

Artikel_Titis_2019_J_Phys__Conf _Ser *by Turnitin*

Submission date: 24-Feb-2023 05:33PM (UTC+0900)

Submission ID: 2014072226

File name: Artikel_Titis_2019_J_Phys__Conf_Ser.pdf (1.65M)

Word count: 3556

Character count: 18932

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To cite this article: Nendra Mursetya Somasih Dwipa and Titis Sunanti 2019 *J. Phys.: Conf. Ser.* **1254** 012005

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An Analysis of Student Satisfaction Level on Service and Facilities Quality Using Weighted Least

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Abstract. The present article aims to study the level of students satisfaction of PGRI Yogyakarta University towards service and facilities quality. To try and understand the factors which influence student satisfaction as well as consequences of it, this study test a weighted least squares model. This study investigate determinant and dominant factors of the students satisfaction and its characteristics. The data were collected through a questionnaire administered to 644 students of PGRI Yogyakarta University to investigate their perceptions of the universities services. A questionnaire containing 30 questions has been used for data collection. The data were analyzed using the descriptive technique and the weighted least squares analysis. The measurement of the service quality is an important element to provide better, more efficient and more effective services. Spss Software and cronbach alpha index have been used for data analysis and reliability. The reliability factor should be improved first because it is dominant in determining the students' satisfaction. Quality indicators constituting the reliability factor include classroom, library, laboratory, public area, and information system.

The results show that, by percentage, 2 indicator is in the very good category, only 5 indicators are in the good category, 9 indicators are in the fairly good category, and 14 indicators are in the poor category. The results indicate that the universities service quality needs to be improving. The results of the analysis show that five determinant factors of the students' satisfaction include tangibles, reliability, responsiveness, assurance, and empathy. By the priority scale, the reliability factor should be improved first because it is dominant in determining the students' satisfaction.

Keywords: students satisfaction, weighted least squares, descriptive technique, reliability

1. Introduction

There is a very close relationship between student academic achievement and their level of satisfaction with services and facilities. Readiness and alertness of the Faculty or department in carrying out its services provides a high level of satisfaction by students as stated by Thomas and Galambos (1). According to Kotler (2006), service is any action or activity offered by a party to another party that

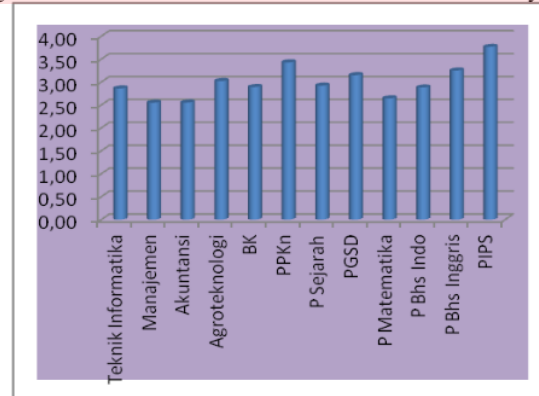


basically has no form and does not result in any ownership. Whereas Lovelock and Wright (2007) stated that service is an action or performance that creates benefits for customers by realizing desired changes in themselves or on behalf of the recipient. To identify the competitiveness of marketable and sellable educational institutions, there are a number of strengths that must be prioritized by educational institutions' policy makers because of the competitiveness of educational institutions using offensive and defensive information technology.

Every educational institution has operational planning that is compiled and revised periodically. The plan is known as a work plan which in principle describes the strategies of educational institutions and the limited resources they have in the process of achieving the vision and mission of the relevant educational institution. The strategy does not only include a global description of the things to be achieved in the long term, but includes a summary of planning and development of resources such as capital and human resources.

UPY's internal quality assurance system continues to be actively built. A good quality assurance system will be able to improve quality, uphold autonomy, and develop itself as an academic institution and community moral strength in a sustainable manner. The quality management system states that one indicator that can be used to measure the quality of a product or service is the ability of a product / service to meet the criteria set by the customer / user. Criteria set by the customer or product / service user are often referred to as customer / user expectations. The results of the evaluation of student satisfaction on the quality of services and facilities at UPY conducted by the Quality Assurance Agency (BPM) generally show in the sufficient category. The complete results of the student satisfaction questionnaire for all study programs at UPY illustrated in Figure 1.

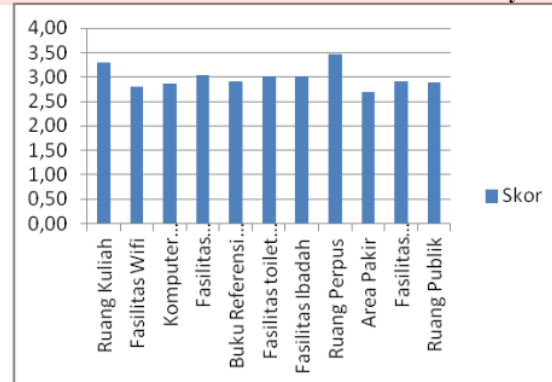
Figure 1. Result of the Student Satisfaction on Facilities by Department



Based on the results of the student satisfaction questionnaire on facilities as shown in Figure 1 it can be observed that the highest level of satisfaction obtained from the PPKn study program and the low one is the Management, Accounting and Mathematics Education study programs. Judging from the overall assessment instruments for facilities, the highest score was found in the library room facility

which obtained a score of 3.47. The results of measuring student satisfaction at the facilities at UPY can be explained in detail for each aspect in Figure 2.

Figure. 2 Result of the Student Satisfaction on Facilities By Criteria

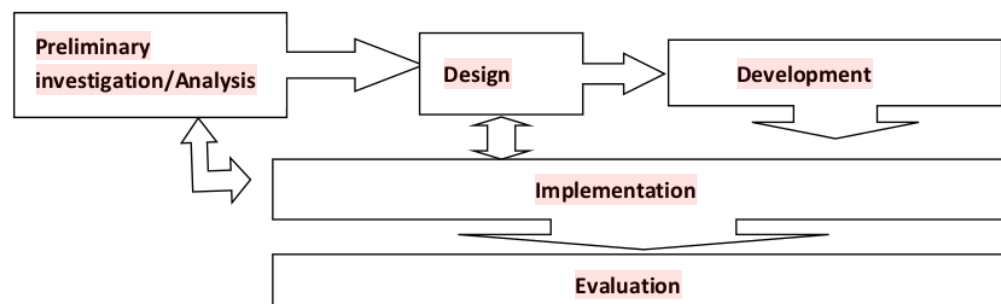


Parameter estimation models that affect satisfaction with education services can use multiple regression using the Ordinary Least Squares (OLS) method. This model is the first step in the discovery of further parameter estimation models. This method requires a classic assumption test so that the resulting parameter estimator is BLUE (Best Linear Unbiased Estimator). This test includes tests of normality, multicollinearity, heterocedasticity, and auto correlation. The Weighted Least Squares (WLS) method is more precise in generating BLUE estimators than ordinary OLS, because it adds new variables as weighting. From this, WLS has the ability to minimize the impact of non-fulfillment of classical assumptions that can eliminate the nature of unfairness.

2. Method

This research was carried out using the Plomp model which consisted of the preliminary investigation phase, planning stage (design), development phase, implementation phase, and evaluation phase. The design of this study can be seen in Figure 3.

Figure 3. Research Design



In the initial investigation stage, information collection and analysis, problem definition and project follow-up are carried out. The design phase aims to design instruments regarding the level of student satisfaction as a result of solving the problems raised at the initial investigation stage. Design is a work plan to be realized in order to obtain solutions at the development stage. While the implementation and revision is done to assess the measurement of satisfaction modeling results in order to obtain valid and reliable results.

3. Findings and Discussions

3.1. Sample and Population

The pretest and posttest questions used were a matter of description consisting of 5 questions. Each item through filtering validity and reliability testing. To find out the ability of learners on the probability, then the average value of the competency achievement indicator calculated for each item is presented in table 3 as follows.

The population used in this study were all students of Yogyakarta PGRI University who were registered as active students in the 2017/2018 academic year. The total number of UPY students as the population of this study is 6099 students with the distribution can be seen in table 1.

Table 1. Student Distribution

No.	Faculty	Study Program	Level	2017/2018 Data		Sample
				Lecturer	Sum of Students	
1	Post Graduate	Pend Ilmu Pengetahuan Sosial	S2	10	169	
2	Agrotechnology	Agroteknologi	S1	7	142	15
3	Economics	Akuntansi	S1	14	838	16
4		Manajemen	S1	16	970	126
5	Education	Bimbingan Dan Konseling	S1	16	667	92
6		Pend Bahasa Inggris	S1	6	128	46
7		Pend Bahasa dan Sastra Indonesia	S1	6	318	20
8		Pend Guru Sekolah Dasar	S1	24	1.182	20
9		Pend Matematika	S1	16	558	110
10		Pend Pancasila Dan Kewarganegaraan	S1	7	239	64
11		Pendidikan Sejarah	S1	7	253	22
12	Engineering	Teknik Informatika	S1	18	635	20
TOTAL				147	6099	644

The sample selection used the Stratified Random Sampling method by dividing the population into several subgroups in the form of student study programs. the distribution of the number of students taken as samples in this study can be seen in table 1.

3.2. Result

This research has been developed through the Plomp model which consists of the preliminary investigation phase, planning phase (design), development phase, implementation phase, and evaluation phase.

Preliminary Investigation

This stage aims to collect various information related to student satisfaction and identify problems in services and facilities that underlie the importance of this study.

a) Needs analysis

Needs analysis aims to raise and determine the basic problems encountered in the lecture and the ideal conditions expected by students. At the stage of the needs analysis, the researcher conducted observations, interviews and documentation for UPY students. Based on the needs analysis, information is obtained that the level of student satisfaction in UPY services and facilities is influenced by several different factors. Based on the description of the facts of the problems that occur in the field, it is necessary to conduct research on student satisfaction in Upy especially regarding facilities and services.

b) Student analysis

Student analysis is done to find out the trend of learning patterns and characteristics of students and the difficulties experienced during carrying out their education at UPY. This is important because student satisfaction is the object of this study.

c) Goal Spesification

This stage was carried out to formulate the results of the analysis that had previously been carried out. Indicators that emerge from the previous analysis will become research objectives as well as the basis for the preparation of research instruments. Broadly speaking, the purpose of this study is focused on the following.

- To find out how the level of student satisfaction on aspects of facilities and services at Yogyakarta PGRI University.
- To determine the level of student satisfaction on facilities and services using the Weighted Least Squares method.

Design

The design phase is carried out to design the instruments needed in research related to information retrieval of data. The design phase itself has the following phases.

a) Instrument

The instruments used in the study were questionnaires, questionnaires, interview guidelines, and field notes. This instrument seeks to capture, explore, and describe information about student satisfaction on services and facilities. The aspects measured in the instrument are generally divided as in table 2.

Tabel 2. Questionnaire Indicator

A. Facilities aspect	
1.	A clean, comfortable and neat of classroom
2.	area of free wifi
3.	Facilities for using internet-connected computers
4.	Lecture facilities: LCD, computer, laboratory, etc
5.	Adequate reference book in the library
6.	cleanliness of toilet facilities
7.	Religious/worship facilities for students
8.	Library room
9.	Parking area
10.	Extracurricular facilities
11.	Hall/public space
B. Services aspect	
1.	Payment information
2.	Ease of payment
3.	Plan study information
4.	class and examination schedule information
5.	Information on study results
6.	Ease of access to lending library collections
7.	Hospitality of general administration staff
8.	Hospitality of financial administration staff
9.	Hospitality of academic administration staff
10.	Hospitality of librarian
11.	Scholarship information
12.	Hospitality of security personel

b) Media Selection

The selection of instrument distribution media is done to get the efficiency and effectiveness of time and resources so that the research runs programmatically. Based on the analysis carried out earlier in the preliminary stage of the selection of the media it was dropped by means of a manual manual which immediately took the data in the predetermined sample.

c) Format Selection

The format selection is done by selecting the format of the instrument that is compiled by reviewing the existing and developed formats. The format that is intended in this study are the components that must be present in data retrieval information in accordance with the literature review that has been carried out.

Development

The development phase aims to produce the final form of research instruments. The development phase consists of several stages, namely testing instrument validity and reliability, revision, and development trials.

a) Validity And Reliability Instrument

The validity and reliability of the instrument was tested with Cronbach-Alpha with the help of SPSS software, which tested the instrument on 50 (fifty) students before asking the actual sample (respondent). Students as test respondents were selected from final year students who were not sampled. The results of the reliability test output with the help of SPSS software are shown in table 3.

Table 3. Reliability Test Output

Reliability Statistics	
Cronbach's Alpha	N of Items
,853	23

From table 3 the results of the reliability coefficient of 0.853 exceed the standard criteria of at least 0.600. This implies that the instrument developed has been reliable. For the results of the instrument validity test can be seen from table 4.

Table 4. Validity Test Result

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
q1	69,3000	99,235	,028	,859
q2	71,6200	95,996	,196	,855
q3	71,1400	95,429	,259	,853
q4	69,7200	91,389	,469	,846
q5	70,2400	94,472	,239	,855
q6	70,1200	90,598	,521	,844
q7	70,1000	93,357	,359	,850
q8	69,8600	89,551	,487	,845
q9	70,2800	91,512	,419	,848
q10	70,3000	93,398	,375	,849
q11	70,0200	92,020	,528	,845
q12	70,0000	90,694	,428	,847
q13	69,8800	90,965	,517	,844
q14	70,0000	90,694	,475	,845

q15	69,8600	90,204	,501	,844
q16	69,9000	90,010	,562	,843
q17	69,7600	91,370	,501	,845
q18	69,8000	90,531	,492	,845
q19	69,8400	93,607	,388	,849
q20	69,8600	92,204	,486	,846
q21	69,9400	88,302	,563	,842
q22	70,0200	88,469	,627	,840
q23	70,1600	96,790	,124	,859

The results that appear from table 4 show that the correlation value of each question item in the column "Corrected Item-Total Correlation" compared to the total score is greater than the standard criteria of at least 0.30 which means that all questions are valid.

b) Trials Development

Based on the results of the instrument testing in the previous stage it was found that all instruments were valid and reliable. Therefore, the major revision phase was generally not carried out and the development test was immediately conducted. This is done to find out the student's assessment of the services and facilities at UPY.

Implementation

At this stage the instrument is distributed in the predetermined sample. The results of filling in the instruments by the respondents are shown in the following table 5.

Table 5. Result of Instrumen Distribution

NO	Study Program	Fasilities	Criteria	Services	Criteria
1	Pasca Sarjana P.IPS	3,49	FAIR	4,43	GOOD
2	Teknik Informatika	2,69	FAIR	3,29	FAIR
3	Pertanian	3,07	FAIR	3,69	GOOD
4	Bimbingan Konseling	3,59	GOOD	3,59	GOOD
5	Pendidikan Guru Sekolah Dasar	3,12	FAIR	3,62	GOOD
6	Manajemen	3,58	GOOD	3,58	GOOD
7	Akuntansi	3,25	GOOD	4,03	GOOD
8	Pendidikan Matematika	3,02	FAIR	3,66	GOOD
9	Pendidikan Bahasa Inggris	2,95	FAIR	3,85	GOOD
	Rata-Rata	3,20		3,75	

Based on table 5, it can be seen that the aspects of the facility are in the category of "fair" and the service aspect is in the "good" category.

3.3. Discussion

Based on the calculation of the analysis with the usual OLS (Ordinary Least Squares) method without weighting, H_0 is rejected, which implies that there are still heteroscedastic problems in the model, so new innovations are needed to improve the model and not mislead conclusions. The heteroskedas problem can be handled by doing a weighted on this new model.

Through the classical assumption test it can be concluded that the WLS model has a greater value of t value, a smaller level of significance so that it is better, and a greater F value. From these two models it can be ascertained that WLS modeling provides better results than OLS. The following table 6 shows a comparison of the two models.

Table 6. Comparison of WLS with OLS

NO	Object	OLS	WLS	Keterangan
1	t-value	-2,2711 until 2,217	-1,1356	WLS better
2	Significant Level	1,45	0,025	WLS better
3	F-value	1,321	1,681	WLS better

4. Conclusion

Based on the results of research and discussion, it can be concluded several things as follows:

1. The level of student satisfaction in the aspects of facilities and services at the PGRI Yogyakarta University is in good category.
2. Model the level of student satisfaction on facilities and services using the Weighted Least Squares method

$$Y = 6,729 + 0,032x_1 - 0,036x_2 + 0,067x_3 - 0,116x_4 + 0,066x_5 + 0,027x_6 + 0,117x_7 - 0,052x_8 + 0,006x_9 + 0,079x_{10} - 0,018x_{11} - 0,056x_{12} + 0,056x_{13} - 0,086x_{14} - 0,003x_{15} - 0,184x_{16} + 0,089x_{17} - 0,033x_{18} - 0,089x_{19} + 0,134x_{20} - 0,030x_{21} + 0,046x_{22} + 0,011x_{23}$$

with

- Y : level of student satisfaction in services and facilities
- X₁ : A clean, comfortable and neat of classroom
- X₂ : area of free wifi
- X₃ : Facilities for using internet-connected computers
- X₄ : Lecture facilities: LCD, computer, laboratory, etc
- X₅ : Adequate reference book in the library
- X₆ : cleanliness of toilet facilities
- X₇ : Religious/worship facilities for students
- X₈ : Library room
- X₉ : Parking area
- X₁₀ : Extracurricular facilities
- X₁₁ : Hall/public space

X ₁₂	:	Payment information
X ₁₃	:	Ease of payment
X ₁₄	:	Plan study information
X ₁₅	:	class and examination schedule information
X ₁₆	:	Information on study results
X ₁₇	:	Ease of access to lending library collections
X ₁₈	:	Hospitality of general administration staff
X ₁₉	:	Hospitality of financial administration staff
X ₂₀	:	Hospitality of academic administration staff
X ₂₁	:	Hospitality of librarian
X ₂₂	:	Scholarship information
X ₂₃	:	Hospitality of security personel

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