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Developing A SERVQUAL-Based Scale for Measuring Student Satisfaction with Academic Service in Higher Education

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Abstract

Assessing student satisfaction with academic services provided by higher education institutions has always been a challenging task. This study aimed to create a valid, reliable, and practical web-based student satisfaction scale (SSS) through a design and validation stage. Applying the SERVQUAL model in this development research, during the design stage, the SSS consisted of three subscales with 32 items. These items were established and validated through expert review for content validity, pilot testing for practicality, and a main test for concurrent validity. The results showed that the it had an acceptable level of content validity with I-CVI scores ranging from .80 to 1.00 and an S-CVI of .90. It also met practicality criteria with an S-SPI of 0.9. The concurrent validity of the SSS ranged from .665 to .999, and reliability was .888 to .999. These findings suggest that the SSS met valid, reliable, and practical criteria. It has diagnostic and predictive value for improving quality assurance purposes.

Keywords: Academic Service, Student Satisfaction, Higher Education, Service Quality

1. Introduction

Ensuring the quality of higher education is proving to be a challenge in various countries' education systems (Liu & Liu, 2017; Shabbir et al., 2015; Sunarto, 2022). The need to improve quality has also become a priority in Indonesia, bolstered by a new Decree of National Higher Education Standards (NHES) in 2023. A study conducted by Visscher dan Hendriks (2009) on quality assurance in six countries, including the Netherlands, Italy, England, Germany, Estonia, and Denmark, highlights the importance of continuous quality improvement, taking into account several critical factors, including the limited use of data in reviewing and improving institutional functions.'

Higher education quality is a critical aspect that encompasses various areas ranging from student satisfaction to institution rankings. While both factors play an essential role in determining the quality of education, Harvey (2022) prioritizes student satisfaction over institution rankings. The rationale behind this approach is that the

primary purpose of student feedback is to identify areas that require improvement, rather than simply providing information or ranking institutions. Therefore, the quality of academic and supported services is a crucial indicator of higher education quality worldwide (Wong & Chapman, 2022). Several studies have also identified student academic satisfaction as a significant factor in improving the overall quality of higher education (Abili et al., 2012; Butt & Rehman, 2010; Kanwar & Sanjeeva, 2022; Zaki, 2020).

Evaluating student satisfaction in higher education including in study program level is a crucial aspect that has been studied by researchers worldwide. To this end, various methods have been proposed, including the SERVQUAL (Parasuraman et al., 1988), HESQUAL (Teeroovengadum et al., 2016), and the competency method (Warn & Tranter, 2001). However, among these methods, the SERVQUAL model has gained significant attention as it measures both expectation and perception, which enables the identification of satisfaction levels by analyzing the gaps between these two variables. The SERVQUAL model has been used in multiple studies worldwide to assess higher education satisfaction, including studies on faculty satisfaction (Krsmanovic et al., 2014), public and private quality comparison (Saliba & Zoran, 2018), service quality (Goumairi et al., 2020), and public administration services (Soares et al., 2017). The model's ability to identify the gaps between expectation and perception has made it a popular and widely used tool for evaluating student satisfaction in higher education. This approach allows researchers to analyze the factors that contribute to student satisfaction and identify areas that need improvement, ultimately enhancing the quality of education in higher learning institutions.

With the advent of web-based surveys, measuring student satisfaction has become relatively easier, offering numerous advantages such as improved design, administration, response rate, low data entry errors, efficient analysis, reporting, and cost-effectiveness (Nayak & Narayan, 2019; Wu et al., 2022; Wyatt, 2000). Despite these advantages, the survey instrument, including the satisfaction scale, must meet specific requirements in its design and development to ensure its validity, reliability, and objectivity, and to minimize bias while collecting data (Lee & Lim, 2008). Despite the benefits of existing student satisfaction instruments, such as their ability to measure student satisfaction, there are also limitations. The scope of the instrument content may be too broad and not entirely applicable to a study program's specific needs and uniqueness. Therefore, study programs require a student satisfaction scale that can accurately measure academic services and meet their improvement needs. For this reason, this study aims to create a valid, reliable, and practical student satisfaction scale with academic services that can improve quality assurance at the study program level. The proposed scale will be tailored to meet the specific needs of each study program and ensure that the data collected is objective, unbiased, and reliable.

2. Methods

2.1 Research Design and Procedure

The method of this development research was in the form of scale construction referenced to Mann (2006), Lee and Lim (2008), and (Cohen & Swerdlik, 2017). The development procedure consisted of design and validation stages. In the design stage, the study focused on defining the indicator of the scale, writing the blueprint, pooling items, writing the initial scale items, and transferring all the scale materials into a web-based scale of Google Form. Meanwhile, for the validation stage, the study addressed content validation assessment by an expert panel, pilot test, and main test.

2.2 Participants

The study was conducted at Sriwijaya University's Faculty of Teacher Training and Education (FTTE) among its current lecturers and students. Ten out of 22 heads of study programs were randomly selected to participate in the expert review to assess the content validity of SSS. The age group of students who took part in the pilot test and main test ranged from 18 to 30 years. The first-year students were excluded from the study since they were not considered ready to benefit from academic services. In the pilot test, 30 students were chosen randomly to assess the practicality of SSS. Finally, in the main test, 949 students from 22 study programs took part in the validation of SSS.

2.3 Instruments

The process of validating the initial SSS involved three steps: expert review, pilot test, and main test (Mann, 2006). The expert review was conducted by a panel of experts who established the content validity using a validation sheet. They reviewed each item separately, non-face-to-face approach, following a single-blind procedure (Rubio et al., 2003). Using a scoring format of 1 to 4 of (Polit et al., 2007) (1=not relevant, 2=somewhat relevant, 3=quite relevant, and 4=very relevant), they filled out the sheet to indicate how they judged each item. The pilot test was conducted by providing respondents with a revised SSS on a designed website. They were also asked to complete a 16-item practicality questionnaire using a Likert format of 1 to 4 (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree). The questionnaire covered the content, language, and web-survey platform of SSS. Examples of the questions were "the number of questions is adequate" (content), "The sentences used are clear, do not give rise to multiple interpretations" (language), and "Any device can be used to access the scale" (web-survey platform). Finally, in the main test, respondents had the final version of the SSS available on a web-based platform. They were asked to complete the SSS and their responses also ranged from 1 to 4 (1=strongly disagree, 2=disagree, 3=agree, and 4=strongly agree). The web link to the SSS in Google Form platform was sent to students via study program social media.

2.4 Data Analysis

The research question had three criteria to clarify and was analyzed in three portions accordingly. Firstly, SSS calculated the content-validated value using the CVI method, consisting of CVI for item (I-CVI) and CVI for scale (S-CVI) (Yusoff, 2019). An item was rated I-CVI of 1.00 if all validators agreed it was "quite relevant or very relevant". If over half but not all validators deemed an item "quite relevant or very relevant", the I-CVI was at least 0.78 for ten validators. If none of the validators chose "quite relevant or very relevant" for an item, the I-CVI was 0. Its S-CVI was calculated by dividing the number of items scored 3 or 4 (deemed relevant) by the total number of items. The method of scale practicality index (SPI) adopted from the CVI was used to measure the practicality criteria of SSS in the pilot test. The I-SPI was 1.00 if all respondents agreed that an item was "agree and strongly agree". If more than half but not all respondents rated an item as "agree and strongly agree", the I-SPI was at least 0.78 for ten respondents. If none of the respondents chose "strongly disagree or disagree" for an item, the I-SPI was 0. The S-SPI of SSS was counted by dividing the number of items scored 3 or 4 (deemed agree) by the total number of practicality items. Additionally, its reliability and validity in the pilot test were measured through Cronbach alpha and item-total correlation, while convergent validity was utilized for its reliability and validity in the main test. The items of SSS should have higher correlations among themselves and significantly higher loadings, as measured by Cronbach alpha and item-total correlation to ensure its reliability and validity.

3. Results

3.1 Design Phase

During the design phase of the SSS, the SERVQUAL model (Parasuraman et al., 1985, 1988) was implemented to generate the scale. The expectation and perception aspects of the scale contained five domains of service quality, namely tangible, reliability, responsiveness, assurance, and empathy, with an equal number of items in each aspect. As per the literature review, the initial form item composition of the SSS consisted of 32 items, with 16 items each for expectation and perception aspects. The scale comprised teaching service, academic administration service, and facility satisfaction subscales. To provide a clearer understanding, the table below illustrates the blueprint of the SSS.

Table 1: The Blue Print of the SSS

Subscales	Domain (N item)									
	Tangible		Reliability		Responsiveness		Assurance		Empathy	
	E*	P**	E	P	E	P	E	P	E	P
Teaching Service	1	1	1	1	1	1	1	1	1	1
Academic Administration Service	1	1	1	1	1	1	1	1	1	1
Facility	1	1	1	1	1	1	1	1	2	2
Total of Items	3	3	3	3	3	3	3	3	4	4

*E=Expectation, **P=Perception

After reviewing the literature, establishing the blueprint of SSS, and pooling the items, the study continued to select the items, prepared the manual, and transferred them into a web-based survey platform of Google Form.

3.2 Content Validity

The study conducted a thorough literature review and consulted with experts to identify the different aspects and domains of SSS. A panel of ten experts then assessed the relevance of each item in relation to the aspect and domain definition. To ensure its content validity, it used I-CVI and S-CVI measures. Below is a detailed table of the I-CVI, S-CVI subscales, S-CVI SSS of the initial form after validated by the expert panel.

Table 2: I-CVI and S-CVI of SSS judged by expert panel (N=10)

Dimension	Expectation			Perception		
	Not Relevant	Relevant	CVI	Not Relevant	Relevant	CVI
Teaching Service Subscale						
Tangible	1	9	.90	1	9	.90
Reliability	1	9	.90	2	8	.90
Responsiveness	2	8	.80	2	8	.80
Assurance	1	9	.90	1	9	.90
Empathy		10	1.00	1	9	1.00
S-CVI Teaching Service = .9						
Academic Administration Service Subscale						
Tangible		10	1.00		10	1.00
Reliability	1	9	.90	1	9	.90
Responsiveness	1	9	.90	2	8	.80
Assurance	2	8	.80	1	9	.90
Empathy	1	9	.90		10	.90
S-CVI of Academic Administration Service = 0.9						
Facility Subscale						
Tangible		10	1.00	1	9	.90
Reliability	1	9	.90	1	9	.90
Responsiveness	1	9	.90	2	8	.80
Assurance	1	9	.90	1	9	.90
Empathy 1	1	9	.90	1	9	.90
Empathy 2		10	1.00		10	1.00
S-CVI of Facilities = .916						
S-CVI of the SSS = .903						

Using the CVI method as done by Zamanzadeh et al. (2015) for given scores of 10 validators in the table above, each item must reach a consensus of I-CVI equal to or more than 0.78 to be included in the initial form. 32 items

are in the values between .8 - 1. They are more than .78 of I-CVI. Thus, all items remain in the pool of items. Meanwhile, the S-CVI value of each subscale and full scale reach 1, indicating all subscales and the full scale meet the requirement of content validity.

3.3 Pilot Test of SSS

To obtain validity and reliability coefficients on the SSS, a pilot test was conducted in which 30 respondents participated. The data was analyzed using the Corrected Item Total Correlation Technique (Wolf, 1967) with the computer assistance of SPSS Version 25. This method was used to obtain the overall Cronbach's Alpha and Corrected Item-Total Correlation of the SSS. The results showed that all items in the three satisfaction subscales were deemed valid, except for the Assurance-Perception-Administration-Academic-services (APAAA) item, which had a correlation coefficient of only .222. This value was below the permissible value of 0.30 (McCowan & McCowan, 1999), indicating that the item needed to be rephrased and included in the main test. To ensure the reliability of all items in the SSS, Cronbach's alpha was calculated. The results of this analysis confirmed that all items in the SSS were reliable, with a sufficient value of >0.60 . Overall, the pilot test provided valuable insights into the SSS and helped to ensure that the scale was adequate for further validating through the main test step.

Tabel 3: The Results of Pilot Test (N=30) and Main Test of SSS (N=949)

Items*	Pilot Test		Main Test	
	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item-Total Statistics of Teaching Service				
TETS	.428	.879	.649	.945
ReaETS	.659	.860	.729	.941
ReaETS	.355	.882	.797	.938
AETS	.588	.866	.793	.938
EETS	.559	.872	.800	.937
TPETS	.696	.858	.740	.940
ResPTS	.722	.856	.800	.937
ResPTS	.737	.855	.787	.938
APTS	.670	.860	.828	.936
EPTS	.684	.858	.649	.945
Item-Total Statistics of Academic Administration Services				
TEAAS	.653	.819	.785	.953
ReaEAAS	.536	.832	.815	.951
ReaEAAS	.475	.834	.818	.951
AEAAS	.709	.815	.821	.951
EEAAS	.748	.812	.794	.952
TPAAS	.785	.804	.786	.953
ResPAAS	.449	.839	.834	.951
ResPAAS	.414	.840	.800	.952
APAAS	.222	.852	.830	.951
EPAAS	.548	.827	.802	.952
Item-Total Statistics of Facilities				
TEF	.667	.925	.745	.941
ReaEF	.641	.926	.746	.941
ReaEF	.563	.929	.755	.941
AEF	.626	.927	.753	.941
EE1F	.846	.921	.734	.941
EE1F	.631	.927	.748	.941
TPF	.704	.924	.766	.940
ResPF	.841	.918	.745	.941
ResPF	.783	.921	.754	.941
APF	.742	.922	.777	.940
EEP1F	.619	.929	.709	.943
EEP2F	.862	.920	.746	.941

*T=tangible, Rea=reliability, A=assurance, E=empathy, Res=responsiveness, E=expectation, P=perception, TS=teaching service, AAS=academic administration service, F=facilities

Following the completion of the initial SSS, a pilot test was also carried out to evaluate its practicality. Participants were asked to express their thoughts on the website's content, language, and appearance by responding to a questionnaire. The responses to these questions were assessed using the SPI method, which assisted in determining their I-SPI score. The overall feasibility score of the SSS was verified by calculating the S-SPI, which involved categorizing the number of items where participants agreed or strongly agreed (score 3 or 4) versus those where they did not agree or strongly disagree (score 1 or 2), and dividing it by the total number of items. The feasibility score obtained for the SSS using this method provides a comprehensive understanding of its practicability.

No.	Practicality Items	I-SPI
1	The purpose of the scale is clear.	1.00
2	Instructions for filling are clear.	0.97
3	The number of questions is adequate.	0.90
4	Fill in questions relevant to the purpose of the scale.	1.00
5	Duration of completing the scale does not take up time.	0.97
6	Questions are placed orderly.	0.87
7	The sentences are clear and do not give rise to multiple interpretations.	0.83
8	The number of words in each item is adequate.	0.97
9	Response forms 1-4 are easy to understand.	0.93
10	Scalable application site is easy to access.	1.00
11	The appearance of the questionnaire on the web is attractive.	0.87
12	Filling in information about respondents is easy.	1.00
13	All questionnaire response buttons are easy to access.	1.00
14	The font size used is adequate.	0.97
15	The scale can be accessed using the device you own (smartphone, tablet, laptop, computer)	1.00
16	Reviewing responses before completing is easy to do.	0.97
S-SPI		0.94

3.4 Main Test Test of SSS

During the main test, the SSS was validated by involving 949 students, and analyzed using the corrected item-total correlation method. The results of the data analysis are presented in Table 3 above, where the criterion validity coefficient of the items ranged from .649 to .834. Meanwhile, the coefficient of Cronbach's alpha were between .936 and .953. A scale is considered reliable if the Cronbach's alpha value is greater than .60 and the criterion validity coefficient is at least .30. Therefore, the data in the table indicate that the SSS has good reliability and validity. When compared to the pilot test, the validity and reliability values of the main test were better. This is acceptable due to the significant difference in the number of respondents, which influenced their values. For better understanding, the final form of the SSS items is attached in Appendix 1.

4. Discussion

The current study aimed to create a web-based quality assurance instrument called the Student Satisfaction Scale (SSS). It was designed to improve the service quality of study programs and includes teaching services, academic administration services, and facility subscales. The study was successful in designing and validating it, resulting in a valid, reliable, and practical SSS. Based on these findings, the SSS is considered suitable for this institution to measure student satisfaction with academic service. Furthermore, a discussion followed in connection with the achieved goal.

During the development of SSS, the SERVQUAL model (Parasuraman et al., 1988) was exclusively used. This model emphasizes the importance of measuring consumer satisfaction based on tangible, reliability, responsiveness, assurance, and empathy dimensions. In order to determine the service quality level, a balanced

number of items between expectations and perception in each dimension was required. This would enable identification of any gaps between the two (Dan, 2012). In the design stage, the components of measuring student satisfaction aspects such as teaching services, academic administration services, and facilities were analyzed. As a result, 20 items were established for the first and second subscales, and 12 items for the third subscale. Specifically, these initial items consisted of 16 expectation aspects and 16 perception aspects. Due to psychological considerations of respondents, such as the risk of losing interest in completing a longer questionnaire, a smaller number of items were preferred (Sharma, 2022).

After conducting a blind review, ten validators reached a consensus that all proposed items of SSS were relevant and had valid content. The items achieved I-CVI between .80 and 1 and an S-CVI value of .90, which is above the minimum limit of 0.78 for ten raters. In order to ensure content validity, the proposed items were evaluated based on relevance, clarity, simplicity, and ambiguity. An intensive literature review was conducted to ensure that all items fulfilled these criteria. Expert panels also considered all items of SSS to be adequate. Therefore, it can be concluded that it meets the content validity requirement. The CVI value is important in defining the domain of the latent variable being measured, both in the development stage and the judgment-quantification stage (Bertea & Zait, 2013). In his work, Yagmale (2003) outlined four standards for evaluating content validity - relevance, clarity, simplicity, and ambiguity. In the current study, the items were thoroughly reviewed against the standard to ensure their relevance to indicators. The expert panels judged the items of SSS to be adequate during the judgment-quantification stage. Thus, it can be concluded that SSS satisfies the requirement of content validation.

In terms of applying web survey platform of this study, the SSS has good practical values according to the results of the pilot test. The level of practicality was calculated using the SPI method, and each item reached values between 0.87 and 1.0, indicating that the scale is practical or user-friendly in terms of content, language, or website appearance. Along with the initial validity and reliability values, it is a matter to assess practical aspects because it provides comprehensive information regarding its usefulness to users. Some related studies have confirm the using web-based or online survey in for its quality (Rao et al., 2018) as well as its possibilities, pitfall, and application (Harlow, 2010). However, some limitations emerge because the SSS only uses the Google Form platform, which requires semi-manual data processing. If incorporated into the existing information system, the system may process data more effectively and display them on the quality assurance unit of the institution website. Nonetheless, the practical test results demonstrate that users did not complain about using this platform. The finding the current study confirms previous researches of how effective ways to design and apply it as a supporting platform for data collection (Regmi et al., 2016; Son et al., 2021; Zeithaml et al., 2002) and informs user experience during a web-based survey (Santosa, 2016). Compared to similar applications (Andres et al., 2020), studies show the web platform superiority in the present research including unlimited respondents, automatically presented answers in spreadsheets, theme options, adding logos, images, videos, skip logic and page branching, embedding surveys into emails or web sites, adding collaborators, and it's free.

To determine whether the SSS stands for previous work, the studies of Siming et al (2015), Weerasinghe et al. (2017), and Razinkina et al. (2018) may be a reference. Their studies identified various elements that influenced student satisfaction, such as GPA, quality of teaching, clarity of expectations, teaching style, quality of lecturers, quality of campus services and facilities, and effective use of technology. Additionally, the studies found that the quality of classrooms, lecturer-student relationships, interactions with fellow students, concern for lecturers' well-being, and student growth and development also contribute to student satisfaction. The current study project selected several of these elements for pooling the items, categorizing them into tangibility, reliability, responsiveness, assurance, and empathy domains. It points similar results that according to validators' viewpoints they were relevant included in the scale.

The latest study conducted on the subject has revealed some significant findings. According to the study, the number of items focused on facility subscales outweighed those of teaching service and academic administration service subscales, as per expert opinions. This indicates the crucial role that facilities play in building satisfaction levels. While previous research by Douglas et al. (2006) suggests that facilities are not as significant in measuring student satisfaction, they are still very important in determining a student's choice of university. Prospective students pay serious attention to the quality of facilities offered by a higher education institution before making a

decision. With 12 of 32 items denoting the facility subscale in the present study, it is clear that the items in this subscale hold universal importance.

The study in question has successfully achieved its objectives. However, the process of determining the exact service quality in higher education is a complex and multi-faceted one. The Parasuraman et al. model of service quality is used in this study to determine how the respondents perceive their expectations of the services and their perception of the performance of the expected services. It is important to note that capturing the performance of the service by a scale is not always sufficient due to the subjective nature of service quality measurement using a self-report method that depends on the respondent perception (Özkan, 2016). Therefore, future research may benefit from including another method, such as peer review or the use of performance indicators and service providers or higher education institutions (Mishra, 2007). By comparing the expectations and perceptions of the respondents, more impressive data on the service quality can be obtained. In terms of website-based surveys used to measure student satisfaction in a more integrated fashion, future studies may consider embedding SSS into information systems to make the administration, data processing, and reporting more effective and informative. Overall, the study has provided valuable insights into the service quality in higher education, and future research can build on these findings to further enhance the quality of service provided to students.

5. Conclusion

Students' satisfaction with their academic experience in higher education is an important aspect that needs to be measured accurately. While there are numerous methods available to assess overall satisfaction, using a similar scale may not be sufficient to reveal individual responses concerning academic satisfaction. To address this issue, researchers have developed an alternative instrument called the student satisfaction scale (SSS), which applies the SERVQUAL model to measure academic satisfaction more comprehensively. The SERVQUAL model analyzes the gap between students' expectations and perceptions to evaluate their satisfaction with teaching services, academic administration services, and facilities. The SSS comprises 32 items that measure students' expectations and perceptions in five critical domains, including tangibility, reliability, assurance, responsiveness, and empathy. These domains represent the quality assurance required at the study program level of higher education. The validation stage of the study confirmed that the SSS is a reliable and valid tool for measuring student satisfaction with academic services. It has both diagnostic and predictive values for improving the academic quality assurance of study programs, ensuring that students receive the best possible learning experience.

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Data Availability Statement: We will provide relevant study data upon request and maintain confidentiality as per informed consent.

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References

- Abili, K., Narenji Thani, F., & Afarinandehbin, M. (2012). Assessing quality gap of university services. *Asian Journal on Quality*, 13(3), 204–211. <https://doi.org/10.1108/15982681211287766>
- Andres, F. da C., Andres, S. C., Moreschi, C., Rodrigues, S. O., & Ferst, M. F. (2020). The use of the Google Forms platform in academic research: Experience report. *Research, Society and Development*, 9(9), 1–7. <https://doi.org/http://dx.doi.org/10.33448/rsd-v9i9.7174>
- Berteau, P. A., & Zait, A. (2013). Scale Validity in Exploratory Stages of. *Management & Marketing*, 9(1), 38–46.
- Butt, B. Z., & Rehman, K. ur. (2010). A study examining the students satisfaction in higher education. *Procedia Social and Behavioral Sciences*, 2(2), 5446–5450. <https://doi.org/10.1016/j.sbspro.2010.03.888>
- Cohen, R. J., & Swerdlik, M. E. (2017). *Psychological testing and assessment: An introduction to tests and measurement* (9th ed.). Mc Graw Hill.
- Dan, P. (2012). Measuring Quality Satisfaction with Servqual Model. In A. Pusca (Ed.), *The 7th Edition of International Conference European Integration Realities and Perspectives* (Issue January, pp. 696–707). Danubius University, Romania. <https://doi.org/10.2139/ssrn.2263867>
- Douglas, J., Douglas, A., & Barnes, B. (2006). Measuring student satisfaction at a UK university. *Quality Assurance in Education*, 14(3), 251–267. <https://doi.org/10.1108/09684880610678568>
- Goumairi, O., Aoula, E. S., & Souda, S. B. E. N. (2020). Application of the servqual model for the evaluation of the service quality in Moroccan higher education: Public engineering school as a case study. *International Journal of Higher Education*, 9(5), 223–229. <https://doi.org/10.5430/ijhe.v9n5p223>
- Harlow, A. (2010). Online surveys—possibilities, pitfalls and practicalities: The experience of the TELA evaluation. *Waikato Journal of Education*, 15(2). <https://doi.org/10.15663/wje.v15i2.116>
- Harvey, L. (2022). Back to basics for student satisfaction : improving learning rather than constructing fatuous rankings. *Quality in Higher Education*, 28(3), 265–270. <https://doi.org/10.1080/13538322.2022.2050477>
- Kanwar, A., & Sanjeeva, M. (2022). Student satisfaction survey: A key for quality improvement in the higher education. *Journal of Innovation and Entrepreneurship*, 11, 1–10. <https://doi.org/10.1186/s13731-022-00196-6>
- Krsmanovic, M., Horvat, A., & Ruso, J. (2014). Application of SERVQUAL model in high education. *11th International Conference "Standardization, Prototypes and Quality: A Means of Balkan Countries' Collaboration, September.* https://www.researchgate.net/publication/267980133_Application_of_SERVQUAL_model_in_high_education
- Lee, D., & Lim, H.-W. (2008). Scale Construction. In P. P. Heppner, D. M. Kivlighan, & B. E. Wampold (Eds.), *Research Design in Counseling* (3th ed., pp. 494–510). Thomson Brooks/Cole.
- Liu, S., & Liu, J. (2017). Chapter 2 - Quality Assurance in Chinese Higher Education A2 - Shah, Mahsood. In M. S. Do & Q. T.N. (Eds.), *The Rise of Quality Assurance in Asian Higher Education* (pp. 15–33). Chandos Publishing. <https://doi.org/https://doi.org/10.1016/B978-0-08-100553-8.00001-X>
- Mann, B. L. (2006). Formative Evaluation of Instructional Material. In B. Mann (Ed.), *Selected style in web-based educational research* (pp. 232–242). Idea Group Publishing. <https://eric.ed.gov/?id=ED508893>
- McCowan, R. J., & McCowan, S. J. (1999). Item Analysis for Criterion-Referenced Tests. In *Online Submission*. Center for Development of Human Services. <http://eric.ed.gov/ERICWebPortal/recordDetail?accno=ED501716>
- Mishra, S. (2007). *Quality Assurance In Higher Education: An Introduction* (2nd ed.). National Assessment and Accreditation Council and Commonwealth of Learning. <https://oasis.col.org/server/api/core/bitstreams/5154fb34-2c2e-4bd0-8388-c2f5b2046f26/content>
- Nayak, M. S. D. P., & Narayan, K. A. (2019). Strengths and Weakness of Online Surveys. *IOSR Journal of Humanities and Social Sciences*, 24(5), 31–38. <https://doi.org/10.9790/0837-2405053138>
- Özkan, H. A. (2016). Weaknesses of servqual which resources from cognitive differences. *International Journal of Business and Social Research*, 06(11), 34–41. https://www.researchgate.net/publication/6185294_Is_the_CVI_an_acceptable_indicator_of_content_validity_Appraisal_and_recommendations
- Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and its Implication for Future Research (SERVQUAL). *Journal of Marketing*, 49(January), 41–45. <https://doi.org/10.2307/1251430>
- Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL : A multiple- Item Scale for measuring

- consumer perceptions of service quality. *Journal of Retailing*, 64(January), 12–40. https://www.researchgate.net/publication/225083802_SERVQUAL_A_multiple-Item_Scale_for_measuring_consumer_perceptions_of_service_quality
- Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Focus on Research Methods Is the CVI an Acceptable Indicator of Content Validity? Appraisal and Recommendations. *Research in Nursing & Health*, 30, 459–467. <https://doi.org/10.1002/nur.20147>
- Rao, T. A., Ehsan-ul-Haq, & Tariq, S. (2018). Quality Assurance of Web-Based Applications. *Internasional Journal of Multidisciplinary Science and Engineering*, 2(2), 1–5. https://www.researchgate.net/publication/323676961_Quality_Assurance_of_Web-Based_Applications
- Razinkina, E., Pankova, L., Trostinskaya, I., Pozdeeva, E., Evseeva, L., & Tanova, A. (2018). Student satisfaction as an element of education quality monitoring in innovative higher education institution. *E3S Web of Conferences*, 33, 1–8. <https://doi.org/10.1051/e3sconf/20183303043>
- Regmi, P. R., Waithaka, E., Paudyal, A., Simkhada, P., & Van Teijlingen, E. (2016). Nepal journal of epidemiology guide to the design and application of online questionnaire surveys. *Nepal Journal of Epidemiology*, 6(4), 640–644. www.nepjol.info/index.php/NJE
- Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research*, 27(2), 1869–1876. <https://doi.org/10.1016/b0-12-227055-x/00351-5>
- Saliba, K., & Zoran, A. G. (2018). Measuring Higher Education Services Using the SERVQUAL Model. *Journal of Universal Excellence*, 4(4), 160–179. https://www.fos-unm.si/media/pdf/IP/IP_37_SALIBA_ZORAN.pdf
- Salinda Weerasinghe, I. M., Lalitha, R., & Fernando, S. (2017). Students' Satisfaction in Higher Education Literature Review. *American Journal of Educational Research*, 5(5), 533–539. <https://doi.org/10.12691/education-5-5-9>
- Santosa, P. I. (2016). Measuring user experience during a web-based survey: A case Of back-to-back online surveys. *International Journal on Advanced Science, Engineering and Information Technology*, 6(3), 339–344. <https://doi.org/10.18517/ijaseit.6.3.815>
- Shabbir, M., Khalid, M. I., Bakhsh, K., Mohsin, M. N., Rasool, S., & Mohsin, M. S. (2015). Improving Professional Development System through Quality Assurance Practices in the Universities of Pakistan. *International Education Studies*, 9(1), 141. <https://doi.org/10.5539/ies.v9n1p141>
- Sharma, H. (2022). How short or long should be a questionnaire for any research? Researchers dilemma in deciding the appropriate questionnaire length. *Saudi Journal of Anaesthesia*, 16(1), 65–68. https://doi.org/10.4103/sja.sja_163_21
- Siming, L., Gao, J., & Xu, D. (2015). Factors leading to students' satisfaction in the higher learning institutions. *Journal of Education and Practice*, 6(31), 114–118. <https://files.eric.ed.gov/fulltext/EJ1083362.pdf>
- Soares, M. C., Novaski, O., & Anholon, R. (2017). SERVQUAL model applied to higher education public administrative services. *Brazilian Journal of Operations & Production Management*, 14(3), 338–349. <https://doi.org/10.14488/bjopm.2017.v14.n3.a7>
- Son, D. H., Linh, T. V., & Van, P. T. H. (2021). Applying Google form in Doing Job Survey : A Case Study At Binh Thuan Medical College. *American Journal of Sciences and Engineering Research*, 4(6), 176–187. <https://iarjournals.com/upload/46176187.pdf>
- Sunarto, K. (2022). *Chapter 5 - The Rise of Quality Assurance in Indonesian Higher Education* (M. S. Do & Q. T.N. (eds.); pp. 67–86). Chandos Publishing. <https://doi.org/https://doi.org/10.1016/B978-0-08-100553-8.00008-2>
- Teeroovengadum, V., Kamalanabhan, T. J., & Seebaluck, A. K. (2016). Measuring service quality in higher education. *Quality Assurance in Education*, 24(2), 244–258. <https://doi.org/10.1108/QAE-06-2014-0028>
- Visscher, A. J. (2009). Improving quality assurance in European vocational education and training: Factors influencing the use of quality assurance findings. In *Improving Quality Assurance in European Vocational Education and Training: Factors Influencing the Use of Quality Assurance Findings* (Issue April 2009, pp. 1–182). <https://doi.org/10.1007/978-1-4020-9527-6>
- Warn, J., & Tranter, P. (2001). Measuring Quality in Higher Education: A Competency Approach. *Quality in Higher Education*, 3(3). <https://doi.org/10.1080/13538320120098078>
- Wolf, R. (1967). Evaluation of Several Formulae for Correction of Item-Total Correlation in Item Analysis. *Journal of Educational Measurement*, 4(1), 21. <https://doi.org/10.1111/j.1745-3984.1967.tb00565.x>
- Wong, W. H., & Chapman, E. (2022). Student satisfaction and interaction in higher education. *Higher Education*, 85(5), 957–978. <https://doi.org/10.1007/s10734-022-00874-0>
- Wu, M. J., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports*, 7(February), 1–11. <https://doi.org/10.1016/j.chbr.2022.100206>
- Wyatt, J. C. (2000). When to Use Web-based Surveys. *Journal of the American Medical Informatics Association*, 7(4), 426–430. <https://doi.org/10.1136/jamia.2000.0070426>
- Yaghmaie, F. (2003). Validity and Its Estimation. *Journal of Medical Education*, 3(1), 25–27.

- https://www.researchgate.net/publication/277034169_Content_validity_and_its_estimation
- Yusoff, M. S. B. (2019). ABC of Content Validation and Content Validity Index Calculation. *Education in Medicine Journal*, 11(2), 49–54. <https://doi.org/10.21315/eimj2019.11.2.6>
- Zaki, M. (2020). Academic Quality Assurance Survey in Higher Education. *International Journal of Higher Education*, 9(6), 268–275. <https://doi.org/10.5430/ijhe.v9n6p268>
- Zamanzadeh, V., Ghahramanian, A., Rassouli, M., Abbaszadeh, A., & Alavi-, H. (2015). Design and Implementation Content Validity Study : Development of an instrument for measuring Patient-Centered Communication. *Journal of Caring Sciences*, 4(5), 165–178. <https://doi.org/10.15171/jcs.2015.017>
- Zeithaml, V. A., Parasuraman, A., & Malhotra, A. (2002). Service quality delivery through web sites: A critical review of extant knowledge. *Journal of the Academy of Marketing Science*, 30(4), 362–375. <https://doi.org/10.1177/009207002236911>

Appendix 1: The Final Item of the SSS

No.	Code	Items
1	TETS	Lecturers should organize the classroom before and during learning in a neat manner and orderly manner.
2	ReaETS	Lecturers need to use innovative, case-based, problem-solving, and project-based learning methods.
3	ReaETS	Lecturers must immediately to students who experience difficulties in learning and provide necessary assistance.
4	AETS	Lecturers are required to Use current, reliable, and easily accessible sources for lecture materials.
5	EETS	Lecturers must create a comfortable learning atmosphere for all student.
6	TPETS	Staff need to organize the workspace and equipment to show readiness to serve students' academic administration needs.
7	ResPTS	Staff must always be agile in providing academic administration services to students.
8	ResPTS	Staff should be responsive when students convey administrative needs that need to be resolved.
9	APTS	Staff must have reliable skills to provide good administrative services to students.
10	EPTS	Staff should show a polite attitude when treating students who require administrative services.
11	TEAAS	The classroom where lectures are held or the laboratory where practice and practicums are held and the equipment must look representative.
12	ResEAAS	Furniture (desks, chairs) and equipment in the classroom must be available in sufficient quantities and well maintained.
13	ResEAAS	Lecture rooms and facilities must be available if there is a sudden need.
14	AEAAS	The laboratory or practice room should be equipped with modern equipment in sufficient quantities for learning.
15	EEAAS	Sanitary facilities (toilets) must be available in sufficient numbers, easily accessible, and kept clean.
16	TPAAS	Places of worship facilities should be available in sufficient capacity and easily accessible to students.
17	ResPAAS	Lecturers always arrange the classroom carefully to create a conducive learning atmosphere.
18	ResPAAS	Lecturers always apply contemporary learning methods, problem-solving, case discussions, and projects.
19	APAAS	Lecturers are aware of students' difficulties in learning and immediately assist.
20	EPAAS	Lecturers provide up-to-date and easily accessible learning materials and resources.
21	TEF	Lecturers always create a fun and comfortable learning atmosphere.
22	ReaEF	Staff organize working conditions neatly to facilitate service to students.
23	ReaEF	Staff provide administrative services deftly by their main duties.
24	AEF	Staff respond quickly when students need help with paperwork or completing documents.
25	EE1F	Staff demonstrate high skills in providing administrative services.
26	EE1F	Staff provide full academic administration services with friendliness.
27	TPF	The classrooms where lectures are held or the laboratories where practicums are carried out and their equipment look classy.
28	ResPF	The lecture rooms and their furniture and other equipment are always well maintained and in sufficient quantities.
29	ResPF	Whenever there are other incidental needs, space in one of the buildings and equipment are always available.
30	APF	The laboratory or practice room has modern equipment and is sufficient in quantity.
32	EEP1F	Sanitary facilities (toilets) are always clean, easy to reach, and available in adequate quantities.
32	EEP2F	Places of worship facilities are provided in adequate capacity and are easily accessible.

