

UTILIZATION OF OPEN SOURCE TECHNOLOGY IN DETERMINING OF VALIDITY AND RELIABILITY OF EVALUATION MODEL INSTRUMENTS BASED ON ANEKA VALUES IN ORDER TO EVALUATE THE QUALITY OF COMPUTER LEARNING

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ABSTRACT

The aims of this research was to obtain the instrument of evaluation model based on ANEKA values that valid and reliable to used in evaluate the quality of computer learning. The method used in this research is instrument development method. Specific research on the making of this instrument is carried out within 1 month with some activities carried out, among others: definition of variables, translation of variables into more detailed indicators, preparation of instrument items, test of instruments, and analysis of instrument validity and reliability. Research subjects involved in this study are: 1 expert evaluation of education and 1 expert informatics engineering education that validating the contents of the instrument. In addition, there are 4 experts and 26 students who tested the validity and reliability of the instrument. The results of this research is a new breakthrough utilization of open source technology that is used for the calculation of validity and reliability of instruments, so obtained the items of evaluation model instrument based on ANEKA values that valid and very high reliability.

Keywords: *Evaluation Model, ANEKA, Instruments, Validity, Reliability, Open Source Technology*

1. INTRODUCTION

The process of education can be said “good” if it has been able to show the quality of quality learning. Measurement of learning quality can be done through evaluation activities. Generally, evaluation is an activity for collecting, analyzing, and explaining comprehensively information about a particular object/program/policy being studied and the results of an evaluation can be used for the consideration in making a decision to continue or to stop the object/program/policy [1]. Evaluation is an activity for collecting, analyzing, and presenting,

information about a particular object to be used for a consideration in making an appropriate and accurate decision [2]. Evaluation is an activity to collect, analyze, and present information about an object to be evaluated, where the results of these evaluations are used for consideration in making a decision that is precise, accurate, and reliable [3]. The evaluation is an activity for data collecting, data analyzing and data presenting into information about a particular object under study so that the results can be used to take a decision [4]. Evaluation is an activity for collecting, understanding and reporting the result of analysis of

a particular program/object in such a way that the result can be used for consideration in making a decision whether the program will be continued or stopped [5]. Evaluation is an activity that collects, analyzes, and presents data into useful information in making decisions based on recommendations obtained from these activities [6]. Evaluation is an activity of data collection, data processing, data analysis, presentation of data into information that used as a recommendation in taking a right decision [7]. Evaluation is an activity conducted by the evaluator to collect, analyze, and present complete and accurate information about a particular object/program/service/policy being studied, thus the results could be used as a recommendation in making a decision [8]. Evaluation is an activity that consists of the process of gathering, describing, and explaining various pieces of information about the effectiveness of something that can be used later as the consideration for making a decision and a recommendation [9]. Evaluation is an activity undertaken by the evaluators to collect, analyze, and present the analyzed data into a useful information as the basis for taking a decision to continue or stop a program/object [10]. Evaluation is an activity conducted by an evaluator in collecting, analyzing, and presenting information related to the program/object/policy that the results can be used to take a decision [11]. Based on some definitions of evaluation, so evaluation is an important activity undertaken in measuring the quality of learning through the process of data collection, data analysis, and presentation of information that the results can be used for consideration in taking a decision in the improvement of learning process towards a better quality.

Some evaluation models that can generally be used to evaluate the quality of learning, such as: CIPP evaluation model, formative-summative evaluation model, countenance evaluation model, CSE-UCLA evaluation model, and others. However, among the evaluation models, there is no suitable use to evaluate the learning quality, especially in the field of computer if associated with the decrease in student character due to advances in information technology, such as: misuse of computer-based learning facilities for negative things.

One of the new breakthroughs that can be used to overcome these problems is the evaluation model based on the ANEKA values. Through evaluation model based on the ANEKA values, the quality of

computer learning can be measured through several evaluation components such as Accountability, Nationalism, Public Ethics, Quality Commitment, and Anti-Corruption. To be able to use components of ANEKA values-based evaluation model in evaluating the quality of computer learning, it is necessary to make valid and reliable instruments.

But the fact that often happens is in making a valid instrument and has a high reliability is also difficult to do. Therefore, in making ANEKA value-based evaluation model instrument also needed a high theory study related to ANEKA value and accurate validation and reliability calculation process using the right formula and with the help of information technology support to accelerate the calculation process. Many applications or softwares can be used to perform the process of calculating the validity and reliability of the instrument as it is commonly known by many people namely SPSS, Lisrel, and MPlus. However, not all applications can be used for free. Therefore, it is also necessary to use an application that can be used to calculate the validity and reliability of ANEKA value-based evaluation model instrument which can be obtained quickly and free of charge so that it can be used and studied by all parties freely. Based on that situation, it is very appropriate that open source technology is utilized to provide free facilities that are used to calculate the validity and reliability of the ANEKA value-based evaluation model instrument, so can to obtain valid and reliable measurement instrument to assess the quality of computer learning.

The problem in this research is how to develop a valid and reliable instrument of evaluation model based on ANEKA values using open source technology?

The main objective of this research is to obtain valid and reliable instrument of evaluation model based on ANEKA values assisted by open source technology so that it can be used as an optimal measuring tool in evaluating the quality of computer learning.

Some research results underlying this research include: research on the design of the actualization of the basic values of lectures profession at the Department of IT Education, Universitas Pendidikan Ganesha conducted in 2015 by Putrama obtained the result of the design of actualization is one way to realize the value of the lecturers profession in carrying out its function as policy executor or policy maker [12]. From the results of research conducted by Putrama has not been able to

show the instrument items as a valid and reliable measurement tool in measuring the ANEKA values that has been internalized in the activity of work as a lecturer. Then proceed with the research on the actualization of the basic values of the profession of lecturer civil servant at the Department of IT Education, Universitas Pendidikan Ganesha conducted in 2016 by Divayana obtained the result that is through the internalization of the ANEKA values embodied professional civil servants in implementing tri dharma in university [13]. From the results of research conducted by Divayana is also not able to show the instrument items as a valid and reliable measurement tool in measuring the ANEKA values.

Research conducted by Melitasari [14] in 2015 about Actualization of Basic Values of Civil Employees on Position of First Policy Analyst Candidate, Department of Organization of Regional Secretariat of Belitung Timur. Where the research conducted by Melitasari also found the same constraints that have not been able to show the items of valid and reliable instrument in measuring the ANEKA values. Research conducted by Marzuki [15] in 2012 about the integration of character education in school, also has constraints that have not been able to show the existence of valid and reliable instrument items in measuring ANEKA values reflected in character education given in learning process at school. A research conducted by Suyana in 2015 about students affective profile in phi-log learning approach with nation characteristic has the same constraint as other research that has not been able to show the existence of valid and reliable instrument items in measuring ANEKA values as reflected in the development of the learner's character while following the learning (especially physics learning).

From those situations, so it is very important to make a new breakthrough by developing a valid and reliable of the ANEKA values-based evaluation model instruments assisted by open source technology to be able to perform accurate measurement of ANEKA values.

The results of research related to this research are research conducted by Oktarina in 2016 about the actualization of ANEKA values in lecturer profession at Institut Hindu Dharma Negeri Denpasar as base of commitment of public service quality [16], have similarities with research conducted by researchers in terms of research studies that are associated with the indicators of ANEKA values. The difference lies in the focus of research conducted by Oktarina focused on the

actualization the stage of ANEKA values as the basis for maintaining the quality commitment in providing services to the public (especially the service to students at Institut Hindu Dharma Negeri Denpasar). While in this research, researcher focus to get instrument of evaluation model based on ANEKA values that valid and reliable.

Research conducted Diayuningsih and Suyanto in 2014 about pattern development of character values through school culture in SMA Wachid Hasyim 2 Taman Sidoarjo [17], have similarities with research conducted by researchers in terms of research approach used is qualitative, while the difference lies in the focus of research conducted, where Diayuningsih and Suyanto focus in terms of using the model of the development of the character values of learners in determining the quality of learning, while researchers in this study focus on the determination of instrument of evaluation model based on ANEKA values.

Research conducted by Setiawan in 2013 about the ability of teachers to assess in the learning through the internalization of the value of honesty on civic education learning [18], has similarities to research conducted by researchers in terms of research approach used is qualitative. While the difference lies in the focus of research, where Setiawan only focus on the internalization of the value of honesty in the learning process, while researchers in this study focus on the determination of valid and reliable instrument so as to measure the internalization of the ANEKA values in the learning process.

Another research conducted by Arifin in 2012 about the implementation of school culture values in creating quality schools [19], have similarities with research conducted by researchers in terms of research approach used is qualitative. While the difference lies in the focus of his research, where Arifin seeks to implement the values of school culture in realizing quality learning process, while researchers implement the instrument items in measuring the ANEKA value in the learning process.

Based on the problems found and the study of several studies that have been done by some previous researchers, the researchers are interested to conduct research about determining of validity and reliability of evaluation model instruments based on ANEKA values assisted by open source technology in order to evaluate the computer learning quality.

2. LITERATURE REVIEW

2.1 Evaluation Model Based on ANEKA Values

The word of ANEKA if described one by one according to each alphabet then becomes: A which interpreted as *Akuntabilitas* (in Indonesian) or *Accountability* (in English), N which interpreted as *Nasionalisme* (in Indonesian) or *Nationalism* (in English)), E which interpreted as *Etika Publik* (in Indonesian) or *Public Ethics* (in English), K which interpreted as *Komitmen Mutu* (in Indonesian) or *Quality Commitment* (in English), A which interpreted as *Anti Korupsi* (in Indonesian) or *Anti-Corruption* (in English).

Evaluation model based on ANEKA values is an evaluation model of education that refers to values of accountability, nationalism, public ethics, quality commitment, anti corruption in assessing every aspect evaluated in the learning process, so that later decision results can provide appropriate and optimal consideration and also recommendations towards learning process [20].

Accountability refers to the obligation of each individual, group or institution to fulfill its responsibilities [21]. Accountability can also be interpreted as the ability of the government apparatus in showing reports or records of the process and results of work that can be justified [22]. From some of these definitions can be drawn a general conclusion that accountability is an obligation that must be implemented by every individual or group of people to fulfill the responsibilities that become their trust by showing the report or record the process and the results of their work.

Nationalism is a view or understanding of Indonesian human love of the nation and its homeland based on the values of Pancasila [23]. Nationalism can be defined as the ability to love the nation and country [24].

Based on several definitions of nasionalism, it can be taken a general conclusion that nationalism is the ability of every citizen to love their country based on a strong awareness and passion to live together.

Public ethics is a reflection of standards or norms that define good or bad and right or wrong behavior, actions, and decisions that direct public policy in carrying out public service responsibilities [25].

The public service ethic is a guide must obey by the public servants or bureaucrats to perform good public services [26].

Based on several definitions of public ethic, it can be concluded that public ethics is a

standard that regulates good behavior that must be owned by public servants and bad behavior that should be avoided by public servants in providing services to the public, so can to create of optimal service to the public.

Quality commitment is an attitude to maintain the effectiveness and efficiency of work with the implementation of tasks effectively, efficiently, and innovative [27], [28].

Quality commitment is an attitude to maintain the effectiveness, efficiency, and innovation of work in order to achieve a certain quality [16].

Based on several definitions of quality commitment, it can be concluded that the quality commitment is a firm attitude to maintain effectiveness, efficiency, innovation in order to realize the results/product work quality and superior.

Anti-corruption is a firm stance against corruption. The spirit of anti-corruption aims to build the intention, spirit and commitment to eradicate corruption [16]. Anti-corruption is also interpreted as an act that does not approve of the efforts made by any person with the purpose of benefiting himself or others or a corporation, misusing authority because of their position [29].

Based on several definitions of anti-corruption, it can be concluded that anti-corruption is a decisive action that does not approve the efforts of a person or group of people by abusing their position or authority to seek their own advantage.

2.2 Open Source Technology

Open source is a term used for that software open/free source code to be seen by others and letting others know how the software works and simultaneously fix the weaknesses of the software. The interestingly and one of the advantages is that open source software can be obtained and used for free without having to pay a license[30].

Open source software is software that is freely distributed and free with the software's source code so can to enable others to modify, participate in the development and redistribute those software [31]. One example of an open source technology is open office. This application is the first fully supported office application ODF. Open office is a combination of several applications formulated in ODF, ie text or word processing (.odt), spreadsheets (.ods), presentations (.odp), images (.odg), formulas (.odf), and databases (.odb). Open office is available for various types of operating systems such as Linux, Mac OSX, MS

Windows, and Solaris [32]. Based on some definition of open source, it can be taken a general conclusion that open source technology is a technology consisting of several applications that are directly equipped with the source code and can be distributed freely and free for general users, so that users can make modifications or improvements in those application.

3. RESEARCH METHODOLOGY

3.1 Research Approach

The approach used in this research is instrument development. The steps undertaken in the development of instrument of evaluation model based on ANEKA values, such as: 1) defining variables, 2) describing the variables into more detailed indicators, 3) compiling the items, 4) conducting an instrument test, 5). Analyze instrument validity and reliability.

3.2 Research Object

The object of this research is instruments of evaluation model based on ANEKA values.

3.3 Research Subject

Subjects in this research involved 1 expert of education evaluation and 1 expert of IT education to validate the contents of the instrument, 26 students of IT Vocational Udayana and 4 experts involved in testing the validity and reliability of the instrument.

3.4 Research Location

The location of this research at SMK TI Udayana which is one of computer school in Badung Regency, Bali, Indonesia.

3.5 Data Collecting Methods

The instrument of data collection used in this research is questionnaire and documentation.

3.6 Data Analysis Technique

Analysis technique of content validity from instrument of evaluation model based on ANELA value is done through expert test with Gregory formula. Testing the validity of instrument of evaluation model based on ANEKA values using correlation formula of pearson-product moment. Testing the instrument reliability of evaluation

model based on ANEKA values using Cronbach Alpha coefficient.

4. RESULTS AND DISCUSSION

4.1 Results

Based on the background, problems and approach used in this research, then there are some things that result in this research as follows.

4.1.1 Defining of Variables

The variables/evaluation components in the evaluation model based on ANEKA values used in measuring the quality of computer learning, such as: a) Accountability, b) Nationalism, c) Public Ethics, d) Quality Commitment, and e) Anti Corruption.

4.1.2 Translation of Indicators

As for some indicators/aspect of each evaluation component on evaluation model based on ANEKA values, among others:

a) Accountability

The indicators in the variable of accountability, among others: responsible, honest, clarity of target, consistent, neutral, participative, and prioritizing the public interest.

b) Nationalism

The indicators in the variables of nationalism, among others: tolerant, work ethic, transparent, confidence, mutual cooperation, deliberation, kinship, wise, not greedy, and mutual help.

c) Public Ethics

The indicators in the variables of public ethics, among others: respect, polite, obey on the laws and regulations, careful, obey on commands, and high integrity.

d) Quality Commitment

The indicators in the variable of quality commitment, among others: effectiveness, efficiency, innovation, and quality oriented.

e) Anti Corruption

The indicators in the variables of anti corruption, among others: independent, discipline, fair, brave, hard work, care, and simple.

4.1.3 Items of Instruments

The items of instruments of each evaluation indicator in evaluation model based on ANEKA values can be seen in the following table 1.

Table 1: Items of Instruments from Each Evaluation Indicators in Evaluation Model Based on Aneka Values

No	Evaluation Components	Evaluation Aspects		Items of Instruments	
1.	Accountability	1)	Responsible	(1)	Seriously in completing the task
				(2)	Completed the task on time
		2)	Honest	(3)	Dare to admit mistakes/omissions
				(4)	Work on the exam questions according to their own ability
				(5)	Not cheating on exam

No	Evaluation Components	Evaluation Aspects	Items of Instruments		
		3) Clarity of target	(6) Obtain lesson material according to the lesson plans (7) The purpose of learning refers to the needs of works		
		4) Consistent	(8) Teacher does not vacillate in taking a decision (9) Teachers consistently perform correct assessments according to students' abilities		
		5) Neutral	(10) Disinterested between one friend who was at loggerheads (11) Does not discriminate between computer field subjects with other supporting subjects		
		6) Participative	(12) Want to help friends who have difficulty in learning without instruction from the teacher (13) When in group activities, group members participate in providing advice/opinions when making decisions		
		7) Prioritizing the public interest	(14) When in group activities, group leaders always take a decision based on mutual agreement with group members (15) When in group activities, the group leader gives an opportunity to the group members to present their opinions		
		2.	Nationalism	1) Tolerant	(16) Want to accept any differences of opinion (17) Want to accept the different ability of friends
				2) Work Ethic	(18) When in group activities, all members of the group seriously in completing the task given (19) When in group activities, all group members complete the task on time
				3) Transparent	(20) When in group activities, all group members are open to sharing knowledge (21) Teachers want to share all the knowledge that they have for all students (22) Provide the right solution when a friend asks
				4) Confidence	(23) Have confidence that work done together will obtain optimal results (24) Foolish students have the confidence of accomplishing the task, if they will strive diligently
				5) Mutual Cooperation	(25) When in group activities, together with all group members in completing tasks that are considered heavy (26) All class components (both teachers and students) work together to create a conducive learning environment
				6) Deliberation	(27) Group decision making is taken jointly on the basis of deliberation and consensus (28) Avoid unilateral decisions
				7) Kinship	(29) Teachers and students demonstrate familiarity in the learning process at school (30) Students have a strong intimacy and a strong sense of brotherhood, both at school and outside the school
				8) Wise	(31) Take solving solutions by thinking of the interests of all parties (32) Make the best decisions and want to be implemented by all parties
				9) Not Greedy	(33) When in group activities, it is necessary to avoid the taking of work that is only done by one member (34) When in group activities, it is necessary to avoid the taking of work only done by the Chairman
				10) Mutual Help	(35) Students who are smart want to help and teach students who are weak (36) When in group activities, all group members help each other in completing projects both small and large
3.	Public Ethics			1) Respect	(37) Giving the opening greeting when the learning process begins and after completion of the learning process (38) Please first permit the teacher if you want to leave the class / learning process (39) Give a smile first when meeting teachers / olders
				2) Polite	(40) Polite in expressing opinions (41) Avoid using harsh words when communicating with the teacher or friends
				3) Obey on the Laws and regulations	(42) Implement existing regulations (43) Avoiding things against the rules
				4) Careful	(44) Be careful in expressing opinions (45) Be thorough and critical in studying influences that come from outside
				5) Obey on commands	(46) Running well the instruction given by the teacher during the learning process takes place (47) Listening and executing positive advice given by the teacher

No	Evaluation Components	Evaluation Aspects		Items of Instruments			
4.	Quality Commitment	6)	High Integrity	(48)	Always strive for the good reputation of the school through achievement		
				(49)	Always defend the name of the school if anyone is insulting the school		
		1)	Effectiveness	(50)	Students are able to develop computer applications that help the government in making decisions quickly and accurately		
				(51)	Students are able to develop computer applications that become solutions to meet the needs of the community		
				2)	Efficiency	(52)	Students are able to develop computer applications that can minimize the expense of operating expenses of a company/agency
						(53)	Students are able to develop computer applications that can minimize the use of resources/energy
				3)	Innovation	(54)	Students are able to develop intelligent applications
						(55)	Students are able to develop wireless computer applications that can be accessed anytime and anywhere
		4)	Quality oriented	(56)	Students are able to develop dynamic and responsive computer applications so that they can interact with change		
				(57)	Students are able to develop sustainable and integrated computer applications		
5.	Anti Corruption	1)	Independent	(58)	Complete the exam without interference from the others		
				(59)	Doing your own work to the fullest		
		2)	Discipline	(60)	Not skipping while learning takes place		
				(61)	Make assignments according to the guides and instructions given by the teacher		
		3)	Fair	(62)	Teachers do not vote in giving judgment		
				(63)	Students get the same rights to gain knowledge		
				(64)	Provision of punishment from teachers according to the level of error/omission		
		4)	Brave	(65)	Ready to report any cheating during the exam		
				(66)	Ready to admit if any mistakes are made		
		5)	Hard Work	(67)	Diligently answer the exam without being influenced by a friend invitation to cheat		
				(68)	Abstinance to give up to complete the heavy task		
		6)	Care	(69)	Pay close attention to the things that allow the occurrence of cheating in the learning process		
				(70)	Pay attention to the state of the learning support facilities		
		7)	Simple	(71)	Looked neat and according to the rules		
(72)	Not showing off excessive intelligence						
(73)	Not showing off wealth						

4.1.4 Result of Instruments Test

The test results on the items of instruments of each evaluation indicator on in evaluation model based on ANEKA values assisted by open source technology include: content validation, items validation, and items reliability.

a) Content Validity

The results of content validity from two assessors/experts, such as: 1 expert of education evaluation and 1 experts of IT education, can be seen in Table 2 below.

Table 2: The Results of Content Validity

Expert-1		Expert-2	
Irrelevant (Score 1 - 2)	Very Relevant (Score 3 - 4)	Irrelevant (Score 1 - 2)	Very Relevant (Score 3 - 4)
33, 51, 73	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21,	51, 73	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22,

Expert-1		Expert-2	
Irrelevant (Score 1 - 2)	Very Relevant (Score 3 - 4)	Irrelevant (Score 1 - 2)	Very Relevant (Score 3 - 4)
	22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72		23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72

The results of the assessment of two experts are included in the cross tabulation (2 x 2) consisting of four columns shown in Table 3 below.

Table 3: Cross Tabulation (2 x 2)

		Expert-1	
		Irrelevant (Score 1-2)	Very Relevant (Score 3 - 4)
Expert-2	Irrelevant (Score 1-2)	A (0)	B (3)
	Very Relevant (Score 3 - 4)	C (2)	D (68)

Notes:

- A = cells that indicate disagreement between the two assessors
- B and C = cells that show different views between assessors
- D = cells indicate a valid agreement between the two assessors

68

$$\text{Content Validity} = \frac{68}{0+3+2+68} = 0.932$$

The formula for calculating the content validity of instruments of evaluation model based on ANEKA values use the Guilford Formula. The Guilford Formula as follows [33].

$$\text{Content Validity} = \frac{D}{A+B+C+D} \quad (1)$$

b) Items Validity

The visualization of utilization of open source technology to determine items validity of instruments of evaluation model based on ANEKA values can be seen in Figure 1, while the result of items validity of the instrument of evaluation model based on ANEKA values can be seen in Table 4 below.

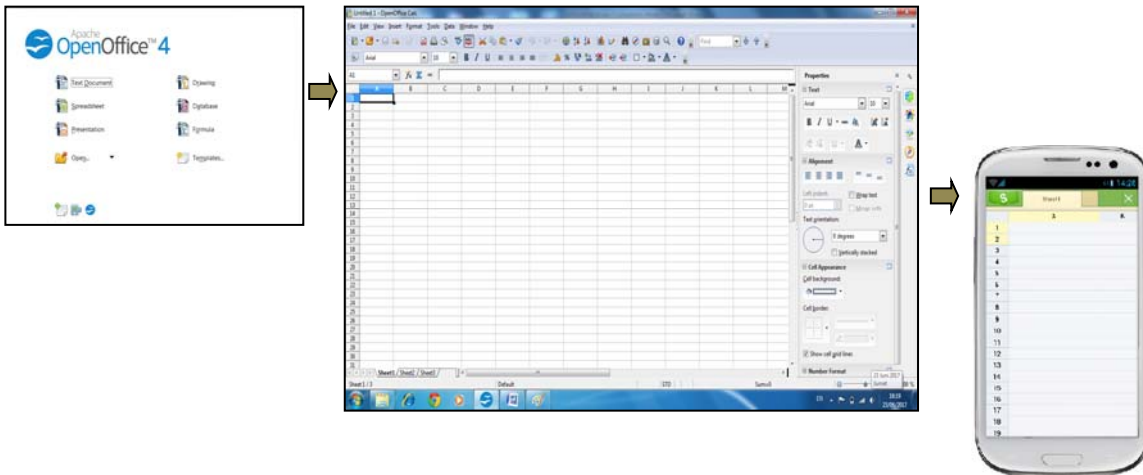


Figure 1: The Visualization of Open Source Technology Utilization to Determine Items Validity of Instrument of Evaluation Model Based on ANEKA Values

Table 4: The Results of Item Validity of Instruments of Evaluation Model Based on ANEKA Values

Respondent	Items														
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
R1	5	5	4	4	5	5	4	4	4	4	4	4	5	5	5
R2	5	5	5	5	5	4	5	4	5	5	4	4	4	4	5
R3	4	2	4	4	5	2	4	4	5	5	4	4	2	4	4
R4	5	5	5	4	5	5	3	5	4	5	5	5	4	2	4
R5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	5	2	4	2	4	3	4	4	4	4	4	5	4	4	4
R7	5	5	4	3	4	3	4	4	4	4	4	4	4	4	4
R8	4	5	5	5	5	4	4	5	5	5	4	5	4	4	5
R9	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4
R10	4	4	5	5	4	5	4	4	4	5	4	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	5	5	5	4	4	5	5	5	5	4	4	4	5	5	4
R13	5	5	5	5	4	5	5	5	5	4	5	5	4	5	4
R14	5	4	5	4	5	5	5	4	4	4	4	4	4	5	5
R15	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5
R16	4	5	4	2	2	4	5	4	4	4	4	4	4	4	4
R17	5	4	5	5	5	2	5	4	4	4	4	4	4	4	4
R18	5	5	5	2	5	4	5	5	4	5	4	5	4	4	4

Respondent	Items														
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
R19	5	5	5	5	5	2	5	5	5	5	5	5	2	5	5
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	5	4	4	4	5	5	5	5	5	5	5	4	4	5	5
R22	4	2	4	2	4	4	4	4	4	4	4	4	4	4	4
R23	5	5	5	4	5	5	5	5	5	4	5	5	4	4	4
R24	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	5	2	5	4	5	4	4	4	4	4	5	5	5
R26	5	4	5	4	5	5	5	5	5	5	5	5	4	4	5
R27	5	5	5	5	5	4	4	4	4	4	4	4	5	5	5
R28	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4
R29	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
R30	5	5	5	5	5	4	5	4	4	5	4	4	5	5	4
r_{xy}	0.401	0.724	0.570	0.414	0.493	0.428	0.432	0.607	0.565	0.505	0.636	0.587	0.378	0.378	0.565
r-Table	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
Status	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID

Continuation of Table 4:

Respondent	Items														
	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28	X29	X30
R1	5	5	5	4	5	5	5	5	5	5	5	4	4	4	5
R2	4	5	5	4	5	5	4	4	5	5	5	5	5	4	4
R3	4	4	4	4	4	4	2	4	4	4	4	4	2	4	4
R4	5	5	4	5	5	5	5	4	5	5	5	5	2	5	4
R5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	5	4	4	4	4	4	2	4	4	4	4	4	5	5	4
R7	5	4	4	4	4	4	2	4	4	4	4	4	4	4	5
R8	4	4	5	4	5	5	4	4	4	5	5	5	5	5	5
R9	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5
R10	4	4	4	4	4	4	2	4	4	2	2	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	5	5	4	5	4	5	5	5	5	4	4	4	4	4	5
R13	4	4	4	5	4	4	5	5	5	5	5	4	5	5	5
R14	5	5	5	2	5	5	2	5	4	2	2	4	5	4	5
R15	5	4	4	4	5	5	5	5	5	5	5	5	5	5	5
R16	4	4	5	2	5	5	4	4	5	4	4	4	4	4	5
R17	5	4	4	2	5	5	2	4	4	2	2	4	5	4	5
R18	4	4	5	4	5	4	4	5	5	4	4	4	4	5	4
R19	5	5	5	5	5	5	2	5	5	5	5	5	5	5	4
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	5	4	4	5	5	5	5	5	5	4	4	5	4	4	4
R22	4	4	4	4	4	4	4	4	2	2	2	4	4	4	4
R23	5	5	5	4	4	4	2	5	4	4	4	4	5	5	5
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	5	4	4	4	4	5	4	4	4	5	5	4	4
R26	5	4	5	5	5	5	5	5	5	4	4	5	5	5	5
R27	5	5	5	4	4	4	4	5	4	4	4	5	5	4	4
R28	4	4	4	4	4	4	4	4	4	4	4	4	5	4	5
R29	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5
R30	4	4	5	5	5	5	4	5	5	4	4	5	5	4	5
r_{xy}	0.428	0.500	0.567	0.450	0.629	0.646	0.551	0.735	0.723	0.693	0.693	0.761	0.393	0.587	0.375
r-Table	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
Status	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID

Continuation of Table 4:

Respondent	Items														
	X31	X32	X33	X34	X35	X36	X37	X38	X39	X40	X41	X42	X43	X44	X45
R1	4	4	3	5	5	5	5	5	4	4	5	4	4	4	5
R2	5	5	2	4	5	5	4	4	5	4	5	5	5	4	4
R3	4	4	1	4	4	4	4	4	4	4	4	4	2	4	4
R4	5	5	2	5	5	5	5	5	5	5	5	5	3	5	4
R5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4
R7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5

Respondent	Items														
	X31	X32	X33	X34	X35	X36	X37	X38	X39	X40	X41	X42	X43	X44	X45
R8	5	5	2	5	5	5	5	5	4	5	5	5	5	5	5
R9	5	5	3	5	5	5	5	5	5	5	5	5	5	5	5
R10	4	4	4	4	2	4	4	4	4	4	2	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	4	4	4	4	4	4	4	5	4	4	4	4	4	4	5
R13	4	4	4	4	5	5	4	5	5	5	5	4	5	5	5
R14	4	4	3	5	2	4	5	5	4	4	2	4	5	4	5
R15	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5
R16	4	5	4	4	4	5	4	4	4	4	4	4	4	4	5
R17	4	4	3	4	2	4	4	4	4	4	2	4	5	4	5
R18	4	4	2	5	4	5	5	5	4	4	4	4	4	5	4
R19	5	5	4	5	5	5	5	5	5	5	5	5	5	5	4
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	5	5	3	4	4	4	4	5	5	5	4	5	4	4	4
R22	4	4	1	4	2	4	4	4	4	4	2	4	4	4	4
R23	4	5	5	4	4	4	4	4	4	4	4	4	5	5	5
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	3	4	4	4	4	4	4	4	4	5	5	4	4
R26	5	5	3	4	4	4	4	5	5	4	4	5	5	5	5
R27	5	5	3	4	4	4	4	4	4	4	4	5	5	4	4
R28	4	4	2	4	4	4	4	4	4	4	4	4	5	4	5
R29	5	5	2	5	4	5	5	5	4	4	4	5	5	5	5
R30	5	5	4	5	4	5	5	5	4	4	4	5	5	4	5
r_{xy}	0.761	0.722	0.061	0.628	0.693	0.703	0.628	0.757	0.606	0.581	0.693	0.761	0.478	0.587	0.375
r-Table	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
Status	VALID	VALID	INVALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID

Continuation of Table 4:

Respondent	Items														
	X46	X47	X48	X49	X50	X51	X52	X53	X54	X55	X56	X57	X58	X59	X60
R1	5	4	4	5	5	3	5	5	5	5	5	5	5	4	5
R2	5	5	5	4	5	4	5	4	4	5	4	5	5	4	5
R3	2	4	4	4	4	3	4	2	4	4	4	4	4	4	4
R4	5	5	5	5	5	3	4	4	4	4	5	5	4	4	5
R5	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4
R6	2	4	4	4	4	4	4	4	4	4	5	4	4	4	4
R7	5	4	4	4	4	3	4	4	4	4	5	4	4	4	4
R8	5	5	5	5	5	4	5	4	4	5	4	4	5	4	5
R9	5	5	5	5	5	3	5	5	4	4	5	5	5	4	5
R10	4	4	4	4	2	3	3	4	4	4	4	4	4	4	4
R11	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
R12	5	4	4	4	4	4	4	5	5	4	5	5	4	5	4
R13	5	4	4	4	5	2	4	4	4	4	4	4	4	5	4
R14	4	4	4	5	2	4	5	4	4	5	5	5	5	4	5
R15	5	5	5	5	5	2	3	5	5	5	5	4	4	4	5
R16	5	5	4	4	4	4	5	4	4	4	4	4	5	2	5
R17	4	4	4	4	2	4	5	4	4	4	5	4	4	2	5
R18	5	4	4	5	4	4	5	4	4	4	4	4	5	4	5
R19	5	5	5	5	5	5	5	2	5	5	5	5	5	5	5
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	4	5	5	4	4	2	5	4	5	5	5	4	4	5	5
R22	2	4	4	4	2	4	3	4	4	4	4	4	4	4	4
R23	5	5	4	4	4	2	4	4	4	4	5	5	5	4	4
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	5	4	4	4	4	5	5	5	5	5	5	4	4
R26	4	5	5	4	4	2	5	4	4	5	5	4	5	5	5
R27	5	5	5	4	4	4	5	5	5	5	5	5	5	4	4
R28	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4
R29	5	5	5	5	4	2	5	5	5	5	5	5	5	5	5
R30	5	5	5	5	4	4	4	5	5	4	4	4	5	5	5
r_{xy}	0.724	0.722	0.761	0.628	0.693	-0.318	0.425	0.378	0.521	0.565	0.428	0.500	0.567	0.439	0.629
r-Table	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
Status	VALID	VALID	VALID	VALID	VALID	INVALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID

Continuation of Table 4:

Respondent	Items												Σ	
	X61	X62	X63	X64	X65	X66	X67	X68	X69	X70	X71	X72		X73
R1	5	5	5	5	5	5	4	4	4	5	4	5	3	333
R2	5	4	4	5	5	5	5	5	4	4	5	5	3	332
R3	4	2	4	4	4	4	4	2	4	4	4	4	2	269
R4	5	5	5	4	5	5	5	5	5	4	5	5	4	333
R5	4	4	4	4	4	4	4	4	4	4	4	4	2	290
R6	4	2	4	4	4	4	4	5	5	4	4	5	3	291
R7	4	2	4	4	4	4	4	4	4	5	4	3	3	291
R8	5	4	4	4	5	5	5	5	5	5	5	5	3	338
R9	5	5	5	5	5	5	5	5	5	5	5	5	3	353
R10	4	2	4	4	2	2	4	4	4	4	5	5	3	277
R11	4	4	4	4	4	4	4	4	4	4	4	4	2	291
R12	5	5	5	5	4	4	4	4	4	5	5	4	2	321
R13	4	5	5	5	5	5	4	5	5	5	5	5	2	330
R14	5	2	5	4	2	2	4	5	4	5	5	4	2	301
R15	5	5	5	5	5	5	5	5	5	5	5	5	2	348
R16	5	4	4	5	4	4	4	4	4	5	4	4	2	300
R17	5	2	4	4	2	2	4	5	4	5	5	5	2	285
R18	4	4	5	5	4	4	4	5	4	5	5	5	3	315
R19	5	2	5	5	5	5	5	5	5	4	5	5	2	343
R20	4	4	4	4	4	4	4	4	4	4	4	4	3	291
R21	5	5	5	5	4	4	5	4	4	4	4	5	2	325
R22	4	4	4	2	2	2	4	4	4	4	4	4	3	263
R23	4	2	5	4	4	4	4	5	5	5	5	4	2	316
R24	4	4	4	4	4	4	4	4	4	4	4	4	3	292
R25	4	4	5	4	4	4	5	5	4	4	5	3	2	317
R26	5	5	5	5	4	4	5	5	5	5	5	4	2	335
R27	4	4	5	4	4	4	5	5	4	4	5	5	2	322
R28	4	4	4	4	4	4	4	5	4	5	5	4	3	296
R29	5	5	5	5	4	4	5	5	5	5	5	4	2	346
R30	5	4	5	5	4	4	5	5	4	5	5	5	3	335
r_{xy}	0.646	0.551	0.735	0.723	0.693	0.693	0.761	0.592	0.587	0.375	0.570	0.413	-0.040	
r-Table	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	
Status	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	VALID	INVALID	

c) Items Reliability

The results of the items reliability of instrument of evaluation model based on ANEKA values assisted by open source technology can be seen in the following table 5.

Table 5: The Results of Item Reliability of Instruments of Evaluation Model Based on ANEKA Values

Respondent	Items														
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
R1	5	5	4	4	5	5	4	4	4	4	4	4	5	5	5
R2	5	5	5	5	5	4	5	4	5	5	4	4	4	4	5
R3	4	2	4	4	5	2	4	4	5	5	4	4	2	4	4
R4	5	5	5	4	5	5	3	5	4	5	5	5	4	2	4
R5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	5	2	4	2	4	3	4	4	4	4	4	5	4	4	4
R7	5	5	4	3	4	3	4	4	4	4	4	4	4	4	4
R8	4	5	5	5	5	4	4	5	5	5	4	5	4	4	5
R9	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4
R10	4	4	5	5	4	5	4	4	4	5	4	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	5	5	5	4	4	5	5	5	5	4	4	4	5	5	4
R13	5	5	5	5	4	5	5	5	5	4	5	5	4	5	4
R14	5	4	5	4	5	5	5	4	4	4	4	4	4	5	5
R15	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5
R16	4	5	4	2	2	4	5	4	4	4	4	4	4	4	4
R17	5	4	5	5	5	2	5	4	4	4	4	4	4	4	4
R18	5	5	5	2	5	4	5	5	4	5	4	5	4	4	4
R19	5	5	5	5	5	2	5	5	5	5	5	5	2	5	5
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Respondent	Items														
	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
R21	5	4	4	4	5	5	5	5	5	5	5	4	4	5	5
R22	4	2	4	2	4	4	4	4	4	4	4	4	4	4	4
R23	5	5	5	4	5	5	5	5	5	4	5	5	4	4	4
R24	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	5	2	5	4	5	4	4	4	4	4	5	5	5
R26	5	4	5	4	5	5	5	5	5	5	5	5	4	4	5
R27	5	5	5	5	5	4	4	4	4	4	4	4	5	5	5
R28	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4
R29	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
R30	5	5	5	5	5	4	5	4	4	5	4	4	5	5	4
Variance X_i	0.22	0.86	0.24	1.07	0.46	0.88	0.33	0.24	0.25	0.25	0.22	0.24	0.53	0.44	0.24
Variance of Total															
Reliability															

Continuation of Table 5:

Respondent	Items														
	X16	X17	X18	X19	X20	X21	X22	X23	X24	X25	X26	X27	X28	X29	X30
R1	5	5	5	4	5	5	5	5	5	5	5	4	4	4	5
R2	4	5	5	4	5	5	4	4	5	5	5	5	5	4	4
R3	4	4	4	4	4	4	2	4	4	4	4	4	2	4	4
R4	5	5	4	5	5	5	5	5	4	5	5	5	2	5	4
R5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	5	4	4	4	4	4	2	4	4	4	4	4	5	5	4
R7	5	4	4	4	4	4	2	4	4	4	4	4	4	4	5
R8	4	4	5	4	5	5	4	4	4	5	5	5	5	5	5
R9	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5
R10	4	4	4	4	4	4	2	4	4	2	2	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	5	5	4	5	4	5	5	5	5	4	4	4	4	4	5
R13	4	4	4	5	4	4	5	5	5	5	5	4	5	5	5
R14	5	5	5	2	5	5	2	5	4	2	2	4	5	4	5
R15	5	4	4	4	5	5	5	5	5	5	5	5	5	5	5
R16	4	4	5	2	5	5	4	4	5	4	4	4	4	4	5
R17	5	4	4	2	5	5	2	4	4	2	2	4	5	4	5
R18	4	4	5	4	5	4	4	5	5	4	4	4	4	5	4
R19	5	5	5	5	5	5	2	5	5	5	5	5	5	5	4
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	5	4	4	5	5	5	5	5	5	4	4	5	4	4	4
R22	4	4	4	4	4	4	4	4	2	2	2	4	4	4	4
R23	5	5	5	4	4	4	2	5	4	4	4	4	5	5	5
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	5	5	5	4	4	4	4	5	4	4	4	5	5	4	4
R26	5	4	5	5	5	5	5	5	5	4	4	5	5	5	5
R27	5	5	5	4	4	4	4	5	4	4	4	5	5	4	4
R28	4	4	4	4	4	4	4	4	4	4	4	4	5	4	5
R29	5	5	5	5	5	5	5	5	5	4	4	5	5	5	5
R30	4	4	5	5	5	5	4	5	5	4	4	5	5	4	5
Variance X_i	0.26	0.24	0.26	0.69	0.26	0.26	1.36	0.26	0.45	0.83	0.83	0.25	0.66	0.24	0.26
Variance of Total															
Reliability															

Continuation of Table 5:

Respondent	Items														
	X31	X32	X33	X34	X35	X36	X37	X38	X39	X40	X41	X42	X43	X44	X45
R1	3	4	4	5	5	5	5	5	4	4	5	4	4	4	5
R2	2	5	5	4	5	5	4	4	5	4	5	5	5	4	4
R3	1	4	4	4	4	4	4	4	4	4	4	4	2	4	4
R4	2	5	5	5	5	5	5	5	5	5	5	5	3	5	4
R5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R6	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4
R7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5
R8	2	5	5	5	5	5	5	5	4	5	5	5	5	5	5

Respondent	Items														
	X31	X32	X33	X34	X35	X36	X37	X38	X39	X40	X41	X42	X43	X44	X45
R9	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5
R10	4	4	4	4	2	4	4	4	4	4	2	4	4	4	4
R11	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R12	4	4	4	4	4	4	4	5	4	4	4	4	4	4	5
R13	4	4	4	4	5	5	4	5	5	5	5	4	5	5	5
R14	3	4	4	5	2	4	5	5	4	4	2	4	5	4	5
R15	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5
R16	4	5	4	4	4	5	4	4	4	4	4	4	4	4	5
R17	3	4	4	4	2	4	4	4	4	4	2	4	5	4	5
R18	2	4	4	5	4	5	5	5	4	4	4	4	4	5	4
R19	4	5	5	5	5	5	5	5	5	5	5	5	5	5	4
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R21	3	5	5	4	4	4	4	5	5	5	4	5	4	4	4
R22	1	4	4	4	2	4	4	4	4	4	2	4	4	4	4
R23	5	5	4	4	4	4	4	4	4	4	4	4	5	5	5
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
R25	3	5	5	4	4	4	4	4	4	4	4	5	5	4	4
R26	3	5	5	4	4	4	4	5	5	4	4	5	5	5	5
R27	3	5	5	4	4	4	4	4	4	4	4	5	5	4	4
R28	2	4	4	4	4	4	4	4	4	4	4	4	5	4	5
R29	2	5	5	5	4	5	5	5	4	4	4	5	5	5	5
R30	4	5	5	5	4	5	5	5	4	4	4	5	5	4	5
Variance X_i	1.04	0.26	0.25	0.23	0.83	0.25	0.23	0.26	0.20	0.19	0.83	0.25	0.53	0.24	0.26
Variance of Total															
Reliability															

Continuation of Table 5:

Respondent	Items															
	X46	X47	X48	X49	X50	X51	X52	X53	X54	X55	X56	X57	X58	X59	X60	
R1	5	4	4	5	5	3	5	5	5	5	5	5	5	4	5	
R2	5	5	5	4	5	4	5	4	4	5	4	5	5	4	5	
R3	2	4	4	4	4	3	4	2	4	4	4	4	4	4	4	
R4	5	5	5	5	5	3	4	4	4	4	5	5	4	4	5	
R5	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	
R6	2	4	4	4	4	4	4	4	4	4	5	4	4	4	4	
R7	5	4	4	4	4	3	4	4	4	4	5	4	4	4	4	
R8	5	5	5	5	5	4	5	4	4	5	4	4	5	4	5	
R9	5	5	5	5	5	3	5	5	4	4	5	5	5	4	5	
R10	4	4	4	4	2	3	3	4	4	4	4	4	4	4	4	
R11	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	
R12	5	4	4	4	4	4	4	5	5	4	5	5	4	5	4	
R13	5	4	4	4	5	2	4	4	4	4	4	4	4	5	4	
R14	4	4	4	5	2	4	5	4	4	5	5	5	5	4	5	
R15	5	5	5	5	5	2	3	5	5	5	5	4	4	4	5	
R16	5	5	4	4	4	4	5	4	4	4	4	4	5	2	5	
R17	4	4	4	4	2	4	5	4	4	4	5	4	4	2	5	
R18	5	4	4	5	4	4	5	4	4	4	4	4	5	4	5	
R19	5	5	5	5	5	5	5	2	5	5	5	5	5	5	5	
R20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
R21	4	5	5	4	4	2	5	4	5	5	5	4	4	5	5	
R22	2	4	4	4	2	4	3	4	4	4	4	4	4	4	4	
R23	5	5	4	4	4	2	4	4	4	4	5	5	5	4	4	
R24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
R25	5	5	5	4	4	4	4	5	5	5	5	5	5	4	4	
R26	4	5	5	4	4	2	5	4	4	5	5	4	5	5	5	
R27	5	5	5	4	4	4	5	5	5	5	5	5	5	4	4	
R28	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	
R29	5	5	5	5	4	2	5	5	5	5	5	5	5	5	5	
R30	5	5	5	5	4	4	4	5	5	5	4	4	5	5	5	
Variance X_i	0.86	0.26	0.25	0.23	0.83	0.74	0.56	0.53	0.22	0.24	0.26	0.24	0.26	0.51	0.26	
Variance of Total																
Reliability																

Continuation of Table 5:

Respondent	Items												Σ	
	X61	X62	X63	X64	X65	X66	X67	X68	X69	X70	X71	X72		X73
R1	5	5	5	5	5	5	4	4	4	5	4	5	3	333
R2	5	4	4	5	5	5	5	5	4	4	5	5	3	332
R3	4	2	4	4	4	4	4	2	4	4	4	4	2	269
R4	5	5	5	4	5	5	5	5	5	4	5	5	4	333
R5	4	4	4	4	4	4	4	4	4	4	4	4	2	290
R6	4	2	4	4	4	4	4	5	5	4	4	5	3	291
R7	4	2	4	4	4	4	4	4	4	5	4	3	3	291
R8	5	4	4	4	5	5	5	5	5	5	5	5	3	338
R9	5	5	5	5	5	5	5	5	5	5	5	5	3	353
R10	4	2	4	4	2	2	4	4	4	4	5	5	3	277
R11	4	4	4	4	4	4	4	4	4	4	4	4	2	291
R12	5	5	5	5	4	4	4	4	4	5	5	4	2	321
R13	4	5	5	5	5	5	4	5	5	5	5	5	2	330
R14	5	2	5	4	2	2	4	5	4	5	5	4	2	301
R15	5	5	5	5	5	5	5	5	5	5	5	5	2	348
R16	5	4	4	5	4	4	4	4	4	5	4	4	2	300
R17	5	2	4	4	2	2	4	5	4	5	5	5	2	285
R18	4	4	5	5	4	4	4	4	5	4	5	5	3	315
R19	5	2	5	5	5	5	5	5	5	5	4	5	2	343
R20	4	4	4	4	4	4	4	4	4	4	4	4	3	291
R21	5	5	5	5	4	4	5	4	4	4	4	5	2	325
R22	4	4	4	2	2	2	4	4	4	4	4	4	3	263
R23	4	2	5	4	4	4	4	5	5	5	5	4	2	316
R24	4	4	4	4	4	4	4	4	4	4	4	4	3	292
R25	4	4	5	4	4	4	5	5	4	4	5	3	2	317
R26	5	5	5	5	4	4	5	5	5	5	5	4	2	335
R27	4	4	5	4	4	4	5	5	4	4	5	5	2	322
R28	4	4	4	4	4	4	4	5	4	5	5	4	3	296
R29	5	5	5	5	4	4	5	5	5	5	5	4	2	346
R30	5	4	5	5	4	4	5	5	4	5	5	5	3	335
Variance Xi	0.26	1.36	0.26	0.45	0.83	0.83	0.25	0.47	0.24	0.26	0.24	0.39	0.33	31.76
Variance of Total														627
Reliability														0.96

4.2 Discussion

Based on the results of research related to the content validity to the items of instrument of evaluation model based on ANEKA values was done by two assessors/experts obtained the content validity value of 0.932. The validity of instrument referring to classification of validity expressed by Guilford [34], among others: $0.80 < r_{xy} < 1.00$ included in the category of very high validity, $0.60 < r_{xy} < 0.80$ included in the category of high validity, $0.40 < r_{xy} < 0.60$ included in the category of medium validity, $0.20 < r_{xy} < 0.40$ included in the category of low validity, $0.00 < r_{xy} < 0.20$ included in the category of very low validity, and $r_{xy} < 0.00$ included in invalid category.

Based on Guilford classification reference, the result of content validity of instrumen items of evaluation model based on ANEKA values included in the category of very high validity because the content validity value = 0.932 in the range of $0.80 < r_{xy} < 1.00$. If viewed from the validation result of instrument evaluation model

based on ANEKA value shown in table 4, it can be seen that there are 3 items of invalid instrument those are item-33 in component of nationalism, item-51 in component of quality commitment, and item-73 in component of anti corruption.

That three invalid items must be discarded, 70 valid instrument items and ready to use to measure the quality of computer learning, such as: in component of accountability (item-1, item-2, item-3, item-4, item-5, item-6, item-7, item-8, item-9, item-10, item-11, item-12, item-13, item-14, item-15), in component of nationalism (item-16, item-17, item-18, item-19, item-20, item-21, item-22, item-23, item-24, item-25, item-26, item-27, item-28, item-29, item-30, item-31, item-32, item-34, item-35, item-36), in component of public ethics (item-37, item-38, item-39, item-40, item-41, item-42, item-43, item-44, item-45, item-46, item-47, item-48, item-49), in component of quality commitment (item-50, item-52, item-53, item-54, item-55, item-56, item-57), in component of anti corruption (item-58, item-59, item-60, item-61,

item-62, item-63, item-64, item-65, item-66, item-67, item-68, item-69, item-70, item-71, item-72).

The valid items are: item-1 with r_{xy} value = 0.401 so it included to medium validity category, item-2 with r_{xy} value = 0.724 so it included to high validity category, item-3 with r_{xy} value = 0.570 so it included to medium validity category, item-4 with r_{xy} value = 0.414 so it included to medium validity category, item-5 with r_{xy} value = 0.493 so it included to medium validity category, item-6 with r_{xy} value = 0.428 so it included to medium validity category, item-7 with r_{xy} value = 0.432 so it included to medium validity category, item-8 with r_{xy} value = 0.607 so it included to high validity category, item-9 with r_{xy} value = 0.565 so it included to medium validity category, item-10 with r_{xy} value = 0.505 so it included to medium validity category, item-11 with r_{xy} value = 0.636 so it included to high validity category, item-12 with r_{xy} value = 0.587 so it included to medium validity category, item-13 with r_{xy} value = 0.378 so it included to low validity category, item-14 with r_{xy} value = 0.378 so it included to low validity category, item-15 with r_{xy} value = 0.565 so it included to medium validity category, item-16 with r_{xy} value = 0.428 so it included to medium validity category, item-17 with r_{xy} value = 0.500 so it included to medium validity category, item-18 with r_{xy} value = 0.567 so it included to medium validity category, item-19 with r_{xy} value = 0.450 so it included to medium validity category, item-20 with r_{xy} value = 0.629 so it included to high validity category, item-21 with r_{xy} value = 0.646 so it included to high validity category, item-22 with r_{xy} value = 0.551 so it included to medium validity category, item-23 with r_{xy} value = 0.735 so it included to high validity category, item-24 with r_{xy} value = 0.723 so it included to high validity category, item-25 with r_{xy} value = 0.693 so it included to high validity category, item-26 with r_{xy} value = 0.693 so it included to high validity category, item-27 with r_{xy} value = 0.761 so it included to high validity category, item-28 with r_{xy} value = 0.393 so it included to low validity category, item-29 with r_{xy} value = 0.587 so it included to medium validity category, item-30 with r_{xy} value = 0.375 so it included to low validity category, item-31 with r_{xy} value = 0.761 so it included to high validity category, item-32 with r_{xy} value = 0.722 so it included to high validity category, item-34 with r_{xy} value = 0.628 so it included to high validity category, item-35 with r_{xy} value = 0.693 so it included to high validity category, item-36 with r_{xy} value = 0.703 so it included to high validity category, item-37 with r_{xy}

value = 0.628 so it included to high validity category, item-38 with r_{xy} value = 0.757 so it included to high validity category, item-39 with r_{xy} value = 0.606 so it included to high validity category, item-40 with r_{xy} value = 0.581 so it included to medium validity category, item-41 with r_{xy} value = 0.693 so it included to high validity category, item-42 with r_{xy} value = 0.761 so it included to high validity category, item-43 with r_{xy} value = 0.478 so it included to medium validity category, item-44 with r_{xy} value = 0.587 so it included to medium validity category, item-45 with r_{xy} value = 0.375 so it included to low validity category, item-46 with r_{xy} value = 0.724 so it included to high validity category, item-47 with r_{xy} value = 0.722 so it included to high validity category, item-48 with r_{xy} value = 0.761 so it included to high validity category, item-49 with r_{xy} value = 0.628 so it included to high validity category, item-50 with r_{xy} value = 0.693 so it included to high validity category, item-52 with r_{xy} value = 0.425 so it included to medium validity category, item-53 with r_{xy} value = 0.378 so it included to low validity category, item-54 with r_{xy} value = 0.521 so it included to medium validity category, item-55 with r_{xy} value = 0.565 so it included to medium validity category, item-56 with r_{xy} value = 0.428 so it included to medium validity category, item-57 with r_{xy} value = 0.500 so it included to medium validity category, item-58 with r_{xy} value = 0.567 so it included to medium validity category, item-59 with r_{xy} value = 0.439 so it included to medium validity category, item-60 with r_{xy} value = 0.629 so it included to high validity category, item-61 with r_{xy} value = 0.646 so it included to high validity category, item-62 with r_{xy} value = 0.551 so it included to medium validity category, item-63 with r_{xy} value = 0.735 so it included to high validity category, item-64 with r_{xy} value = 0.723 so it included to high validity category, item-65 with r_{xy} value = 0.693 so it included to high validity category, item-66 with r_{xy} value = 0.693 so it included to high validity category, item-67 with r_{xy} value = 0.761 so it included to high validity category, item-68 with r_{xy} value = 0.592 so it included to medium validity category, item-69 with r_{xy} value = 0.587 so it included to medium validity category, item-70 with r_{xy} value = 0.375 so it included to low validity category, item-71 with r_{xy} value = 0.570 so it included to medium validity category, item-72 with r_{xy} value = 0.413 so it included to medium validity category.

Based on the results of the reliability of instrument items of evaluation model based on

ANEKA value of 0.96, so this reliability value included to the category of very high reliability because the value of 0.96 in the Guilford reliability coefficient category range [34], that is $0.80 < r_{11} < 1.00$, so the instrument items can be said to be used to measure the quality of computer learning.

From the results of this study, this study has been able to overcome the weaknesses found in previous studies conducted by Putrama in 2015, Divayana in 2016, Melitasari in 2015, Marzuki in 2012, and Suyana in 2015, which generally experience the same constraints in determining the validity and reliability of the instruments especially those that measure the ANEKA values. Therefore, this research can be said to have been able to present a new breakthrough in calculating the validity and reliability of the instruments used to measure the ANEKA values through open source technology.

Besides the advantages in this research that has presented new breakthrough in calculation of validation and reliability of instrument, but also there are obstacles found in this research, among others: 1) finding of valid instrument item but still in low validity category, 2) Application display is still simple and has not been created in dynamic form.

5. CONCLUSIONS

Based on the results of the research and discussion above, it can be concluded several things, among others: 1) the strength found in this research is the discovery of a new breakthrough that use of open source technology to facilitate the validity and reliability calculation of evaluation model instrument based on ANEKA values with accurate calculation results and fast. The results of the calculation obtained using open source technology, among others: a) the content validity result of instrument included to very high validity category, b) the validation of instrument items obtained 70 valid items and 3 invalid items, c) the reliability of instrument items included to very high category, so the items of this instrument can be said reliable; 2) the limitations still found in this research is the existence of instruments that are still in the category of low validity; 3) The solution to resolving the constraints encountered with valid instrument items but included to low validity category is to make the content of the item more qualified, so that the validity of instrument can fit into the high validity category; 4) The solution to solving the related application that is still simple is

to create dynamic and more interactive forms in the application.

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