

VALIDITY AND RELIABILITY ANALYSIS OF ASSESSMENT FOR CUSTOMER SATISFACTION AT UNIVERSITY OF MUHAMMADIYAH GRESIK

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Abstract

This study is aimed at analyzing validity and reliability of service questionnaires to measure the level of customer satisfaction at the University of Muhammadiyah Gresik. There were three questionnaires to be developed for services; at units and university level, at Study Program services, and at services of learning evaluation by lecturers. By using quantitative descriptive analysis of SPSS application, the results showed that the average values of Cronbach alpha for the three types of the questionnaires were 0.778 to 0.806, 0.874 to 0.884, 0.964 to 0.966, and in consecutive, their r values were 0.806, 0.884, and 0.966. Thus three of these questionnaires fulfilled the validity and reliability for both Cronbach alpha and r value that was already above 0.3 or approaching one. Therefore, the three questionnaires are acceptable to explore customer satisfaction data used at the University of Muhammadiyah Gresik.

Key words: *Questionnaire item analysis, validity, reliability, customer satisfaction*

INTRODUCTION

Quality assurance in higher education is a vital part that must be optimized so that the services provided to students can be felt. The main purpose of this quality assurance is generally geared to gauge two main points, namely the consistency of the services provided and continuous improvement achieved in meeting the targets. Both of these measures will require an assessment tool that is reliable and trustworthy.

A good assessment should certainly be able to meet a general rule, at least be able to meet two important things, that is validity and reliability. In particular, validity also must be able to meet at least content validity, construct,

and also its face validity. The validity and reliability are very important to be investigated because if the assessment does not meet the two aspects, definitely, the results obtained are also doubtful in its trustworthy. Conversely if an assessment has been able to meet both of the above aspects it will also guarantee the validity of the results obtained. Moreover, an assessment that is used to measure customer satisfaction in a college course, also must meet at least two of the rules. Hårdle & Klinke (2012) explain more detail that the validity and reliability provide clear opportunities for users of questionnaires in predicting the accuracy of the instruments used.

In the assessment, validity is to measure

what should be measured that is to obtain measurement results reflecting the objectives of the measurement itself. So the validity of the demands should be compatible between what should be measured and its measurements of materials. In this case, the questions that are used to be in accordance with the purposes or the material scope of its assessment (Parsian & Dunning: 2009). In general, the validity is divided into several groups: content validity, construct validity, and face validity. Content validity is compatibility between the drafts of the assessment that should be appropriate to the materials being investigated. Simply the appropriateness of the contents can be done by checking and identifying the developed drafts in item questions used in the assessment. All aspects in the materials that are assessed should have represented all the aspects contained in the target materials. Analysis of content validity is generally done by using descriptive analysis by comparing the coverage of all the materials that should be on the analysis and the coverage of draft content or grids that have been developed (Deniz & Alsaffar: 2013).

Construct validity is checking the quality of items developed in the assessment, which refers to proving the quality of items through field trials or try out. The results of the assessment test is usually analyzed to determine whether the assessment items that have been created have had linear quality to the early stages of its preparation in the content validity. Functionally, construct validity can help add to the information on the validity of the content because usually validity of the content is done by

checking to see the compliance between the grid items with the scope of materials that should be in investigation, while the validity of the construct is checking or analysis of the items made after their assessment of the field trials that have been used so that the quality of assessment items can be accounted for. To analyze the construct validity usually is done by using quantitative analysis (Anastasiadou: 2011).

Face validity is checking quality assessment items that promote the proper analysis of the items with the preparation of its models. The thing which is important concern in the face validity is a physical model or the end of the assessment items that will be given to participants of the assessment. It should be noted here that the quality of face validity, to a certain extent, affects the motivation of respondents in taking test or filling out the questionnaire. It can happen when the questionnaires are good in quality or interesting so that participants would be happy to take the test or fill out the questionnaire items. Conversely when the quality of typing of questionnaire items distributed is less interesting, it will have an impact on the lack of motivation of the participants to fill out or submit the return questionnaires.

Beside validity, another aspect which is also considered important is the reliability assessment in which each device must also be able to meet the assessment considerations. Reliability is the strong backbone of quality items after validity. The validity of the material relates to conformity assessment of what should be assessed, while reliability relates to the

quality of consistency of items or questions of which each item must meet the quality of consistency that can be justified. There are several ways that can be used to analyze the reliability of which is a test re-test reliability and split-half models. Test re-test reliability is the process of reliability analysis that is based on the correlation between the two types of tests used in different occasions which are then analyzed the level of reliability (Havercamp: 2009). While the split-half reliability analysis method is performed by dividing the two tests that have been used, for example, comparing the scores obtained from odd and even items, then correlate between the two. Again, validity concerns with respect to the range of material being tested, while the reliability respects to the scope of use or its size, the more or large use of the test, the more reliable the test.

All instruments of both test and non test (questionnaire) should be able to meet these two aspects in which each will give results that must be in accordance with the purposes or material items to be developed. It also includes instruments to collect information on customer satisfaction in the implementation of quality assurance in higher education. This study aims to identify the level of validation of the instrument (in this case the questionnaire) used in exploring data about customer satisfaction so that the implementation of the developed quality systems has visible impact. Another way of finding worthy instrument that fulfills the validity and reliability can be adapted from others as proposed by Shimabukuro et al (2012) who highlight the importance of validity and

reliability associated with integration of questionnaires from workers can be adapted to the patient's health therapy. This adaptation makes it easier process of the validity and reliability of the questionnaire required in the collection of consumer data therapies.

Questionnaires to be developed and analyzed in this study are three types including satisfaction of university services and units, services at study programs, and the last is questionnaire about learning services by lectures. Thus, this study aims to identify the quality of the validity of three questionnaires so hopefully the assessments can be used appropriately.

Research Method

This research is quantitative descriptive where data has been collected from questionnaires and analyzed using quantitative calculation patterns per item of questionnaire to find the consideration of validity and reliability. As mentioned in the section above that the purpose of this study is to analyze the validity of the questionnaire used in exploring customer satisfaction that is used at the University of Muhammadiyah Gresik, Indonesia. The results of validity of the instrument of study program used is to ensure the accuracy of the instrument so that it can be functioned to dig customer satisfaction applied in each cycle of the implementation of quality assurance.

Instrumen and Souces of Data

The try out of this questionnaire is given to all students from six faculties: the faculty of Economics, Agriculture, Teacher Training and

Education, Psychology, FAI (Faculty of Islamic Religion), and Engineering, with the target population of 430 students. Of the target population, there are 190 students who have completed and returned questionnaires with the details of 50 respondents for the public services at university level, 61 respondents for services at faculty and study program, and 79 respondents for learning services by lectures. Thus, samples taken are 44% of the target population which are already adequate to be the data source.

Data collection and analysis

The data collection process begins with composing questionnaires of services for three types; university services and units, services at faculties and departments, as well as services of learning by lecturers.

A questionnaire at the university level services include items related to college facilities, the adequacy of information and technology services, campus cleanliness and toilet, adequacy to discuss literature in the library, the friendliness of public services and library.

A questionnaire service at faculty and study program includes lectures' teaching implementation in general, the adequacy of materials and teaching materials, guidebooks of academic, administrative facilities, procedures of fast and precise services, laboratory services, guardianship process, and the process of preparation of the thesis.

Whereas for the questionnaire of learning services by faculty includes lectures' attitude, lecturer's ability in presenting the material, the ability of faculty to solve problems

in the classroom, lecturing conformity with the goals and objectives which are achieved, the learning method which is applied, the quality of the exam, and achievement of learning competencies.

The next stage is to distribute the questionnaires to 190 respondents, and after all the data is collected then the analysis is accomplished completely. As outlined in the design of the study above, the analysis process is done by calculating and recapping each item in advance in accordance with the choice of respondents. Once finalized recap then a subsequent step is to analyze the validity and reliability of each item by using SPSS program.

Results and Discussions

1. Results of validity and reliability of questionnaire for services at university and department level

Validations done have different results by which in general this validation will see the level of difficulty from each question posed to the respondents. If there are questions that have low values of less than 0.3, the assumption of the question is difficult to be understood to answer, whereas if the value is too high of more than 0.7 then the assumption is too easy question to answer. Because the level of the question should not be too difficult and too easy so the recommended level should be in the medium standard.

The results of the validation from the level of difficulty item questionnaire of services at units of the university show the findings are between 0.3-0.7, where the lowest score from the

test difficulty is in the value of 0:44 on infrastructure item number 3 and the highest value is 0.74 from the item about library unit especially number 6 and 7. Validation of the difficulty level uses easy media that is excel program using the easiest procedure to use the mean.

While the second way uses SPSS media which will look Cronbach Alpha value from each item which are almost the same. By the value of 0.806 Cronbach alpha is then compared with the

value of r table taken at 0.05 with 2-sided test and the amount of data (n) 50, then r table can be of 0.2732. Therefore the value of $r = 0.806 > 0.2732$ r table which can be concluded that the items of the question were reliable. The values from Cronbach alpha from all items are related to the question of services at study program with an average score from 0.778 to 0.806. Table 1 shows more detailed results from each item in the services of the University level:

Table 1. The results of Item Analysis for Service Questionnaire at University Level

Items of questionnaire	Item difficulty	Cronbach Alpha
Buildings, classrooms and facilities are dequate	0.58	0.806
Lending procedures are easy understand and do	0.68	0.801
Internet facilities are available and adequate	0.44	0.798
The service is fast, accurate, and friendly	0.68	0.801
Officers are neatly dressed and polite	0.62	0.782
Security guards 24-hour safety campus area	0.62	0.778
Parking lot safety guard	0.72	0.787
Security provides services with prompt, friendly and courteous	0.58	0.793
Cleanliness in the campus area	0.62	0.806
Bathroom cleanliness	0.6	0.797
The cleanliness of all classrooms	0.64	0.790
Hygiene office spaces	0.7	0.805
Catalogs are available and easy to use	0.66	0.806
Books at Library, researchreports, and journals from each field of study area available and a dequate	0.56	0.805
The availability of storage bags	0.72	0.801
The library rooms and reading rooms	0.74	0.796
Borrowing and returning references are easy procedures	0.7	0.796
Librarians sere with prompt, friendly and courteous	0.74	0.797
The setting of references is done well and a dequate	0.74	0.800

Output of Cronbach Alpha for units at university level

Case Processing Summary

		N	%
Cases	Valid	50	100.0
	Excluded (a)	0	.0
	Total	50	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.806	19

a Listwise deletion based on all variables in the procedure

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
sp1	51.86	27.143	.218	.806
sp2	51.36	26.521	.311	.801
sp3	51.52	26.296	.360	.798
fo1	51.30	26.255	.315	.801
fo2	51.08	24.320	.623	.782
km1	51.24	23.574	.644	.778
km2	51.26	25.013	.560	.787
km3	51.48	25.153	.454	.793
kb1	51.50	26.459	.248	.806
kb2	51.46	25.641	.385	.797
kb3	51.42	25.106	.490	.790
kb4	51.54	27.111	.231	.805
pp1	51.58	26.738	.242	.806
pp2	51.66	26.760	.246	.805
pp3	51.60	26.204	.325	.801
pp4	51.36	25.990	.406	.796
pp5	51.26	26.237	.408	.796
pp6	51.22	26.379	.383	.797
pp7	51.32	27.004	.333	.800

After the questionnaires related to the quality of existing services at the University level have been identified their validity and reliability, now it turns to the quality of questionnaire items of services in the area of study programs. The results are already shown on the results of the validation of the level of difficulty for service item questionnaire of study program between 0.3-0.7, where the lowest score of the test difficulty is at 0.46 on the value

of laboratory items for the type of material used, and of internet access in laboratory of each study program is easy to use so that the item has good level of difficulty to answer. The highest score is in the value of 0.75 that is on the item about the guidance of thesis related to supervising to master and understand research in accordance with the systematic writing. Thus it can be seen that the item of the question is very easy to answer. In addition, such scores of difficulty of the test above means that the items of the questionnaire at study program are no difficulty to answer.

Meanwhile, the results of validation using SPSS show that Cronbach Alpha values are almost similar. The Cronbach alpha of 0.884 is then compared to the value of r table taken at 0.05 in 2-sided test and the amount of data (n) 61, then, the r table can be of 0.248. Therefore the value of $r = 0.884 > 0.248$. It can be concluded that the items of the question are reliable. The values of Cronbach alpha from all items related to the questions of services at study program have average value from 0.874 to 0.884. Tble 2 is the results of more detailed questions from each item in the study program as follows:

Table 2. The Results of Item Analysis of Service Questionnaire for Study Program

Items of questionnaire	Item difficulty	Cronbach Alpha
Lecturers behave to reflect the faith and devotion	0.74	0.884
Lecturers held a lecture on schedule	0.5	0.882
Lecturers assess learning outcomes fairly and transparently	0.6	0.881
Lecturers use of media and methods of active learning, creative and optimal	0.7	0.882
Lecturers deliver materials and tests as planned	0.75	0.884
Lecturers make students understand the presented material	0.57	0.882
Lecturers prepare and master substances in a systematic lecture	0.74	0.882
Lecturers motivate and improve students' ability	0.5	0.881

Items of questionnaire	Item difficulty	Cronbach Alpha
Lecturers are willing to establish communication with students outside of class hours	0.56	0.884
Role models of lecturers according to the students	0.67	0.884
Guidances and administrative facilities are available and easy to use	0.6	0.881
Spaces and administrative facilities are available and adequate	0.6	0.883
Officers serve friendly manner, courteous, fast and precise	0.61	0.882
Procedures are applicable as easy administration	0.57	0.881
Instructions and administrative information are available and easily understood	0.59	0.883
Equipment and laboratory facilities are adequate and easy to use	0.48	0.883
The types and the materials used are available as well as adequate	0.46	0.880
Internet access is adequate and easy to use	0.46	0.883
Laboran can serve intently whenever needed	0.59	0.880
Laboran controls laboratories and serves with courtesy	0.66	0.881
Arrangements of tools and materials are well done	0.6	0.881
Instructions on using the facilities are available and easy to understand	0.57	0.878
Procedures of borrowing and returning equipment and materials are easily	0.64	0.878
Class supervisors implement schedule of supervising on time	0.6	0.881
Class supervisors are readily available at the time of consultation	0.52	0.879
Class supervisors monitor the development of academic and non-academic progress	0.6	0.879
Class supervisors are willing to listen and understand and help solve the problems of students	0.66	0.883
Lecturers provide guidance in accordance with the time schedule determined	0.7	0.879
Supervisors present and play an active role during the seminar proposal, seminars and final exam results of research	0.67	0.878
Supervisors guide and motivate students to finish thesis quickly and on time	0.66	0.875
Supervisors brief / suggest for improvements which are easy to understand	0.69	0.874
Supervisors understand the topics / issues of research	0.7	0.878
Supervisors master and understand the research process in accordance with the systematic of writing and research methods	0.75	0.879

Output of Cronbach Alpha for units at university level

Case Processing Summary

		N	%
Cases	Valid	61	100.0
	Excluded (a)	0	.0
	Total	61	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.884	33

a Listwise deletion based on all variables in the procedure

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ps1	87.82	94.117	.198	.884
ps2	88.31	90.751	.341	.882
ps3	88.33	90.857	.410	.881
ps4	88.15	91.695	.356	.882
ps5	87.98	83.950	.218	.884
ps6	88.18	90.717	.370	.882
ps7	88.13	92.583	.350	.882
ps8	88.28	89.671	.415	.881
ps9	88.11	93.437	.245	.884
ps10	88.13	93.916	.188	.884
adm1	88.46	91.252	.383	.881
adm2	88.46	91.719	.309	.883
adm3	88.36	90.801	.354	.882
adm4	88.44	90.551	.390	.881
adm5	88.46	91.685	.312	.883
lab1	88.56	91.784	.311	.883
lab2	88.61	89.843	.451	.880
lab3	88.69	90.751	.315	.883
lab4	88.51	89.487	.447	.880
lab5	88.41	90.679	.403	.881
lab6	88.48	91.020	.381	.881
lab7	88.43	88.815	.555	.878
lab8	88.36	89.268	.537	.878
pw1	88.33	89.291	.403	.881
pw2	88.59	88.546	.497	.879
pw3	88.49	89.387	.495	.879
pw4	88.38	91.872	.282	.883
bs1	88.33	89.457	.487	.879
bs2	88.28	89.704	.535	.878
bs3	88.33	87.024	.689	.875
bs4	88.36	86.268	.710	.874
bs5	88.23	89.913	.581	.878
bs6	88.20	90.661	.498	.879

Validity and Reliability of Questionnaire for Learning Evaluation

Learning process is the biggest icons or

products provided by university and it is very paramount in an educational institution. The results of validation for questionnaires of learning process evaluation of the difficulty level have been recorded in each semester which are quiet dominant with value ranges between 0.3 to 0.5 with the lowest score of 0.31, and the highest at 0.55. So it can be stated that the items in this learning evaluation questionnaire does not have difficulty to answer, in other words it can be said that the items are not too easy nor too difficult to answer. Because if the value is said to be difficult to answer is below 0.3 and too easy to answer is above 0.7.

The results of the evaluation of the output obtained from the learning process have Cronbach Alpha value of 0.966. This value is then compared to the value of r table, the test of significance of 0.05 in two sides with the number of data (n) 79 respondents, then the r table can be of 0.2185. Therefore the value of $r = 0.966 > r \text{ table} = 0.2185$, thus, it can be concluded that these items are reliable. The values from Cronbach alpha of all items on learning process evaluation questions have an average from 0.964 to 0.966. More detailed results of each item in the evaluation of the learning process are in table 3 below.

Table 3. The Results of Item Analysis of Service Questionnaire for Learning Evaluation

Items of questionnaire	Item difficulty	Cronbach Alpha
Lecturers' habit to dress neatly and polite	0.55	0.966
Lecturer ability to behave that reflects faith and devotion	0.49	0.964
Lecturer ability to behave and act consistently	0.44	0.964
Lecturer ability to receive and give criticism and suggestions	0.39	0.964
Lecturer ability to solve the problems of lectures in class	0.40	0.964
The accuracy of lecturers to organize lectures on schedule	0.50	0.966
Lecturer ability to assess learning outcomes fairly and transparently	0.53	0.965

Items of questionnaire	Item difficulty	Cronbach Alpha
Lecturer capabilities to optimally utilize instructional media	0.51	0.965
Lecturer capabilities to provide an opportunity for students to ask / answer	0.50	0.964
Lecturer ability to apply active learning methods, creative, and fun	0.38	0.966
Lecturer ability to explain the plan of lectures at the beginning of the term	0.53	0.965
Lecturer capabilities to deliver material as planned lecture	0.48	0.964
Conformity exam questions with the material being taught	0.45	0.965
Lecturer ability to make students understand the material presented	0.31	0.964
Lecturer ability to use information and communication technology in learning	0.55	0.965
Lecturer capabilities to deliver the lecture material with satisfactory	0.35	0.964
Lecturer capabilities to deliver the lecture materials clearly	0.40	0.964
Lecturer ability to systematically prepare the substance of lectures	0.40	0.964
Lecturers' mastery of the substance of subjects	0.51	0.964
Efforts to improve the quality of lecturers continuously	0.44	0.964
Lecturer ability to give a good service to students	0.48	0.964
Lecturer ability to motivate and improve students' ability	0.41	0.965
The caring of lecturer on students	0.40	0.964
Lecturer willingness to communicate with students outside of class hours	0.35	0.965
Role models of lecturers according to the students	0.44	0.964

Output of Cronbach Alpha for units at university level

Case Processing Summary

		N	%
Cases	Valid	79	100.0
	Excluded (a)	0	.0
	Total	79	100.0

Reliability Statistics

Cronbach's Alpha	N of Items
.966	25

a Listwise deletion based on all variables in the procedure

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
kep1	89.15	249.925	.550	.966
kep2	89.46	244.149	.745	.964
kep3	89.63	239.569	.811	.964
kep4	89.53	239.944	.779	.964
kep5	89.61	240.677	.746	.964
kep6	89.56	243.737	.582	.966
paeda1	89.71	246.927	.632	.965
paeda2	89.52	244.535	.658	.965
paeda3	89.25	242.012	.756	.964
paeda4	89.81	244.361	.604	.966
paeda5	89.54	244.174	.708	.965

paeda6	89.63	241.646	.744	.964
paeda7	89.49	244.920	.679	.965
prof1	89.65	237.796	.751	.964
prof2	89.51	244.638	.702	.965
prof3	89.75	237.550	.806	.964
prof4	89.67	239.788	.796	.964
prof5	89.70	242.368	.749	.964
prof6	89.54	244.585	.742	.964
prof7	89.65	241.283	.742	.964
sos1	89.57	238.864	.771	.964
sos2	89.59	239.449	.713	.965
sos3	89.53	239.073	.728	.964
sos4	89.75	240.089	.685	.965
sos5	89.49	238.535	.778	.964

After considering the results of the analysis from questionnaires above it can be conveyed here is that all the items contained in the questionnaire have good feasibility elements of validity and reliability. Feasibility of this instrument would provide good and useful information on the application of questionnaires such as the collection of data on customer satisfaction that is used as a parameter in assessing the implementation of the quality assurance process run at the University of Muhammadiyah Gresik.

The importance of validity and reliability of the data collection instruments, especially the questionnaire should be an important concern as expressed by Karunaratne & Jayawardena (2010) who mention the importance validity assessment for all interests include the assessment of customer satisfaction for hotel guests. This customer satisfaction is very important to know because the impact is very close to the sustainability and profitability of business. Likewise Kazemi et.al. (2012) make it clear that customer satisfaction is not only used to increase the profits of corporate results, but it can make it easier to choose qualified supplier. Measures of success demonstrated by the service of company can also manage the handling of issues during the election process supplier. Good customer satisfaction is an indication of the growth of a company that nourish the internal organization itself (Korda & Snoj 2010; Mohammad & Alhamadani, 2011).

Advances in technology also affect the behavior of businesses that are now being developed in various fields. Wang et al, (2001)

state that the importance of assessment questionnaire is also applied to users of the technology associated with communication via websites. This relates to the business lounge which is not only done through offline but most to the present era are more likely to use online. To facilitate the spread of information technology, it serves the customer satisfaction questionnaires-based online services, in particular, on the assessment in schools. Nevertheless any use on online questionnaires must also meet the validity and reliability (Corn: 2007). Customer satisfaction ratings of online are also intended for use in the medical world as well (Polikandrioti et.al.,: 2011).

All previous researchs agreed that all instruments used to explore customer satisfaction should meet the aspects of validity and reliability. This study certainly has consistently clarified the statement in which the questionnaire which has been developed to measure customer satisfaction at the University of Muhammadiyah Gresik has met with acceptable validity and reliability.

Conclusion

This study reaches the following conclusion:

1. The questionnaire service to the university level has complied with the validity indicated by Cronbach alpha value of 0.806 and the value of $r = 0.806$.
2. The questionnaire for the study program service also fulfills the validity and reliability with Cronbach alpha value of 0.884 and the value of $r = 0.884$, and the value of Cronbach alpha from all items related to the question of study program

service has an average value from 0.874 to 0.884.

3. The questionnaire for evaluation of learning by lecturers also fulfills the validity and reliability with Cronbach Alpha value of 0.966 and $r = 0.966$, and the value of Cronbach alpha from all items of learning process evaluation questions have an average value from 0.964 to 0.966.
4. Thus, the third questioner on customer satisfaction to ensure the quality of service at the University of Muhammadiyah Gresik already fulfills the adequate validity and reliability.

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