Development of quality of educational service model based on student satisfaction inventory (a case study at Bali State Polytechnic)

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Abstract. The aim of the present study was three-fold: (i) to determine the level of student satisfaction on the quality of educational services offered by Bali State Polytechnic (BSP) based on Student Satisfaction Inventory, (ii) to design an appropriate strategy to improve the quality of educational services in BSP, and (iii) to develop an appropriate educational service quality model for BSP. The participants were 421 students recruited using Stratified Proportional Random Sampling technique. The data were analyzed with the help of descriptive statistics, Importance Satisfaction Matrix, and Pattern Matching. It was found that the level of student satisfaction on the quality of educational services offered by BSP was in the category of "satisfied" with the average score of 2.78, quite far below the target stated in the 2017 BSP Strategic Plan, which is 3.3. This finding suggests that BSP authorities should increase Wi-Fi bandwidth within the campus, improve routine maintenance of campus facilities and infrastructure, provide training on service excellence for administrative staff, update course materials in accordance with the advancement of science and technology, simplify the administrative process of applying for the cover letter needed for on-the-job training and research, provide some communication channel to accommodate students' suggestions and complaints, make ID card for administrative staff and lecturers.

1. Introduction

Quality of service is defined as excellent or superior service that customers receive relative to what they expect (Zeithaml dan Bitner, 2000). Quality of service, according to Lewis and Booms in Tjiptono (2005), constitutes a measure of how well the level of service is delivered, and the extent to which the service delivered meets customers' expectations. Kotler and Keller (2009) stated that consumers create service expectations from past experience, word of mouth communication and advertising. The consumer compares the perceived service to the expected one. Consumers will be disappointed if the perceived service does not meet the expected service, and vice versa.Tjiptono (2005) argued that the two main factors that affect the quality of service are: (1) Customers' perception of the service they actually receive (perceived service). (2) The service that is actually expected / desired (expected service).

Parasuraman et al. (1988) in Kotler and Keller (2009), stated that there are five dimensions of service quality called Servqual, namely: (1) Tangibles, i.e. physical appearance, equipment, employees, and communication materials. (2) Reliability, i.e. the ability to perform the promised service in a convincing and accurate manner. (3) Responsiveness, i.e. willingness to help customers and provide services quickly. (4) Assurance, i.e. employee knowledge and decency as well as their ability to convey trust and confidence. (5) Empathy, i.e. the willingness to give a special attention to each customer.

Quality in education services is complex in its facets, and there exists a lot of scope for sharpening and clarifying its definition (Choudhury, 2015). DeShields et al. (2005) noted that the higher education sector must endeavor to deliver high service quality and student satisfaction, in order to ensure sustainability in a competitive service environment. Jain et al. (2013) in a study of the fast growing technical education sector in India found that the current competitive environment for enrolling students has forced institutions to adopt a "students as a customer" approach to educational delivery.

Student Satisfaction Inventory (SSI) is a method of measuring student satisfaction in higher education services developed by Noel-Levitz since 2003 which is now widely used in universities in the world (Carabajal, 2012), which contains ten dimensions (Noel-Levitz, 2016), namely: (1) Academic advising and counseling effectiveness, i.e. the extent to which academic guidance and counseling programs can help solve problems faced by the students. (2) Academic support services, which include a wide range of support services available on campus to help students achieve their academic goals. (3) Campus support service, i.e. campus services which make the students' learning experience meaningful and productive. (4) Tuitition fee and financial aids effectiveness, i.e. campus services which relate to the ease of payment of tuition fees and the availability of scholarships provided by higher education institutions. (5) Recruitment and registration effectiveness, i.e. the effectiveness of recruitment methods and ease in conducting registration. (6) Instructional effectiveness, which is related to the implementation of learning process, curriculum, and campus commitment to academic excellence. (7) Campus climate, i.e. the extent to which the campus provides a conducive atmosphere and enhances ownership. (8) Concern for the individual, i.e. the attention and treatment of campus given to individual students and to what extent the students are considered important and accepted and valued by the institution. (9) Safety and security, i.e. safety and security of students while on campus. (10) Service excellence, i.e. the attitude of lecturers and administrative staff in providing services to students. The SSI's publisher indicate that the satisfaction and importance ratings can be use to calculate gap scors between importance and satisfaction (

Bali State Polytechnic (BSP) as one of higher vocational education institution in Indonesia, certainly has to pay attention to quality of education service. Improving the quality of educational services, be it academic or non academic, should constantly be implemented so that student satisfaction can be improved.

The result of the survey on the level of student satisfaction on the BSP education service by BSP Academic Quality Assurance Unit for the years 2015 and 2016 revealed that there has been a decrease in student satisfaction index in all departments and units related to the services delivered to the students, with the average decrease being 0.76 (BSP Academic Quality Assurance Unit, 2016). It is therefore necessary to develop strategies and models to improve the quality of education services to improve student satisfaction on the quality of education services in BSP.

The purposes of this study are: (1) To examine the level of student satisfaction on the quality of education services in BSP as measured by student satisfaction inventory. (2) To design strategies to improve the quality of education services in BSP. (3) To develop the quality model of education services to increase the satisfaction of BSP students.

2. Method

This research was conducted at BSP. The population of this study was all students of BSP which at the end of 2016 amounted to 3,886 people. The sampling technique used was stratified proportional random sampling based on the proportion of the number of population members in each sub-population (Sugiyono, 2012). The best sample size is 5-10 observations for each parameter (indicator) estimated (Sugiyono, 2012). There were 79 indicators in this study, so the minimum sample size should be 5 x 79 = 395. A total of 421 respondents participated in the study. So the number of samples taken exceeded the minimum required sample limit. Data collection was done through observation, questionnaire, and interview (Sugiyono, 2012).

The instrument used in this study was a closed questionnaire consisting of a set of statements based on the indicators of Student Satisfaction Inventory. Each statement was measured using a Likert scale used to measure attitudes, opinions and perceptions of a person or group of people about social events or symptoms (Riduwan, 2002). Each statement was given a score: 1 for the category of not important

(dissatisfied), 2 for less important (less satisfied), 3 for important (satisfied), and 4 for very important (very satisfied).
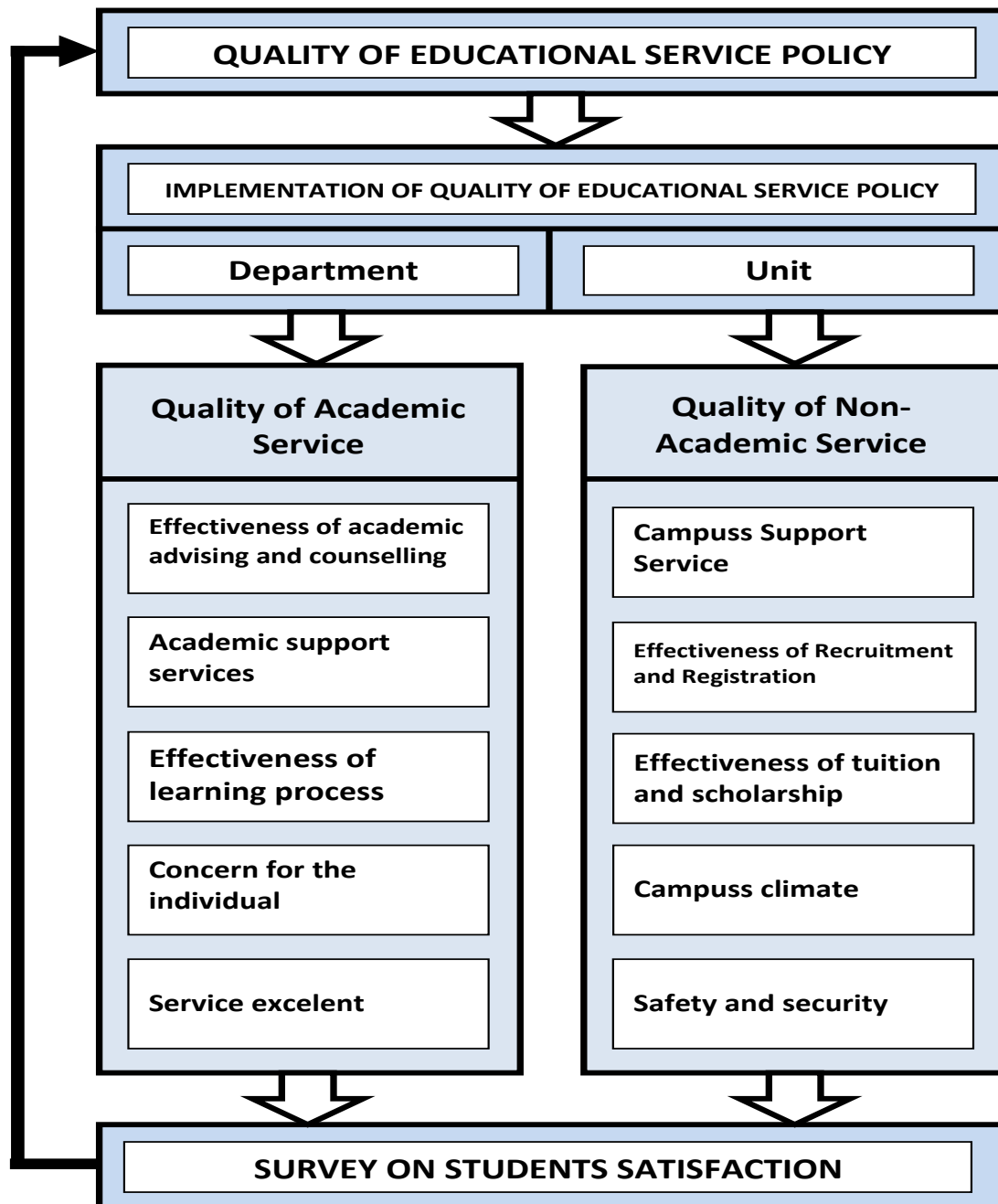

Figure 1. Design of BSP Quality of Educational Service Model
Based on Student Satisfaction Inventory

Before the research instrument was distributed to all respondents, it was first tested for its validity by using product moment correlation, the value of $r \geq 0.3$ indicating that the instrument was valid and $r < 0.3$ indicating that the instrument was not valid (Sugiyono, 2012). Furthermore, the instrument was also tested for its reliability using Cronbach Alpha (α) and the instrument was determined to be reliable if the value of Cronbach $\alpha > 0.6$ (Riduwan (2006).

Data analysis techniques used in this study were: (1) Descriptive statistical analysis, which was used to compute the average value of importance and level of satisfaction of each indicator and dimension and performace gap of each indicator and dimension. (2) Imfortant-Satisfaction Matrix Analysis, which was used to analyze the strategy of developing the quality of education service (Hayati, et al, 2008), as shown in Figure 2. (3) Pattern Matching Analysis, which was used to develop the realistic quality model of education service to be applicable in BSP.

The design of strategies based on the position of each indicator located in the four quadrants, were as follows:

Quadrant I : (Concentrate These) This quadrant contains the factors that are considered important by the customers, but in fact these factors are not in accordance with customer expectations (satisfaction level is still low), so the service performance of these factors should be improved through continuous improvement so that the performance indicators in this quadrant increases.

Quadrant II : (Keep Up the Good Work) This quadrant is the region that contains the factors that are considered important by the customers and is in accordance with expectations (satisfaction is relatively high), so the quality of service for these factors must be maintained because it makes the product / service superior in the eyes of the customers.

Quadrant III : (Low Priority) This quadrant is the region that contains factors that are considered less important by the customers and its performance is also not very good. Increased performance of the factors included in this quadrant needs to be reconsidered because the effect on the benefits perceived by the customers is very small.

Quadrant IV : (Posible Overkill) This quadrant is an area that contains factors considered less important by the customers, but it has a high degree of satisfaction. Factors included in this quadrant are considered to have excessive service quality for low importance so that it can be reduced in order to save costs.
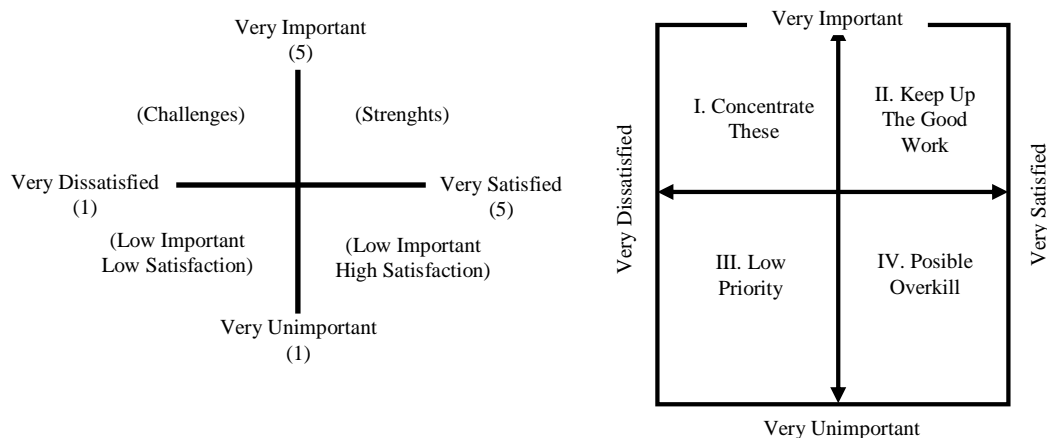
Figure 2. Improtant-Satisfaction Matrix
Source: Hayati, et al (2008)

3. Findings and discussion

The criteria of rating of respondents as satisfied or dissatisfied with the quality of BSP educational services was determined based on the average score of satisfaction level of each quality indicator of BSP educational service, which were as follows: 1.00 - 1.75 = dissatisfied (DS); 1.76 - 2.50 = less satisfied (LS); 2.51 - 3.25 = Satisfied (S); 3,26 - 4,00 = Very satisfied (VS) (Umar, 2005).

Statistical analysis on the level of student satisfaction on the quality of educational services in BSP showed that the average score of student satisfaction level on indicators of each dimension of quality of educational services as meassured by Student Satisfaction Invntory was in the category of satisfied, with the average score being 2.87 as shown in Table 1, though this figure was still below the target of BSP Strategic Plan for the year 2017 (3.3).

Table 1. Level of Student Satisfaction on the Quality of Educational Service in BSP

No.	Dimmension	Average Score	Remark
1	The effectiveness of academic advising and counseling	2,95	S
2	Academic support services	2,69	S
3	Campus support services	2,81	S
4	Student recruitment and registration	2,89	S
5	Tuition and scholarships	2,78	S
6	Effectiveness of learning process	2,94	S
7	Campus environment	3,11	S
8	Attention to individual students	2,83	S
9	Safety and security	2,75	S
10	Service excellent	2,98	S
	Average Scor Quality of Educational Service in BSP	**2,87**	**S**

Source: Results of Analysis Descriptive Statistics

Based on the result of analysis of Important-Satisfaction Matrix, the indicators for each dimension of educational service quality in BSP considered important by the students, which did not yet meet their expectation, could be determined (see Table 2 below).

Table 2. Indicators for Dimmension of the Quality of Educational Service in BSP Considered Important by the Students which did Not Meet Their Expectations

No	Dimenssion	Indicator
1	The effectiveness of academic advising and counseling	• Personal attention given by academic adviser to academic problems faced by students
2	Academic support services	• Ease of internet access for various purposes
3	Campus support services	• Ease of access to information about job vacancies, on-the-job training, and internship • Availability of facilities and public infrastructure (restroom, water, electricity, etc.) • Maintenance of campus facilities and infrastructure
4	Student recruitment and registration	• Administrative service in student registration
5	Tuition and scholarships	• The suitability of tuition fees with what is obtained during study
6	Effectiveness of learning process	• Conformity of work load (number of meetings, assignments, practicum, etc.) to the course semester credit system • Students' knowledge of the benefits and objectives of the course • The ability of lecturers when teaching in the classroom or in the laboratory • Conformity of course materials to the development of science and technologyTransparansi dalam sistem penilaian • Ease of applying academic cover letters (for assignment, on-the-job training, research, etc.) • Improvement of skills required in teaching process
7	Campus environment	• Availibity of communication facilities to convey students' suggestions, opinions, and complaints
8	Attention to individual students	• Fair treatment of individual students

9	Safety and security	• -
10	Service excellence	• Hospitality and courtesy shown by administrative staff
		• Ease of identifying administrative staff from uniform or identification

Source: Results of Important-Satisfaction Matrix Analysis

The strategy formulated to improve the quality of BSP educational services to increase the level of satisfaction of BSP students is as follows: (1) Increasing the effectiveness of academic guidance and counseling by promoting personal attention by the academic advisers to their students on academic problems. (2) Improving the academic support services by increasing Wi-Fi bandwidth on campus. (3) Improving campus facilities and infrastructure by increasing the availability of water and electricity to meet various demands on campus and increasing routine maintenance of campus facilities and infrastructure. (4) Improving the effectiveness of recruitment and registration by improving the quality of service provided by academic and student affairs staff in student registration. (5) Improving the effectiveness of the learning process by changing course semester credit system to the system appropriate for Polytechnic education, that is every course has practicum load; providing understanding to the students about the benefits and objectives of the course by each lecturer; improving the ability of lecturers in teaching in the classroom or in the laboratory; regularly updating the course materials to suit the development of science and technology; enhancing transparency in the assessment process by returning the results of assignments and test to the students; and simplifying the bureaucracy in the application of cover letter for academic matters (for assignment, on-the-job-training, research, etc.) which can be handled at the department level. (6) Improving campus environment by providing a means of communication that accommodates student suggestions and complaints. (7) Increasing attention to individual students by giving rewards and punishment in a fair manner to the students. (8) Improving administrative staff services by improving hospitality and courtesy of administrative staff in serving students, as well as making identification marks for them.

Quality of BSP educational services are grouped into two areas of service quality, namely the quality of academic services and the quality of non-academic services. The quality of academic services consists of: the effectiveness of academic guidance and counseling, the effectiveness of academic support services, the effectiveness of the learning process, the attention to individual students, and excellent service. While the quality of non-academic service consists of: campus facilities and infrastructure, effectiveness of tuition and scholarship, the effectiveness of recruitment and registration of students, campus support service, and safety and security of students. If the elements of the quality of BSP educational services meet the expectations of students they will be satisfied with the quality of educational services. Conversely, if the elements of the quality of BSP educational services do not meet student expectations then the students will not be satisfied with the quality of BSP educational services.

4. Conclusion

The level of student satisfaction on the quality of educational services in BSP is in the category of satisfied with the average score being 2.87, although it was still below the target of the 2017 Strategic Plan (3.3).

The strategy to increase student satisfaction on the quality of BSP educational service includes increasing the ease of internet access for various academic purposes; dissemination of information on job vacancies, on-the-job training, and internships; improving routine maintenance of campus facilities and infrastructure; improving the hospitality and courtesy of administrative staff in serving students; changing the curriculum to the philosophy of polytechnic education, i.e. every course has practicum credit; improving the ability of lecturers in teaching in the classroom or in the laboratory; regularly updating the course materials to suit the development of science and technology; improving transparency in the assessment process by returning exam results and student assignments; simplify the administrative process in administering cover letters for assignments, on-the-job training and research; providing a means of communication that can accommodate student suggestions, opinions, and complaints; giving fair rewards and punishments to students; and making identification cards for administrative staff.

The quality of BSP educational service model refers to the quality policy of BSP educational service implemented by department / study program for academic service quality and by unit / section for non academic service quality whereby student satisfaction survey is the basis in reformulating quality policy.

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