Available online on the website:
http://jurnal.uinbanten.ac.id/index.php/tarbawi

TARBAWI
Jurnal Keilmuan Manajemen Pendidikan

Tarbawi: Jurnal Keilmuan Manajemen Pendidikan
p-ISSN: 2442-8809 | e-ISSN: 2621-9549
Vol. 7, No. 05, 2021, 283-292

Development of Student's Satisfaction Instruments on The Thematic Community Service Lectures Management Using Rasch Model Analysis

Muhammad Nur, Sabaruddin, M. Fadli

[1,2,3]*Institut Agama Islam Negeri (IAIN) Langsa, Aceh, Indonesia*
e-mail: m.nur@iainlangsa.ac.id, sabaruddin@iainlangsa.ac.id, m.fadli@iainlangsa.ac.id

Submitted: 29-08-2021 Revised: 26-09-2021 Accepted: 06-10-2021

ABSTRACT. This study aimed to obtain valid and reliable items on the instrument's construct for student satisfaction for the 2021 Thematic KKN management service at State Islamic Institute of Langsa (IAIN Langsa) using polytomy data analyzed using the Rasch Model. This study uses a survey approach by distributing questionnaires to students taking the Thematic KKN through the Google form. The questionnaire used consisted of 19 items which were developed using a Likert scale. The Instruments development measured student satisfaction with the 2021 Thematic Kuliah Kerja Nyata (KKN) program. The implementation Service is classified into five service constructs: administration, group division, KKN consultation, participant debriefing, and distribution of KKN attributes. This study concludes that the ten items can be maintained because they have values according to the established criteria, which are in the range of MNSQ values (0.50<MNSQ<1.50), STZD (-2.00<STZD<2.00), and PTMEA-COOR > (0.40<PTMEA-COOR<0.85). Some items are too misfit to be revised, tested, and re-analyzed from the beginning to be used as instruments that meet the requirements and are suitable for use as psychometric measurement tools. As a result, the development instrument to measure student satisfaction with the 2021 Thematic KKN service had already proven to be a valid, reliable, and usable instrument.

Keywords: *Application of the Rasch model, Instrument development and thematic KKN*

https://dx.doi.org/10.32678/tarbawi.v7i02.4988
How to Cite Sabaruddin, S., Nur, M., & Fadli, M. (2021). Development of Student's Satisfaction Instruments on The Thematic Community Service Lectures Management Using Rasch Model Analysis. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan, 7*(02), 283-292. doi:10.32678/tarbawi.v7i02.4988.

INTRODUCTION

Kuliah Kerja Nyata (KKN) is one of the absolute requirements for completing undergraduate studies in all higher education programs in Indonesia. The service is an essential element in implementing "the three pillars of higher education" (Tri Dharma Perguruan Tinggi): education, research, and community services which involves lecturers and students directly in the community (Kurnia *et al.*, 2020; Salim & Septiana, 2020). Community service is considered good if benefits are felt both academically and non-academic based on the community's needs, especially following the expertise of students who do service. The Covid-19 pandemic is not an obstacle to the student service process, and there are many ways and activities that students can do that are beneficial to the community (Citraningsih *et al.*, 2021; Sabaruddin *et al.*, 2020). Considering the turmoil academic of the pandemic that has not subsided, service activities based on themes are needed (Rahmatullah, 2021). Service based on themes is chosen according to conditions, community needs, and student areas of expertise. Community service in the Independent Learning, Independent Campus Learning program also recognized significant credit weight. Of

course, the management and the service theme should be appropriate and become a scientific development for students (Artiwi & Rosdiyani, 2021; Yusuf, 2021).

The role of students in society can provide solutions to various problems. Examples of Thematic KKN activities that have been carried out include filling teacher shortages in remote schools for prospective teachers, conducting mass treatment for handling covid, especially for health students, conducting counselling for farmers for agricultural students, making appropriate technology for engineering students, and many other activities that have a direct effect on society. In addition to the practical effect, students in the Thematic KKN also have an academic educational effect on tolerance and moderation in religion and mutual respect for fellow citizens. Implementing Thematic KKN is expected to increase student competence in their respective fields and make them sensitive to various social phenomena. Therefore, it can be a solution to solve various problems and community needs (Anwas, 2011).

The Thematic KKN program going on so far needs to be reviewed for its effectiveness, benefits, and practicality in student satisfaction. To test student satisfaction with the implementation and management of Thematic KKN management held by the Service Institute on campus, valid and reliable instruments are needed. The development of items requires thoroughness and comprehensive empirical tests in order to obtain reliable and standard instruments. The Rasch Model analysis test is considered to select the right instrument items and eliminate inappropriate items used in data mining. This article will discuss how to measure the instrument development of student satisfaction on student satisfaction in managing the 2021 Thematic KKN using the Rasch Model Analysis.

Measurement is the provision of attributes in the form of numbers (scores) on the status of specific traits or characteristics possessed by individuals or particular objects in comparison to specific standards (Hapuddin, 2021). This measurement activity is essential, especially in developing standard and reliable instruments before they are used in measurements. One of the dimensions that must be considered in this measurement activity is the validity and reliability of the instrument. Information on the validity and reliability of this set of instruments requires an exact process and calculation to produce standard and reliable instruments. In psychometrics, many methods and measurement techniques can be used to get good and reliable items to be feasible to use. The use of measurement methods and techniques used in instrument development will also significantly affect the shape and quality of the instrument. Measurement experts have developed three measurement theories that can be used in the development of research instruments, namely: (1) Classical test theory; (2) Item response theory (IRT), which is often known as modern test theory; and (3) Rasch measurement theory (Rasch Model), which is known as "the simplest modern test theory" (Hayat, 2021). The three measurement streams above have different characteristics and characteristics in measurement.

The group of test items and the questionnaire on classical theory can not be separated from the participants who take the test or fill out the questionnaire (Naga, 1992). It, model has been used for many years by measurement experts to determine the reliability of items and the characteristics of a measurement instrument. Classical Test Theory (CTT) is a measurement model invalidating test scores with three concepts: test scores (observation scores), accurate scores, and error scores or measurement of random scores. These three concepts are formulated into this CTT model (Hambleton & Jones, 1993). According to the experts in this classical test theory, a construct is analyzed by applying arithmetic operations to each score obtained from these items. It is less relevant because the score generated from each item is ordinal, so that the score can not be treated as an integer (Jailani, 2011). However, according to Daali, after the participants and groups of items are determined in the classical measurement, the classical items' characteristics are difficulty, discrepancy, validity, reliability, and standard error of measurement (Naga, 1992). In determining the reliable and suitable items for use in measurement, this classical theory uses three parameters: difficulty level, item discrimination power, and distractor effectiveness. Several aspects

considered in classical test theory are the item difficulty, the discriminating power of items, the distribution of answer choices, and the reliability of test scores (Safari, 2000).

Over time, some of the limitations that CTT has in measurement have led to the birth and development of modern test theory (Wright, 1997). The emergence of this new theory has indirectly given birth to new concepts in psychometrics, especially in backfilling and item analysis. The fundamental difference between the two theoretical models of CT and IRT measurements lies in the analysis results. CT is a more sample-dependent test, while IRT is sample-free in the analysis results. Initially, the Rasch model was developed by George Rasch as a mathematical approach in the 1950s. He developed an analytical model of item response theory (IRT), better known as 1PL (one parameter logistics) or one parameter logistics. Rasch analysis model This mathematical approach was later reintroduced by Benjamin Wright in the United States (Linacre, 2007). The birth of this model is also the latest approach that can measure a variable that has not been measured in other approaches. This Rasch measurement model can be used as an option in developing instruments used for assessment in education rather than the classical theory that has been used in measurement (Sumintono, 2017). In practice, the Rasch Model refers to ideas, principles, guidelines, or techniques that allow measurements to be made of latent properties that cannot be obtained in classical measurements.

Although the three measurement concepts are different, the purpose of the measurement model is to describe the quality of indicators that can be used for latent variables. The central concept used in this case is validity and reliability (Ghozali, 2008). This measurement model is necessary to develop an instrument that will be used to measure accurately. The first requirement that a set of instruments must meet before being used to measure is validity testing. Validity can be the extent to which the research test instrument measures what it is supposed to measure. Therefore, reasonable conclusions can be made from the research sample (Creswell & Guetterman, 2019). This measuring instrument should be tested before use. This test can be done by carefully analyzing the validity of the items. In contrast, reliability is the extent to which research testing instruments can be expected to get consistent results when repeated. Therefore, reliability can provide consistency of validity (Yasin *et al.*, 2015).

In developing the instrument to measure student satisfaction with this thematic KKN service, the Rasch model measurement type is used. This model is very suitable for developing survey instruments and is an alternative to developing measurement instruments in educational assessment and using classical theory (Sumintono, 2017). In developing the instrument, the Rasch model approach can test the validity and reliability of the instruments used to measure student satisfaction. The use of this Rasch model in this study can provide a reliable and accurate measuring tool, especially in obtaining information about the validity and reliability of the instrument. A study identifying the validity and reliability of an instrument will be significant in maintaining the instrument's accuracy (Rahayah *et al.*, 2010). This step ensures that the instrument can measure what will be measured consistently and accurately as planned. In analyzing instrument items using the Rasch model, several criteria can be used to develop an instrument: the suitability of items (item fit order), level of difficulty, Rasch discriminatory power, and item function information (item fit order).

Reliability and Separation of Items-Respondent

The consistency of the results of measurement and testing of an instrument makes it reliable and trustworthy so that it is suitable for being used as a measuring tool. The high or low reliability of the instrument is indicated by a numerical value called the Reliability Coefficient. One of the commonly used techniques for calculating the reliability of this instrument is the Cronbach Alpha Coefficient. This Cronbach Alpha value is 0.00 to 1.00 and is the level for each reliability value in the measurement. This reliability coefficient is a quantity that indicates the

quality or consistency of the instrument's measurement results. The higher the reliability coefficient, the higher the quality of the instrument (Djaali & Muljono, 2008).

Tabel 1. Ukuran Alpha Cronbach (Hair jr *et al.*, 2015)

Alpha Coefficient Range	Level	Information
< 0.6	Low	Remove all Items
0.6 < 0.7	Moderate	Revision, throw away some
0.7 < 0.8	Well	Question accepted
0.8 < 0.9	Better	Items accepted
0.0 < 1.0	Best	Items accepted

Level of Item FIT (ITEM FIT ORDER)

Misfit items in the Rasch model analysis identify students' misconceptions about these items. The criteria used in determining the suitability of items for outliers or misfits are seen in the three psychometric attributes of each item obtained, namely the analysis results of the application of Rasch models such as Winstep and ministeps. The three psychometric attributes were obtained by calculating the quadratic value of the MNQ, ZSTD, and PTMEA-COOR outfits. Items that have values beyond these three psychometric attributes can be categorized as misfit items that need to be revised and retested (Boone *et al.*, 2014). The item suitability index can be seen in table 2 below;

Table 2. Criteria Items

Statistics	Fit indices
Outfit mean square values (MNSQ)	0.50 – 1.50
Outfit z-standardized values (ZSTD)	-2.00 – 2.00
Point Measure Correlation (PTMEA-CORR)	0.40 – 0.85

MNSQ values move in the range of zero (0) to one (1)

Rasch Discrimination (PTMEA-COOR)

The PTMEA-COOR value is Rasch's discriminatory power. The PTMEA-COOR value required for the acceptance of the item is (0.4 <Pt Measure Corr<0.85). If the PTMEA-COOR score is outside the predetermined criteria, it is considered that the item is not suitable (misfit), so that the item must be corrected or discarded. Value 1.0 (positive) on PTMEA-COOR. identified that the students taking the test with low ability answered the item incorrectly, while the students with high ability level answered the question correctly. While the PTMEA-COOR value is negative (-), it is assumed that test-taking students who have low abilities answer the questions correctly. Students who have high abilities answer the items incorrectly. So, PTMEA-COOR questions that have negative scores must be revised or discarded (Smiley, 2015). Point Measure Correlation values are considered very good if they meet the following criteria: >0.40, good (0.30-0.39), sufficient (0.20-0.29), cannot be distinguished (0.00-0.19), and necessitate item examination (0.00)(Alagumalai *et al.*, 2005).

METHOD

This study uses the survey technique, distributing questionnaires to students enrolled in the Thematic KKN 2021 program via a Google form. The questionnaire consists of 19 questions designed with the Likert scale. This instrument is used to collect data on student satisfaction with the Thematic KKN Implementation Service 2021,which is classified into 5 constructs about services, namely; administrative services, services in student grouping, KKN consulting services, participant debriefing, and services in KKN attribute distribution. The data was analyzed using

ministep version 4.5.3. The polytomy data collected is analyzed using computer applications. Calton asserts that the use of applications in the process of developing instruments will be more efficient and can help in the development of details, especially in formatting them. Computer applications will also help with entering data and analyzing the data easily (David Colton & Robert W. Covert, 2017). This statistical item analysis was carried out for each stage, especially in determining the items that were suitable and well used in measurement (Cohen & Swerdlik, 2017). In this study, the Rasch model analysis model was used for instrument development, which focused on item fit order, level of difficulty, Rasch discrimination power, and item function information (item fit order).

This study uses the survey technique, distributing questionnaires to students enrolled in the Thematic KKN 2021 program via Google. The questionnaire consists of 19 questions designed with the Likert scale. This instrument collects data on student satisfaction with the Thematic KKN Implementation Service 2021, which is classified into five constructs about services: administrative services, services in student grouping, KKN consulting services, participant debriefing, and services in KKN attribute distribution. The data was analyzed using mini step version 4.5.3. The polytomy data collected is analyzed using computer applications. Calton asserts that the use of applications in developing instruments will be more efficient and can help in the development of details, especially in formatting them. Computer applications will also help enter data and analyze the data quickly (David Colton & Robert W. Covert, 2017). This statistical item analysis was carried out for each stage, especially determining the suitable and well-used items in measurement (Cohen & Swerdlik, 2017). In this study, the Rasch model analysis model was used for instrument development, which focused on item fit order, difficulty level, Rasch discrimination power, and item function information (item fit order).

RESULT AND DISCUSSION

The distribution of students' ability to answer the instrument about student satisfaction with the implementation service of thematic KKN is shown in figure 1. Wright maps are a very efficient and practical analytical tool for viewing the suitability of data with Rasch models. This map is also called the Construct Map, which describes people's abilities and difficulty levels of problems that use the same logit size in providing information about the results of a test (Wilson, 2004). Through the observations of this Wight map, mapping all samples of respondents and the details analyzed will be easy to do. The information depicted on the left side of the map relates to the respondent's information in the sample. While the information on the right side of the map relates to all the details of a particular size.

Figure 1 of Wright's map above shows the value of the student's ability to answer the given questions. L28 students have the highest ability or ability, while L26 students have the lowest abilities.

Reliability and Separation index items

The reliability and separation index of items from the Student Satisfaction instrument on thematic KKN program services is shown in table 3 as follows:

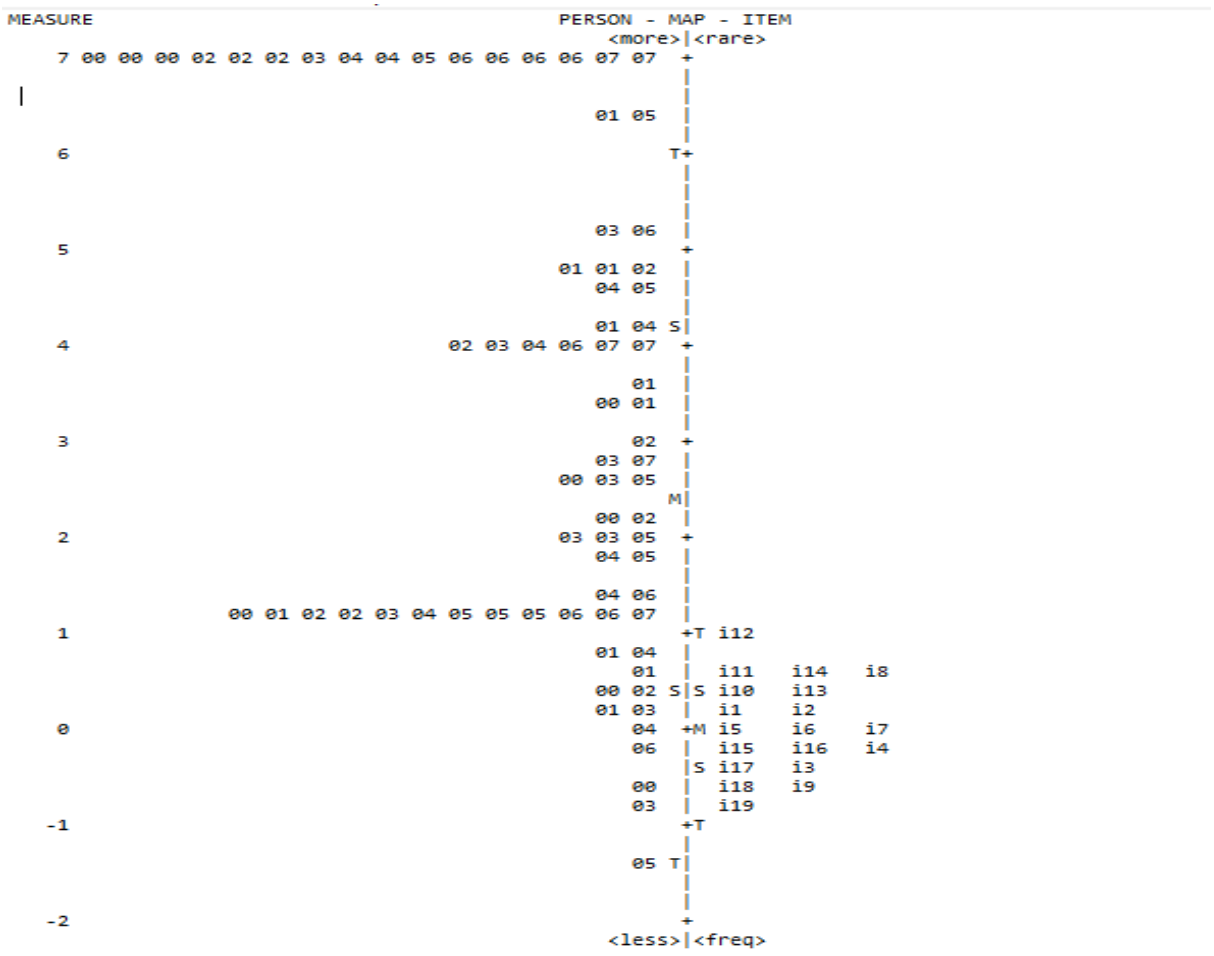

Figure 1. Distribution of students' abilities in answering questions

Table 3. Reliability of the item

SUMMARY OF 19 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	254.7	75.0	.00	.28	.99	.00	.99	-.01
SEM	1.4	.0	.11	.00	.03	.15	.05	.19
P.SD	5.9	.0	.47	.01	.14	.65	.21	.82
S.SD	6.0	.0	.48	.01	.15	.67	.21	.84
MAX.	265.0	75.0	1.01	.30	1.31	1.37	1.55	2.06
MIN.	241.0	75.0	-.87	.25	.71	-1.38	.63	-1.53

REAL RMSE	.29	TRUE SD	.37	SEPARATION	1.26	ITEM RELIABILITY .61
MODEL RMSE	.28	TRUE SD	.37	SEPARATION	1.31	ITEM RELIABILITY .63

S.E. OF ITEM MEAN = .11

ITEM RAW SCORE-TO-MEASURE CORRELATION = -1.00
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000

Based on table 3 above, it is seen that in the reliability and separation index value is 0.61. The reliability of the problem item is 0.63, which is in the moderate level range and must be discarded as part of the instrument item. While the value of the separation item is 1.26, it is assumed to have a less good value for the development of measurement of an instrument because it is below 2.00. Separation indexes that exceed 2 can be assumed to have good value (Bond & Fox, 2007).

Item Fit order

Analysis of the suitability of the items that have been designed can be shown in the MNSQ outfit index value in table 4 below;

Table 4. Item Fit Order

ITEM STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-AL CORR.	PTMEASUR-AL EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
14	248	75	.54	.27	1.31	1.37	1.55	2.06	A .69	.75	72.9	71.7	i14
12	241	75	1.01	.25	1.13	.67	1.26	1.15	B .76	.77	72.9	68.6	i12
8	248	75	.54	.27	1.08	.42	1.17	.76	C .77	.75	76.3	71.7	i8
2	253	75	.16	.28	1.15	.71	1.10	.47	D .71	.74	69.5	74.2	i2
5	256	75	-.08	.29	1.12	.58	1.00	.09	E .74	.73	66.1	75.5	i5
10	250	75	.39	.27	1.05	.29	1.10	.46	F .72	.75	76.3	72.7	i10
15	258	75	-.25	.29	1.09	.45	1.09	.41	G .70	.73	78.0	76.0	i15
9	262	75	-.60	.30	1.05	.31	.99	.06	H .68	.71	71.2	76.4	i9
18	262	75	-.60	.30	.98	.00	1.04	.25	I .70	.71	78.0	76.4	i18
19	265	75	-.87	.30	1.02	.16	.97	.01	J .69	.69	76.3	76.7	i19
13	251	75	.31	.28	.99	.03	.97	-.06	i .74	.75	69.5	73.1	i13
11	248	75	.54	.27	.90	-.39	.97	-.06	h .75	.75	79.7	71.7	i11
16	258	75	-.25	.29	.96	-.11	.89	-.35	g .74	.73	79.7	76.0	i16
1	253	75	.16	.28	.90	-.37	.89	-.37	f .75	.74	74.6	74.2	i1
3	259	75	-.33	.29	.89	-.43	.84	-.54	e .75	.72	74.6	76.2	i3
7	255	75	.00	.29	.87	-.56	.75	-.99	d .79	.74	72.9	74.8	i7
17	260	75	-.42	.30	.85	-.64	.80	-.74	c .76	.72	79.7	76.3	i17
6	255	75	.00	.29	.76	-1.10	.70	-1.23	b .79	.74	76.3	74.8	i6
4	258	75	-.25	.29	.71	-1.38	.63	-1.53	a .79	.73	79.7	76.0	i4
MEAN	254.7	75.0	.00	.28	.99	.0	.99	.0			74.9	74.4	
P.SD	5.9	.0	.47	.01	.14	.7	.21	.8			3.8	2.2	

Based on table 3 above, it is seen that the results of an analysis of 19 items from the Student Satisfaction Instrument in thematic KKN Service 2021, there is one item that has the largest MNSQ value, item i14 (1.55 logit). This item is recommended to be discarded or revised because it has a value above 1.50 in the MNSQ outfit column. This discarded item should be adjusted to the item discarded at the negative item value (-) in the infit value of PTMEA-COOR and the infit value of ZSTD (the value outside the range of-2.0-2.0). The item must be discarded or revised as needed. In table 3 above, it can be seen that item i14 (2.06 logit) is above the value of 2.0 (>2.0). While items i1 (-0.37), i3 (-0.54), i4 (-1.53), i6 (-1.23), i7 (-0.99), i11 (-0.06), i16 (-0.35), and i17 (-0.74) have ZSTD values below -2.00 (<-2.00). so that the nine items must be discarded or revised. Nevertheless, if the value of Infit and Outfit MNSQ has been obtained, then the ZSTD value can be ignored(Hong *et al.*, 2001).

The PTMEA-COOR value serves to detect the polarity of the item and whether its construction has reached the expected goal. In table 3 above, it is seen if all of the PTMEA-COOR values are positive (+). So, it is assumed that these items can measure what will be measured and have reached the expected goal. If the PTMEA-COOR value obtained has a positive value (+), the items are assumed to be able to measure what will be measured. But conversely, if the PTMEA-COOR value is in a negative form (-), it means that the item must be discarded or revised (Bond & Fox, 2007). The 19 items have achieved all the criteria required in the Rasch model measurement as good 'because they have PTMEA-COOR values between 0.4 and 0.8, so that they must be accepted and can be maintained(Arsad *et al.*, 2013). Based on the

results of the analysis of MNSQ, ZSTD, and PTMEA-COOR outfit values on the instrument of student satisfaction for thematic KKN 2021 services, can be shown in table 4 below.

Table 4. Items revised or discarded

Construct	Items		
	Accepted	**Revised/Discarded**	**Total**
Administration Service	i2, i10,	i1, i3, i4,i11	4
Consulting Service	i5, i8,	i6, i7,	2
Student Grouping	i12, i13	--	0
Participant debriefing	i18, i19	i16, i17	2
Attribute distribution	i9, i15	i14,	1
Total	10	9	-

Based on table 4 above, it is seen that in the construct about student satisfaction in administrative services (items i1, i2, i4, i10, i11, and i13), only two items are acceptable, namely; "Ease of accessing and registering thematic KKN online (item i2)" and "Services in the field of administration during KKN activities (item i10)". These items are acceptable because they have an MNSQ value within the required criteria (0.501.50), which is 1.00 logit and 1.10 logit. The item "Consultation related to the administration of the implementation of the Thematic KKN program (item i5)" and "The response given by students regarding the mechanism of requirements following thematic KKN (item i8)", can be accepted because it has the values of MNSQ, ZSTD, and PMTEA COOR following the criteria. and "DPL designation that guides students through online (item i13)". a construct of items regarding student satisfaction with services in the location of KKN participants and DPL designation. Only two items are accepted and can be maintained, namely; "The appointment of KKN participants at the program location (item i12)" and "DPL designation that guides students through online (item i13)". The measuring of student satisfaction in the thematic KKN debriefing consists of 4 points, but only in the items "The suitability of the debriefing material with the theme of Thematic KKN 2021 (item i18), and "Systematics in the presentation of debriefing material (item i19)", which can be disallowed and maintained as good items because they have a value still within the MNSQ value range, STDZ, and PTMEA-COOR required. While Rasch Analysis models on the three items constructed on student satisfaction in KKN attribute distribution services, the "attitude shown by the committee in charge of the division of thematic KKN 2021 attributes (item i9)" and the "readiness of the committee in distributing the needs/attributes of thematic KKN 2021 (item i15)" can be maintained. These items meet those criteria and have values within the criteria of MNSQ, STZD, and PTMEA-COOR values.

Some items can be maintained as valid items. While, 9 items that have a misfit value must be discarded. However, these misfit items can be revised as good items and become normal and valid items. In the development of this instrument, five discarded misfit items will be revised and reused for the needs of the measurement instrument.

CONCLUSION

Based on the analysis of the student satisfaction Instrument for the Thematic KKN 2021 service, it can be concluded that the level of reliability and separation index is 0.61, the reliability of the item is 0.63, which is in the moderate level range, and it is assumed that there are some items that must be discarded for the instrument to be valid and have a high reliable level. While the value of the separation item is 1.26, it is assumed the item on this instrument has a less good value because it is below the value of 2.00.

The results of the Construct analysis on student satisfaction in administrative services (items i1, i2, i4, i10, i11, and i13) show that only two questions are acceptable, namely i2 and i10 points. From 6 items, only i5 and i8 items can be maintained. From the construct about student satisfaction with services in consultation, 2 items are accepted and can be maintained, namely i12 and i13 items. Student satisfaction in the thematic KKN debriefing activities consists of 4 items. i18 and i19 items are accepted, while items i19 and i15 to measure the level of student satisfaction with KKN attribute distribution services are also acceptable.

Some misfit items must be discarded or revised again because they have values beyond the required Rasch model, namely at the values of MNSQ (0.50<MNSQ <1.50), STZD (-2.00 <STZD< 2.00), and PTMEA-COOR> (0.40<PTMEA-COOR< 0.85). However, all those misfit items are not discarded, but there are 5 items that are taken and re-revised. In the development of the student satisfaction Instrument for the Thematic KKN 2021 service, 15 questions have been generated and can be used.

BIBLIOGRAPHY

Alagumalai, S., Curtis, D. D. ., & Hungi. (2005). Applied Rasch Measurement: A Book of Exemplars. In *Applied Rasch Measurement: A Book of Exemplars*. Springer. https://doi.org/10.1007/1-4020-3076-2

Anwas, O. M. (2011). Kuliah Kerja Nyata Tematik Pos Pemberdayaan Keluarga Sebagai Model Pengabdian Masyarakat Di Perguruan Tinggi. *Jurnal Pendidikan Dan Kebudayaan*, *17*(05), 565–575.

Arsad, N., Kamal, N., Ayob, A., Sarbani, N., Sheau Tsuey, C., Misran, N., & Husain, H. (2013). Rasch Model Analysis on the Effectiveness of Early Evaluation Questions as a Benchmark for New Students Ability. *International Education Studies*, *6*(6). https://doi.org/10.5539/ies.v6n6p185

Artiwi, N. P., & Rosdiyani, T. (2021). Implementation of free learning policy-independent campus programs on mastering course theory of foundation design. *ASTONJADRO: Jurnal Rekayasa Sipil*, *10*(1), 173–182. https://doi.org/10.32832/astonjadro.v10i1

Bond, T. G., & Fox, C. M. (2007). Applying the rasch model: Fundamental measurement in the human sciences Second edition. In *Applying the Rasch Model: Fundamental Measurement in the Human Sciences: Second Edition* (2nd ed.). Lawrence Erlbaum Associates. https://doi.org/10.4324/9781410614575

Boone, W. J., Yale, M. S., & Staver, J. R. (2014). Rasch analysis in the human sciences. In *Rasch Analysis in the Human Sciences*. Springer. https://doi.org/10.1007/978-94-007-6857-4

Citraningsih, D., Khilmiyah, A., & Yamin, M. N. (2021). School Image Management during the Covid-19 Pandemic Era at Budi Mulia Dua Junior High School of Yogyakarta. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan*, *7*(01), 113–122. https://doi.org/10.32678/tarbawi.v7i01.4324.

Creswell, J. W., & Guetterman, T. C. (2019). Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research. In *Pearson* (6th ed.). Pearson.

David Colton, & Robert W. Covert. (2017). *Designing and Constructing Instruments for Social Research and Evaluation* (Issue 1). Josey Bass.

Djaali, H., & Muljono, P. (2008). Pengukuran dalam Bidang Pendidikan (YB Sudarmanto). In *PT. Grasindo* (2008th ed.). Grasindo.

Ghozali, I. (2008). *Structural equation modeling: teori, konsep, dan aplikasi dengan Program Lisrel 8.80*. Badan Penerbit Universitas Diponegoro.

Hair jr *et al.*, M. W. C. (2015). ESSENTIALS OF Business Research Methods SECOND EDITION. In *Journal of Chemical Information and Modeling* (Vol. 53, Issue 9).

Hambleton, R., & Jones, R. (1993). An NCME Instructional Module on: Comparison of Classical Test Theory and Item Response Theory and Their Applications to Test Development. *Educational Measurement: Issues and Practice*, *12*(3). https://doi.org/10.1111/j.1745-

3992.1993.tb00543.x

Hapuddin, M. S. (2021). *Muhammad Soleh Hapudin, Teori Belajar Dan Pembelajaran: Menciptakan Pembelajaran yang Kreatif dan Efektif: Vol. I*. Kencana.

Hayat, B. (2021). Klasika: Program Analisis Item dan Tes dengan Pendekatan Klasik. *Jurnal Pengukuran Psikologi Dan Pendidikan Indonesia)*, *10*(1), 1–11. https://doi.org/10.15408/jp3i.v10i1.20551

Hong, W., Thong, J. Y. L., Wong, W. M., & Tam, K. Y. (2001). Determinants of user acceptance of digital libraries: An empirical examination of individual differences and system characteristics. *Journal of Management Information Systems*, *18*(3). https://doi.org/10.1080/07421222.2002.11045692

Jailani, M.K.M. (2011). "Manual Pengenalan Pengukuran Rasch & Winstep" Pengukuran dan Penilaian dalam Pendidikan. In *Jurnal Pengukuran Psikologi dan Pendidikan Indonesia)*. Fakulti Pendidikan UKM. https://doi.org/10.15408/jp3i.v10i1.20551

Kurnia, M., Jaya, I., Jalil, A. R., Arya, N., & Ilham, M. (2020). KKN Tematik Pemberdayaan Masyarakat melalui Penerapan Teknologi Untuk Peningkatan Taraf Hidup Masyarakat Di Kecamatan Pulau Sembilan Kabupaten Sinjai. *Jurnal Pengabdian Masyarakat Hasanuddin (JPMH)*, *1*(1), 1–9.

Linacre, J. M. (2007). *A user's guide to BIGSTEPS : Rasch-model computer programs*. Mesa Press.

Rahmatullah, M. (2021). Education Management in the New Normal Era: A Literature Study. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan*, *7*(01). https://doi.org/10.32678/tarbawi.v7i01.4195.

S Naga, D. (1992). *Teori Sekor Pada Pengukuran Pendidikan*. Bestbad.

Sabaruddin, Marzuki, & Khairunnisak. (2020). Pandemic Covid-19: The Opportunities and Challenges to Using ICT in Mathematics Learning. *IJEBD International Journal Of Entrepreneurship And Business Development EISSN 2597-4785 PISSN 2597-4750*, *3*(4), 409–414. https://jurnal.narotama.ac.id/index.php/ijebd/article/view/1201

Safari. (2000). *Panduan Analisis Butir Soal*. Trim Komunikata Publishing House.

Salim, H., & Septiana, T. I. (2020). Survey of Students Satisfaction and Some Efforts to Improve Lecturer Profesionalism in the English Education Department of STKIP Situs Banten. *Tarbawi: Jurnal Keilmuan Manajemen Pendidikan*, *6*(1), 1–10. https://doi.org/10.32678/tarbawi.v6i01.2507.

Siti Rahayah, A., Omar, B., Isa, A., & Sharif, S. (2010). Validity and reliability Multiple Intelligent item using Rasch measurement model. *Procedia - Social and Behavioral Sciences*, *9*, 729–733. https://doi.org/10.1016/j.sbspro.2010.12.225

Smiley, J. (2015). Classical test theory or Rasch- A personal account from a novice user. *Shiken*, *19*(1), 16–29.

Sumintono, B. (2017). *Rasch Model Measurements as Tools in Assesment for Learning*. https://doi.org/10.2991/icei-17.2018.11

Wilson, M. (2004). Constructing measures: An item response modeling approach. In *Constructing Measures: An Item Response Modeling Approach*. Lawrence ErlBaum. https://doi.org/10.4324/9781410611697

Wright, B. . (1997). A History of Social Science Measurement. *Educational Measurement : Issue and Practice*, *16*(4), 33–35. https://doi.org/10.1111/j.1745-3992.1997

Yasin, R. M., Yunus, F. A. N., Rus, R. C., Ahmad, A., & Rahim, M. B. (2015). Validity and Reliability Learning Transfer Item Using Rasch Measurement Model. *Procedia - Social and Behavioral Sciences*, *204*. https://doi.org/10.1016/j.sbspro.2015.08.143

Yusuf, F. A. (2021). The independent campus program for higher education in indonesia: The role of government support and the readiness of institutions, lecturers and students. *Journal of Social Studies Education Research*, *12*(2), 280–304.