPs-UMT

The next step is to conduct Comparative Judgment, which is to do pairwise comparisons. The rating and numerical scale (Thomas L. Saaty) is tabulated as follow.

Table 1. Definition of Rating and Numerical Scale

Definition	Intensity of Interest
Equal Importance	1
Moderat Importance	3
Strong Importance	5
Very Strong Importance	7
Extreme Importance	9

Note: If there are doubts between the 2 values above, use the middle number, for example between 3 and 5, then write 4, etc.

The final step, in order to avoid respondent inconsistencies, each pairwise comparison is tested at the level of Consistency Ratio (CR):

$$CR = \frac{CI}{RI} \qquad CI = \frac{(\lambda_{max}-n)}{n-1} \qquad (1)$$

CI = Consistency Index, RI = Random Index untuk n variabel,

n= number of variables compared, λ_{max} = average value after matrix normalization.

If the respondents are more than one person and the perceptions are not the same, then the average is calculated with the Geometric Mean (GM), as follows:

$$GM = \sqrt[n]{X_1 * X_2 * ... * X_n} \qquad (2)$$

3. Data Processing Result

Data sources are from three key persons in PPs-UMT. Average results from the three resource persons, as follows:

Table 2. Pairwise Comparison for Criteria

TEAM	BUDGET	HUMAN RESOURCES	INFORMATION TECH. & COMM
BUDGET	1,000	1,437	1,737
HUMAN RESOURCES	0,696	1,000	2,596
INFORMATION TECH. & COMM	0,576	0,385	1,000

Consistency Ratio = 0,056

Table 3. Pairwise Comparison for Criteria dan Budget Dimension

TEAM	Assurance	Empathy	Reliability	Responsiveness	Tangible
Assurance	1,000	1,701	0,306	0,337	2,854
Empathy	0,588	1,000	0,285	0,285	1,214
Reliability	3,263	3,512	1,000	2,065	3,588
Responsiveness	2,967	3,512	0,484	1,000	2,967
Tangible	0,350	0,824	0,279	0,337	1,000

Consistency Ratio = 0,0346

Table 4. Pairwise Comparison for Criteria and Human Resources Dimension

TEAM	Assurance	Empathy	Reliability	Responsiveness	Tangible
Assurance	1,000	1,437	0,235	0,235	0,401
Empathy	0,696	1,000	0,337	0,279	1,257
Reliability	4,246	2,967	1,000	1,000	3,512
Responsiveness	4,246	3,588	1,000	1,000	3,945
Tangible	2,497	0,796	0,285	0,253	1,000

Consistency Ratio = 0,040

Table 9. Pairwise Comparison for Criteria Information Tech. & Comm. Dimension

TEAM	Assurance	Empathy	Reliability	Responsiveness	Tangible
Assurance	1,000	1,437	0,337	0,337	4,246
Empathy	0,696	1,000	0,285	0,306	1,257
Reliability	2,967	3,512	1,000	2,065	3,588
Responsiveness	2,967	3,263	0,484	1,000	2,967
Tangible	0,235	0,796	0,279	0,337	1,000

Consistency Ratio = 0,054

Table 10. The Priority Scale of Service Quality at PPs-UMT

Dimension	Score	Rank
Reliability	0,364	1
Responsiveness	0,303	2
Assurance	0,117	3
Empathy	0,093	4
Tangible	0,087	5

4. Conclusion

From the results of data processing with AHP-Pairwise Comparison, we can take conclusion from table 10 as follow:

- The first priority of service quality improvement program is on the Reliability dimension, a program that facilitated by institution to improve the ability of lecturers and staff in line with knowledge development.
- The second priority of service quality improvement program is Responsiveness dimension, a program that facilitated by the institution to educate and form the lecturers and staff that can help students to solved problem correctly in the short time.
- The next program is to improve service quality from the Assurance dimension. This program is not merely the capability of lecturers and staff but also on the sense of security that is created or arises when students enter or are in the PPs-UMT environment, for example standard stairs, clean toilets, etc.
- The fourth program priority is the Empathy dimension. This program related to problems about the easiness in establishing relationships, good communication, personal attention, and understanding of the individual needs of students and society.
- The last program of service quality improvement is the Tangible dimension. This dimension is a tangible that when seen by the community, they become more interested in studying at PPs-UMT, and if seen by their students, they are willing to promote PPs-UMT voluntarily.

References

[1]   Thomas L. Saaty 2009 *Theory and Applications of the Analytic Network Process*, (RWS Publications).pp 1-46
[2]   Fandy Tjiptono 2019 *Service Marketing– Principle, Implementation, Research*, (Andi Offset) pp 293.
[3]   Philip Kotler 2003 *Rethinking Marketing* (Pearson Prentice Hall) pp 20-23.