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Student satisfaction measurement in higher education

Verra Syahmer[a], Rahmat Nurcahyo[b,*], Djoko S. Gabriel[b], Ellia Kristiningrum[c]

[a]*Department of Agro-Industrial Engineering, Politeknik ATI Padang, Padang 25171, Indonesia*
[b]*Department of Industrial Engineering, Universitas Indonesia, Depok 16424, Indonesia*
[c]*Research Center for Testing Technology and Standards, National Research and Innovation Agency (BRIN), South Tangerang 15314, Indonesia*

Abstract

Since the quality of academic services can affect students' satisfaction, identification of academic quality attributes is needed. It is divided into several factors using factor analysis and modeling the relationship between academic quality and students' satisfaction using the multiple regression method. This research used primary data obtained from questionnaires given to undergraduate students of Universitas Indonesia. The results showed six factors affecting students' satisfaction. However, only two of them, i.e. the lecturers' abilities to deliver learning materials and the quality of the classroom and building, were significant. The top priority factor was the lecturers' abilities to deliver learning materials.

Keywords: student satisfaction; satisfaction measurement; higher education

1. Introduction

There have been some significant changes in higher education due to a tight competition from the global community (Chong & Ahmed, 2014). In today's competitive academic environment there are varieties of higher education institutions (HEIs), each of which has to concern with how to attract and hold students (Hasan, Ilias, Rahman, & Razak, 2008). It is caused by the fact that students-to-be, as the receivers of the academic services, will be more selective in choosing where they will study (Joseph, Yakhou, & Stone, 2005). In this situation, HEIs need to do quality techniques from service industries, taking notice of their customers' needs (Abili, Thani, & Afarinandehbin, 2012; Quinn, Lemay, Larsen, & Johnson, 2009) by focusing on their primary customers, i.e. the students (DeShields, Kara, & Kaynak, 2005; F. M. Hill, 1995; Thomas, 2011; Zairi, 1995). Today's HEIs must consider students' skills and abilities to graduate as well as their perception about their education.

One of the most used methodologies by the HEIs to mend the quality is Total Quality Management (TQM) (Aly & Akpovi, 2001; Quinn et al., 2009), whereas it is used as a guarantee to continuously increase the quality of the HEIs. To improve the HEIs quality, TQM has three main functions: focusing on the fulfilment of customers' needs (Kanji, Malek, & Tambi, 1999), continuous improving efforts (O'Neill & Palmer, 2004; Sherr & Gregory Lozier, 1991), and building total participation for all elements in the quality improvement

programs (Thakkar, Deshmukh, & Shastree, 2006). By using the students as customers affected by the service provided (McCuddy, Pinar, & Gingerich, 2008), the success of TQM implementation can be observed from the students' satisfaction. Simultaneously, the students' satisfactions have become the important issues for HEIs to hold their students and improve their qualities [16] to face the pressure of tight competition in the global community.

Quality has an important role in increasing customers' satisfaction, growing the market, and reaching excellence in business. It is one of the key factors for the company to achieve, strengthen, and maintain competitiveness (Magd, Kadasah, & Curry, 2003). In HEIs, quality is a difficult concept; it is differently defined by the researchers (Jain, Sinha, & Sahney, 2011). However, Allen and Davis (1991) and Holdford and Patkar (2003) defined the quality of academic services as the evaluation of the whole students from the services obtained as one of their education experiences (Jain et al., 2011). The service quality is essential due to the intensive competition among the HEIs, internationalization efforts, and high expectations towards HEIs and education classifications as valuable services (Ling, Chai, & Piew, 2010).

One of the students' HEIs services quality dimensions is the academic quality (Soutar & McNeil, 1996), specifically for the lectures activities in the classroom. According to Edwards, Smith and Webb (2001) lecture is the main teaching method applied in HEIs (McGarr, 2009). This activity involves many education systems (Jain et al., 2011): input from the university staffs (the lecturers) and infrastructure, process (learning, teaching, evaluating, and giving knowledge activities), and output (the HEI's graduates). Meanwhile, the service quality

dimensions in the lecturing activities include the physical qualities of the facilities such as the building and implement condition (Lehtinen & Lehtinen, 1982), the lecturers' knowledge (Shank, Walker, & Hayes, 1996) and teaching quality, and the content of the teaching materials and methods (F. M. Hill, 1995).

As one of the main academic services in HEIs, the quality of the lectures must be attended to satisfy the students. This thing can be accomplished by identifying the factors and attributes in the academic services and recognizing the effects on students' satisfaction so that the priority attributes and factors to improve can be recognized. Knowing the relationship between academic quality and students' satisfaction can help the HEIs to improve the quality of their academic services and identify the attributes of priority quality based on the students' satisfaction.

2. Methodology

2.1. Previous research

Education, especially HEIs, is being pushed to commercial competition due to economic power (Seymour, 1992 in (Jain et al., 2011)). Similar to companies, academic institutions also need to continuously innovate, structure diversification, and find new means to give their services more effectively to their customers. This way impacts investment gains and market and comprehends customers' satisfaction and offered and received services quality perception (Jain et al., 2011). In today's very competitive atmosphere, students are more discriminative in deciding HEIs and more demanding from their chosen HEIs (Joseph et al., 2005). To attract the customers, serving their needs and maintain them, service providers and researchers are actively involved in comprehending customers' expectations and service quality perceptions. A better comprehension of how customers form the quality view can give valuable information to manage the transfer system to design satisfying services for the customers (Seymour, 1992 (Jain et al., 2011)) and adapt the HEI environment to customers' needs.

HE sectors have begun to implement the concept and methodology of TQM (Jain et al., 2011). There are several reasons triggering their interest in implementing TQM; one of which is the increase of competition between the academic institutes (Zairi, 1995) and HEIs to apply Total Quality Management (TQM) as a solution to guarantee their education quality keeps increasing (Aly & Akpovi, 2001). In implementing TQM, the top management of HEIs has to comprehend the quality dimensions enabling them to develop more integrated quality programs (This will ensure the success of the TQM implementation in HE) (Ugboro dan Obeng, 2000 in (Ardi et al., 2012)). TQM started gaining interest from the HEIs at the end of the 1980s (Srikanthan & Dalrymple, 2002). According to DeCosmo et al. (1991) and Spanbauer (1993), TQM was implemented for the first time in the US in 1985 in two universities and expanded quickly until 78 universities attempted to implement it in 1990 (Coate, 1993; Owlia & Aspinwall, 1997). The implementation of TQM in the US was affected by the success of many large companies and critical of education situations such as students' grades, funding, and complaints from businessmen and parents. Looking up to the success and expansion of TQM implementation in US

universities, in the 1900s, many HEIs started to implement TQM and succeeded (Kanji et al., 1999). Because TQM implementation has a different pattern for each country (Srikanthan & Dalrymple, 2002; Venkatraman, 2007), and TQM implementation in HEI will gain different results for each country (Ardi et al., 2012).

Even though HEIs can adopt many TQM principles, implementing them has some obstacles related to the idealist institution missions, the lack of agreement about the meaning or implication of the quality, and academic freedom and ownership cause the government to have limited control over the ket personnel. The continuous improvement principle of TQM also causes a number of problems. According to Seymour (1992), there are four main hindrances in improving HE (and probably also in all public sectors) those are the reluctance to change, compartment, the lack of competition, and the suitability with minimum requirements (Jain et al., 2011). However, core academic values such as knowledge, critical thinking, academic freedom, personal integrity, and decentralization can help if they are considered as the foundation for the process (Owlia & Aspinwall, 1997).

Quality technique from the industry commonly is focused on the customers' needs. Nevertheless, HEI policies make 'focusing on customers' difficult because there are a lot of parties that act as customers in each activity in the HEI. The difficulty in defining HE customers is the main obstacle to improving quality. There are some customer groups from HEI: students, parents, research sponsors, country and government, public, future employers of a student, academic disciplinary communities, accreditation council, staff, and lecturers (Quinn et al., 2009). Dealing with some groups in HEI, Ho and Wearn (1995) suggested that HEIs must consider the relative prominence of each customer to balance quality improvement (Ho & Wearn, 1995). It is because one customer might think about class, curriculum, or certain HEI has high-quality education while others might not.

With the change in the world and competition among the HEIs, Sahney et al. (2004) believed that education is more like a product with the student as the main customer. Owlia dan Aspinwall (1997), who conducted a survey of 124 people about education quality in the United States, Europe, India, and Australia, identified the students as the main customers (Owlia & Aspinwall, 1997). Ewell (1993) showed that the students often see lecturers as the main material source. Helms dan Key (1994) noted that students can be classified as materials, customers, or even employees. As a material, the students go through a process and become a product (Quinn et al., 2009). As a customer, a student buys education services and as an employee, a student has to be involved in activities, motivated to do activities, and evaluated. Analyzing the different roles of students, Helms dan Key (1994) showed that different education policies have given various roles to students (Quinn et al., 2009).

Customer satisfaction is the most important thing for each organization. For service companies, customer satisfaction directly depends on the service quality. In service sector it depends on the quality of the service products and processes. A service process can be defined as a whole transaction between service provider and customer. Customer satisfaction in service companies is based on subjective comparison criteria between

customer expectations, their experiences regarding the services, the services results, regular service providing, and effective problem-solving. An organization has to monitor, evaluate, and control employees' behavior to give satisfying service to customers' expectations (Juneja et al., 2011). In HEIs, there are some methods that can be used related to the service quality and students' satisfaction, such as DeShields et al., 2005 using path analysis to identify the effects of HEI quality (education and service quality) on students' satisfaction. Ardi et al., 2012 used SEM (Structural Equation Modeling) with MLE (Maximum Likelihood Estimation) procedure to rate the connection between HE quality dimensions and identified the effects of each quality dimension (faculty's commitment, department's commitment, course delivery, campus facilities, courtesy, customer feedback & improvement) on students' satisfactions; (Douglas, McClelland, & Davies, 2008) used CIT (Critical Incident Technique) to introduce students with experience in HEs' satisfactions conceptual model and identify core factor with positive impact or negative on students' loyalty behavior. Hasan et al. (2008) used the regression analysis to recognize the relationship between HE service quality dimensions (tangibility, responsiveness, reliability, assurance, empathy, and overall service quality) and students' satisfaction and tested some important factors in the service quality giving the immense contribution to students' satisfactions (Hasan et al., 2008).

A distinction between satisfaction and quality becomes important because service providers must know whether their objective, that is, by giving satisfaction to the customers will develop a high perception towards service quality or that they intend to give high service quality as a way to increase customers' satisfaction (Cronin Jr & Taylor, 1992). Quality is also important in improving customer satisfaction (Shahdadnejad & Alroaia, 2013). This relationship is important because one of the service provider's objectives is to develop customers' loyalties to increase richness or maintain their market position (Cronin Jr & Taylor, 1992). Seeing the continuous growth of HEIs, there is a tight competition among the HEIs. That is why Cuthbert (1996) suggested that specific instruments must be designed to evaluate the service quality in HEIs (Cuthbert, 1996). One of them is to evaluate HEIs academic service quality to increase students' satisfaction.

The lecturer is input from the academic activities in the HEIs. The lecturer has a role in doing the process of the HEIs' system (related to academic activities): conducting training, teaching, learning, and knowledge evaluation. Whereas learning content, teaching quality, and teaching method are the key components of the HE service quality in the academic process (F. M. Hill, 1995) and Lecturers become the priority (Y. Hill, Lomas, & MacGregor, 2003). As the most affecting dimension in education quality, lectures' quality also causes it. In the preceding researchers, some factors of lecturers' quality must be in place according to the students including being able to explain the learning materials clearly and understandably, to comprehend the materials, to prepare and organize them, to be enthusiastic about the learning materials, to teach, to be friendly, to help and open about people's opinions (Feldmann, 1976), to have charisma (Shevlin, Banyard, Davies, & Griffiths, 2000), to inspire, to be knowledgeable (Lammers &

Murphy, 2002), to have knowledge, to be well organized, to support, to help, to be sympathetic, and care about the students' individual needs (Y. Hill et al., 2003), to be competent, to be willing to answer questions, to be approachable, to be humorous, and to be flexible to explain things in different ways (Brown, 2004), to be skilled, to be well communicative, to have teaching skills, to be humorous, and to have good teaching methods (Voss & Gruber, 2006). However, according to studies by Voss & Gruber (2006), which is supported by the findings of Pozo-Munoz et al. (2000), Husbands (1998), Patrick & Smart (1998), and Ramsden (1991), skill is the most vital attribute of "ideal" lecturer (Voss & Gruber, 2006). In contrast, lecturers must have knowledge about their subjects and are able to communicate with their students clearly.

Another education system that is the input from lecture activity is infrastructure. Infrastructure or physical activity can show skill and quality offered by service companies (Bitner, 1992), as well as the HE. Physical facilities from HEIs can affect service quality felt by the students entirely because students can associate as a real element with the service provided by HEIs (Oldfield & Baron, 2000; Russell, 2005). Many researchers that have tested the physical facilities of higher education institutions mentioned one of the vital factors of service quality experienced by the students (Ford, Joseph, & Joseph, 1999; Leblanc & Nguyen, 1997; Sohail & Shaikh, 2004). Physical facilities from HEIs based on various researches include the layout of the classrooms, classroom lighting, the appearance of a campus building and land, classrooms and study rooms comfort, and the campus tidiness and hygiene (Sohail & Shaikh, 2004).

2.2. Methods

The data were attained by surveying undergraduate students of Universitas Indonesia. There were 23 quality attributes developed based on the Delphi method and construct validity. Delphi method was performed to obtain lecture service attributes used in the questionnaires. It was conducted using questionnaires with open questions proposed to students who actively joined the lecture activity. This method was conducted in two stages: to identify the factors determining the lecture quality, and to recognize entities included in the previously obtained factors. Then, the obtained factors in the Delphi method were validated using construct validity by three experts, those are people who have been experienced in education for more than 20 years and has a role in education and academic quality in higher education institutions. After lecture quality attributes were identified, a trial involving 33 students was conducted to test the validity and reliability of the survey instrument.

The sample number in the research was assessed using the Slovin formula. Using the population of the undergraduate students of UI, 48,761 people, the minimum number of samples was 100 respondents. The sample-taking procedures used were convenience, quota, and disproportionate stratified sampling techniques, whereas the sample was divided based on the field of study: health, science and technology, and social and humanism so that the number of samples for every field of study was 34 respondents.

The survey was conducted into 2 stages. The first survey

was to determine the connection between the quality of lectures and students' satisfaction by using a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The second survey calculated the students' satisfaction value towards lecture quality using the Likert scale from 1 (*extremely dissatisfied*) to 5 (*extremely satisfied*). From the first survey, 180 respondents consisted of 33.3% males and 66.7% females; whilst the second survey obtained 150 students with 59.6% males and 40.4% females. The total of respondents obtained exceeded the minimum number of samples in analyzing the data.

The data analysis was conducted using Principal Axis Factoring (PAF) factor analysis, multiple regression factor analysis, and student satisfaction methods. The principal Axis Factoring (PAF) factor analysis method was used to identify the factors and attributes of lecture quality. The multiple regression factor analysis method was used to recognize the value of the relationship between the quality of lectures and students' satisfaction. From the result of this multiple regression analysis, the factors and lecture quality attributes that significantly affected students' satisfaction could be identified. The analysis of students' satisfaction rate was used to recognize students' satisfaction with lectures' performance in the HEIs, compared to the significantly affecting factor and lectures quality attributes towards students' satisfaction. By using it, the factors and attributes becoming a priority to be improved to fulfill students' satisfaction were conceded.

3. Results and Discussion

The first data analysis conducted was forming lecture quality factors using the Principal Axis Factoring (PAF) factor analysis method. The result of the forming can be seen in table 2. From the factor forming result in table 2, six factors were formed of 23 attributes, the naming of each factor and its attribute, and the loading factor value of each attribute used.

After identifying the number of factors formed, multiple regression analysis could determine the independent and dependent used. The dependent variable referred to the formed six lecture quality factors. However, before conducting multiple regression analysis, some following requirements must be accomplished:

1. Normality test. This test was used to know the data distribution used. The obtained result fulfilled the normality assumption because the data had a normal distribution and spread around the diagonal line and follow the diagonal line.
2. Multicollinearity test. Tolerance value of the rate of mistake allowed statistically. Variance influence value (VIF) is a quadrate standard inflation deviation factor. By seeing the limitation of the tolerance value of the independent variable above 0.05 and IF < 5, it can be concluded that there was no multicollinearity among the independent variables. It was caused by the data having a minimum tolerance value of 0.589 and a minimum IF of 1.207.
3. Heteroscedasticity test. If the residuals have similar variants, they are called as homoscedasticity. However, if they are different, the term is heteroscedasticity. The good equation is homoscedasticity. The obtained results

showed that the data did not form a certain pattern. It meant that the data were heteroscedasticity for having similar variants.

Autocorrelation test. If autocorrelation exists, it means that the equation is not good to be used to predict something. Using independent variable (k) = 6 and observation total (N) = 180, it obtained dL value= 1,6878 and dU = 1,8254. The autocorrelation result obtained was 1,8254 < 2,021 < 2,3122 (dU < d < 4-dL), indicating no autocorrelation in the data.

After all of the requirements, multiple regression analyses were conducted. This analysis was used to identify the factors and attributes that significantly affected students' satisfaction. The significant connection variable can be seen from the significant value in each factor and attribute. Table 3 shows the coefficient value from lecture quality factors.

Table 3 shows the significance value, t-value for every independent variable. It was observed that there were only two variables with t-value below 0.05, i.e. X1 and X2 variables. Thus, it obtained a model as follows:

$$Y = -0,087 + 0,224 \, X1 + 0,582 \, X2 \qquad (1)$$

From the formula, it was observable that lecture quality factors affecting students' satisfaction significantly were the lecturers' ability to deliver learning materials and the state of the building and classrooms. The first factor affected the value 0.224, meaning that every one degree increase of lecturers' ability to deliver learning materials could increase students' satisfaction by 0.224 degrees. In the second factor, the state of the building and classrooms had an affecting value of 0.582; it meant that every one-degree increase of the state of the building and classroom could increase students' satisfaction for 0.582 degrees.

Then, the value of the connection among its attributes could also be identified. Table 4 shows the coefficient value from the lecture quality attributes model.

From table 4, it is apparent that only three attributes had a t-value below 0.05, i.e. X1,3; X1,4 and X2,1variables. Based on that explanation, the regression model should be:

$$Y = 0, 560 + 0,197X1,3 + 0,137X1,4 + 0,306 \, X2,1 \qquad (2)$$

From the formula (2), it can be seen that lecture quality attribute affecting students' satisfaction significantly was the lecturers' teaching quality interactively in a relaxed but serious manner, the thrilling learning and teaching activities, as well as comfort and hygiene of the classroom. Lecturers' ability to teach interactively in a relaxed but serious manner had an affecting value of 0.197; each one-degree raise of lecturers' teaching quality interactively in a relaxed but serious manner could increase students' satisfaction by 0.197 degrees. The same thing ensues with the second attribute, the non-tedious quality of learning and teaching activities could have an affecting value of 0.137, indicating that each degree rise in non-tedious quality of learning and teaching activities could increase students' satisfaction by 0.197 degrees. The comfort and hygiene of the classroom could have an affecting value of 0.306, meaning that each one-degree rise in comfort and hygiene of the classroom could increase students' satisfaction by 0.306 degrees.

Table 1. Lectures quality factor forming

No.	Factor	No.	Attribute Explanation	Loading Factor Value
X_1	Lecturers' ability in delivering learning materials	$X_{1,1}$	Lecturers give various tasks that help students to comprehend the learning materials	0,792
		$X_{1,2}$	Lecturers' ability in delivering lectures materials that students can understand them	0,706
		$X_{1,3}$	Lecturers teach interactively in a relaxed but serious manner	0,676
		$X_{1,4}$	The non-tedious teaching and learning activities	0,67
		$X_{1,5}$	Lecturers' ability to communicate in two-way	0,482
X_2	The state of the building and classrooms	$X_{2,1}$	Classroom tidiness and hygene	0,781
		$X_{2,2}$	The state of the building (the availability of elevators and stairs)	0,756
		$X_{2,3}$	Well-function OHP / projector	0,642
		$X_{2,4}$	The aptness of room temperature (not too hot/cold)	0,544
		$X_{2,5}$	The aptness of classroom capacity and the number of students	0,529
		$X_{2,6}$	The state and comfort of chairs utilized	0,498
		$X_{2,7}$	The aptness of room lighting	0,701
X_3	The learning materials delivery process by the lecturers	$X_{3,1}$	The usage of teaching media/tools by lecturers to deliver lectures materials	0,789
		$X_{3,2}$	The aptness of lecturers' delivering lectures and SAP	0,721
		$X_{3,3}$	Lecturers' mastery of the materials they deliver	0,682
		$X_{3,4}$	The applicable examples from the materials given by the lecturers	0,441
X_4	Facility availability	$X_{4,1}$	Markers and whiteboards to be used	0,745
		$X_{4,2}$	The calm atmosphere in lecture room	0,654
X_5	The significance of lecturers' attendance	$X_{5,1}$	Lecturers having time to teach (being able to attend the lecture in accordance with the time)	0,758
		$X_{5,2}$	Lecturers attending the class on time	0,702
		$X_{5,3}$	The clarity of lecturers' voices and intonation while teaching that the lecture becomes understandable	0,62
X_6	The evaluating assessment by the lecturers	$X_{6,1}$	The aptness of grades granted by the lecturers with the credits	0,877
		$X_{6,2}$	The presentability of grades granted by the lecturers towards students' mastery of the materials given	0,808

Table 2. Lectures quality factor model coefficient

Model	Unstandardized Coefficient B	Std. Error	Standardized Coefficient Beta	t	Sig.
1 (Constant)	-.087	.477		-.183	.855
X1	.224	.093	.189	2.408	.017
X2	.582	.090	.447	6.456	.000
X3	.085	.102	.057	.826	.410
X4	-.071	.075	-.063	-.948	.344
X5	.072	.081	.059	.884	.378
X6	.115	.070	.115	1.631	.105

Table 3. Lectures quality attribute model coefficient

Model	Unstandardized Coefficient B	Std. Error	Standardized Coefficient Beta	t	Sig.
1 (Constant)	.560	.406		1.380	.170
X11	.071	.061	0.084	1.1176	.241
X12	-.032	.065	-.035	-.498	.619
X13	.197	.065	.232	3.037	.003
X14	.137	.064	.164	2.150	.033
X15	-.090	.079	-.076	-1.132	.259
X21	.306	.073	.319	4.212	.000
X22	.115	.059	.135	1.932	.055
X23	-.015	.058	-.018	-.265	.791
X24	.057	.060	.070	.964	.336
X25	.046	.056	.054	.823	.412
X26	.073	.054	.092	1.335	.184
X27	-.041	.079	-.036	-.525	.600

Table 4. Satisfaction rate scale

Satisfaction Rate	Scale Value
Extremely dissatisfied	$1.0 \leq X \leq 1.8$
Dissatisfied	$1.81 \leq X \leq 2.6$
Somewhat dissatisfied	$2.61 \leq X \leq 3.4$
Satisfied	$3.41 \leq X \leq 4.2$
Extremely satisfied	$4.21 \leq X \leq 5.0$

Determining factors and attributes that significantly affect students' satisfaction above can help higher education institutions to determine the priority resolution to improve the lecture quality and students' satisfaction. The next step is measuring the students' satisfaction value towards lecture quality. Before measuring the satisfaction value, the satisfaction rate was arranged in interval form. With this way, the range of the lowest value to the highest one could be recognized. Table 5 shows the interval scale of students' satisfaction rate.

Table 5 shows students' satisfaction value for each lecture quality factor and attribute. This satisfaction value also helps higher education institutions to determine repair priority or improvement of provided lecture quality. The results of the measurement of students' satisfaction value can be observed in table 5.

4. Conclusion

Based on the data analysis and discussion, it can be concluded that factors affecting students' satisfaction with lectures quality included 1) lecturers' ability to deliver learning materials, 2) the state of the building and classroom, 3) the materials delivering process, 4) the facility availability, 5) the significance of lecturers' attendance, and 6) evaluating assessment by the lecturers. Of the six factors, two factors significantly affected students' satisfaction; those are lecturers' ability to deliver learning materials with an affecting value of 0.224 and lecturers' ability to deliver the materials interactively attribute for 0.197, learning and teaching activities in a relaxed but serious manner for 0.197, non-tedious learning and teaching activities for 0.137, the state of the building and classrooms for 0.582, and the comfort and hygiene of the classroom for 0.306.

Overall, students felt somewhat dissatisfied with the higher education lecture quality. If every factor and attribute is noticed, the priority factors and attributes to be increased are lecturers' ability to deliver learning materials interactively in a relaxed but serious manner and the non-tedious learning and teaching activities. Lecturers become a priority because lecturers' quality is the most important dimension in education (Y. Hill, Lomas, & MacGregor, 2003). It is caused by the fact that one of the biggest inputs in the higher education system is students (Jaraiedi & Ritz, 1994); lecturers have the duty to conduct processes from the higher education system (related to lecture activities): researching, teaching, knowledge learning and evaluating. The lecture process, learning content, teaching quality, and teaching method are the key components of higher education service quality (F. M. Hill, 1995).

Table 5. Students' satisfaction rate value recapitulation

Factor	Attribute	Satisfaction Value	
		Attribute	Factor
Lecturers' ability in delivering learning materials	X1,1	3.059	
	X1,2	2.994	
	X1,3	3.156	3.102
	X1,4	2.998	
	X1,5	3.316	
The State of the building and classrooms	X2,1	3.519	
	X2,2	3.387	
	X2,3	3.601	
	X2,4	3.497	3.537
	X2,5	3.559	
	X2,6	3.528	
	X2,7	3.674	
The process of delivering the learning materials by the lecturers	X3,1	3.327	
	X3,2	3.359	3.338
	X3,3	3.398	
	X3,4	3.269	
Facility availability	X4,1	3.532	3.414
	X4,2	3.300	
The significance of lecturers' attendance	X5,1	3.112	
	X5,2	3.246	3.223
	X5,3	3.314	
The evaluation assessment by the lecturers	X6,1	3.035	3.158
	X6,2	3.286	

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