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A Proposed User Adoption Model of e-Participation in Indonesia

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The purpose of this study is to develop and test proposed user adoption model of e-Participation in Indonesia. The method used in this study is survey based on quantitative approach. To analyze the validity and reliability of items, this study used Kappa statistics. Total 10 experts participated in this survey to evaluate set of items. Since Kappa coefficient obtained in this study interpreted as good agreement (0.6405 > 0.6), thus the total 60 items said valid and reliable. This study contributed to fill lacking literature of user adoption model of e-Participation in Indonesia.

Key words: *Adoption, E-Participation, Kappa, Model.*

Introduction

Based on the Presidential Instruction No. 3 of 2003, concerning policies and strategies for developing e-Government, there are two main public demands that should be provided by the government to achieve good governance. They are public services and public participation (Instruksi Presiden Nomor 3, 2003). Thus, the government is not only obliged to provide quality public services but also facilitate the public to participate in the formulation of state policies. Public participation can be widely captured by the government through the implementation of the e-Government system, as mandated in Presidential Instruction No. 3 of 2003.

Based on the Cohen and Uphoff (1977) study, public participation occurs when people can express their opinions to assess, criticise, ask or provide input on a plan or program that will be determined and on a decision or policy that is running (Cohen & Norman, 1980). Essentially, people want their opinions and complaints to be heard by the government involved in the government administration process, as a function of control over government

policy. At present, the public can easily convey their aspirations and complaints through the electronic channel provided by the government, e-Participation. E-Participation is a transformation from e-Government 1.0, which emphasises public participation as the main priority in organising government (Napitupulu et al., 2018). E-Participation, also known as Transformational Government (T-Government) or Open Government, offers a new concept of e-Government management that is more open for citizens to be involved in designing public content and services.

The concept of e-Government 2.0, which highlights more public needs (demand side), is different from e-Government 1.0, which underlines technology needs (supply side). Weaknesses of e-Government 1.0 indicate that it was too focused on technology, and neglected human factors have resulted in the failure of the e-Government implementation (Gauld et al., 2010). The system of e-Government should be designed to meet their needs. Therefore, citizens must be engaged at the beginning of the e-Government initiative. Public participation could gain a high legitimacy of policy or decision that impacts the community. The government policy will be easier to implement when legitimacy is increasing, since it shall minimize the resistance of the society (Puspitosari et al., 2011). Based on research (Puspitosari et al., 2011; Kamaruddin & Noor, 2017), a lack of public participation will decrease the quality of public services provided by government. Government policies and programs without the supervision of society often occur in the past. The government tends to be closed to criticism and rarely involves the community in the process of governance. Public participation has not become a top priority in the e-Government 1.0 era, which is more focused primarily on technology. Whereas, public participation is the most important thing when wanting to develop electronic-based public services and must be considered during the e-Government system development process (Osimo, 2010; Napitupulu et al., 2018).

In other words, public participation benefits fulfilled the citizen's needs, better public services provided by government and better control of costs and time of new services. Thus, the government as a public servant, must cooperate with the public as the recipient of public services that can be a means of control over the implementation of public services. Through information and communication technology (ICT) means, public participation is more easily captured in the decision-making process or government policies. Today, the society only needs to access and deliver their aspirations, reports and information for the government institutions through diverse electronic channels.

Based on the work of Napitupulu et al. (2018), e-Participation is a model of public participation by applying ICT, such as a website or mobile application. E-Participation could emerge and appear as Web 2.0 technology. Phang and Kankanhalli reported that Web 2.0 consists of new platforms for interacting with extensive input from users, and the integration of knowledge and user participation in the production of web services (Karamagioli &

Koulolias, 2008). Since they are organising, editing, combining, sharing, commenting, and rating web content as well as to form a social network by interacting and linking one another, the applications or platforms of Web 2.0 are called social media (Karamagioli & Koulolias, 2008; Chun et al., 2010). Web 2.0 offers great potential to transform connections between government and the public into more open, social and citizen-centred relationships. This is the basic characteristic of e-Participation or e-Gov 2.0 (Schellong, 2008).

Further, Phang and Kankanhalli (2008) explain that e-Participation takes place when citizens are empowered to participate by exploiting the potential of ICT in an online environment (Phang & Kankanhalli, 2008). In addition, ICT enables the public to participate in several ways such as chat as a media or discussion forum, profiles that allow users to be part of a system and information provision that allows the public to send information (Maciel et al., 2016). Thus, e-Participation is a light procedure in providing a communication channel without requiring the public to physically visit a government office.

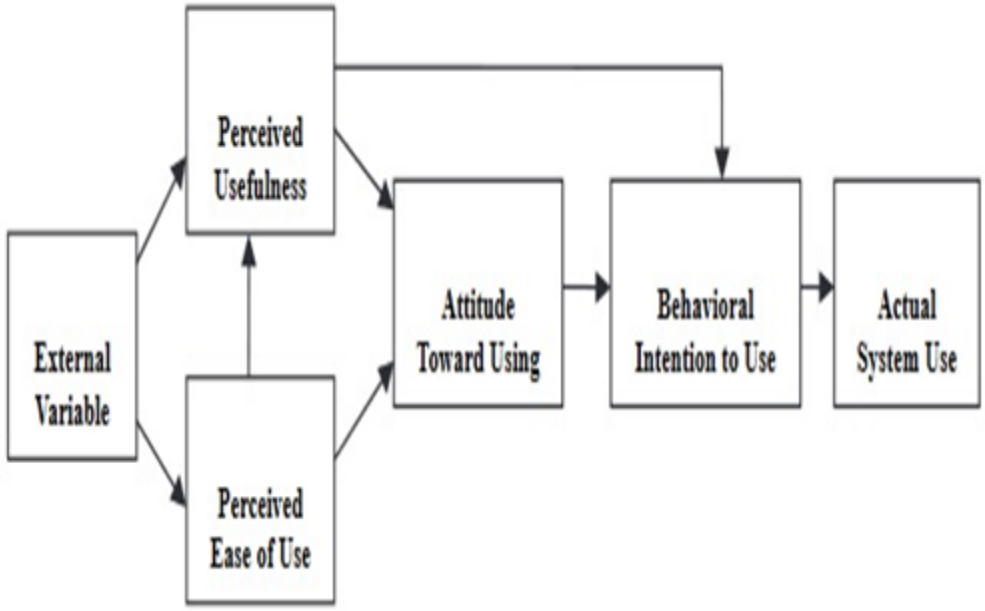
However, the importance of public participation is emphasised in the IS/IT literature and yet few studies are reported (Napitupulu et al., 2018; Kamaruddin & Noor, 2017). Despite the benefits of public participation, the implementation of e-Participation is still limited (Mergel et al., 2011). The use of modern technology does not guarantee that the public is willing to participate in decision or policy making. ICT does not automatically engage citizen participation in the administration of government (Utomo, 2011). Facts indicate that citizens are not significantly involved in online participation because the society has not yet realised the importance of the practice. Adequate conditions and incentives are needed to bind citizens. There are many factors that hinder the continuation of community participation such as the convoluted bureaucratic flow, the many procedures that must be followed by the citizens, the government's low response, high time and costs, all resulting in scepticism from the community (Utomo, 2011). Thus, implementation of e-Participation is not easy because it needs a new fundamental process of the relationship between government and citizen.

The purpose of this study is to propose a user adoption model of e-Participation in Indonesia. The empirical studies related to the public participation model are very limited in literature (Napitupulu et al., 2018; Kamaruddin & Noor, 2017; Mergel et al., 2011). This study reviewed some literature (best practice) of technology adoption models and adapted them into the e-Participation context. A validity and reliability test using the Kappa approach was conducted to identify the best items of the proposed model. Experts' judgment is involved to provide useful insight into the appropriateness of the items and their judgment is important to validate the framework or items. This study theoretically contributes to the current literature, especially to the technology adoption model in the e-Participation environment.

Methodology

This study proposed and tested a conceptual model of user adoption in e-Participation, based on expert judgment. The first step is reviewing literature that is significantly related to the domain of technology adoption in the IS/IT field. Many researchers have undertaken research, resulting in a state-of-the-art study of user adoption of technology (Davis, 1989; Venkatesh et al., 2012; DeLone et al., 2003; Parasuraman, 2000). For instance, the Technology Acceptance Model (TAM) proposed by Davis (1989). TAM was known as a simple and robust theory to predict user adoption in the IS/IT environment (Davis, 1989). User adoption could be predicted by knowing the user acceptance of a particular technology. When the acceptance about technology is high, then people are willing to adopt the technology. Davis (1989) formulated that user acceptance was influenced by two main constructs; perceived usefulness and perceived ease of use (Davis, 1989), as illustrated in Figure 1 as follows:

Figure 1. Technology Acceptance Model (Davis, 1989)

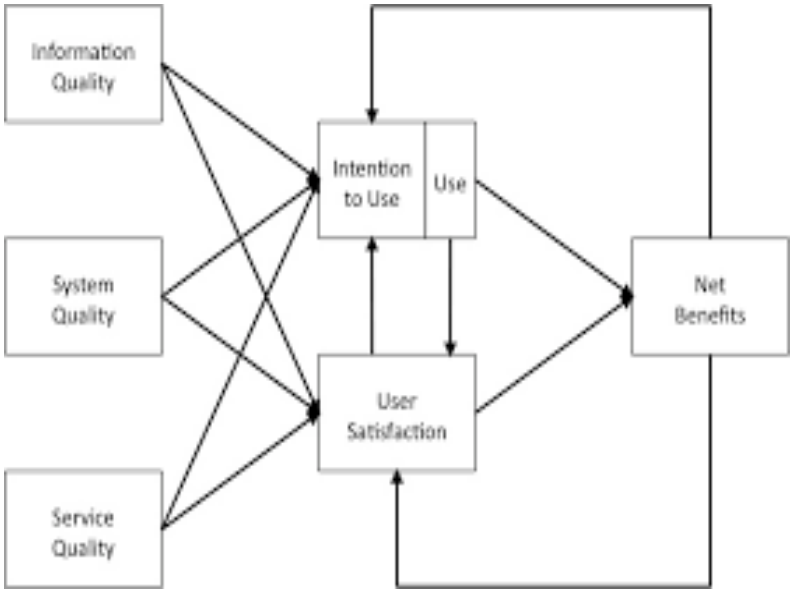


The TAM model has become the most cited theory by other researchers to predict attitudes, desires, and behaviours in the use of new technologies. This model could explain about 40 per cent of the variance of people's intention to adopt a new technology (Morris et al., 2003). The construct of perceived usefulness is influenced by the perceived ease of use, while both constructs are determined by external variables, such as people trust, facilitating condition, social influence, gender, age, etc (Morris et al., 2003; Karahanna & Straub, 1999). The relative strength of both the constructs (usefulness and ease of use) are quite different because people will firstly consider the benefit of using technologies, before they use them. The

construct ease of use issue will arise after they have used them. Thus, the perception of usefulness is considered as the primary factor determinant of behaviour, since it has a higher explanatory power than the perceived ease of use (Davis, 1989; Karahanna & Straub, 1999). However, TAM was tested in a business organisation environment. We therefore do not know whether TAM is applicable to be applied in the e-Participation field. Thus, we adapted the model and re-tested again to obtain the best items that could represent the model. Another technology adoption model will be explained respectively in this chapter.

The IS/IT Success Model proposed by Delon and McLean (2003) is also a well-known theory of user adoption domain research (Parasuraman, 2000), as illustrated in Figure 2 as follows:

Figure 2. Delon and Mclean IS/IT Success Model (Parasuraman, 2000)



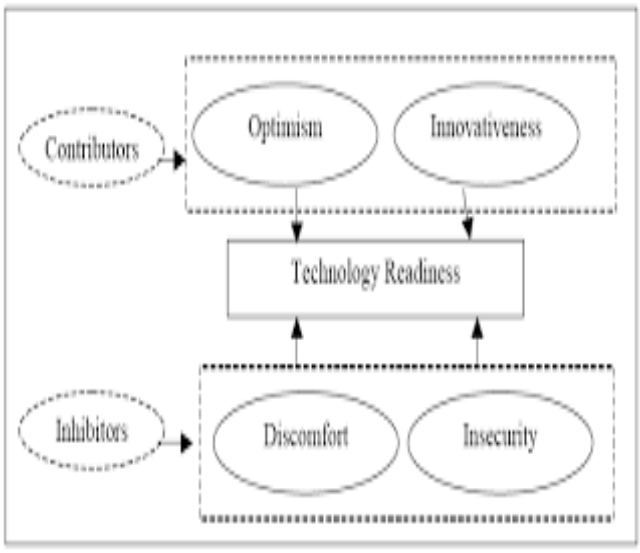
The IS/IT success model emphasised that the user adoption of technology could be predicted by knowing the user acceptance and the user satisfaction. Both constructs are influenced by technology properties such as information quality, system quality and service quality (Napitupulu, 2017). The TAM and Delon and Mclean models propose technology focussed factors and tend to ignore non-technology factors. User satisfaction should be employed in the area of mandatory use (Napitupulu, 2017). For example, a private university establishes a new learning model through e-learning that every lecture and student must enrol it. However, the Delon and Mclean IS/IT Success Model is general in nature and it is not designed for any particular system. Thus, in this study we will also adapt it, especially in the e-Participation context.

The Technology Readiness Index (TRI) was proposed by Parasuraman (2000). The TRI model could predict user adoption of technology by measuring their readiness. One of the important factors that influences technology adoption is related to technology readiness

(Parasuraman, 2000). Parasuraman (2000) defined technology readiness as people's tendency to grasp and adopt new kinds of technology to achieve their life goals.

The TRI is ruled based on four personality traits: optimism, innovation, discomfort and insecurity, as shown in Figure 3. Technology readiness is not assessed by the user's capability to use technologies.

Figure 3. Technology Readiness Index Model (Parasuraman, 2000)



The definition of each personality trait in Figure 3 can be explained as follows (Parasuraman & Colby, 2002):

- Optimism: a positive vision with confidence to be easily mastered, flexible and efficient in understanding knowledge.
- Innovativeness: the tendency to be a pioneer in the use of technology.
- Discomfort: user anxiety about technology.
- Insecurity: distrusting technology for security and privacy reasons.

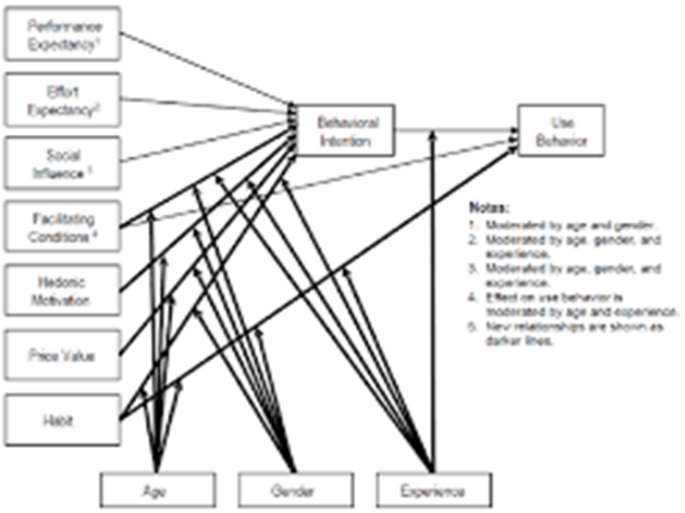
Optimism and innovativeness are called contributors since they strengthen people's intention to use technology, but construct discomfort and insecurity as inhibitors, inhibiting people to adopt it.

The Model of the Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by Venkatesh (2003) and is also known as UTAUT-1. UTAUT-1 is a unified framework which integrates the eight best practice models in the behaviour adoption of technology: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), the

Motivational Model, TPB, the Decomposed Theory of Planned Behaviour, the Model of PC Utilisation, Innovation Diffusion Theory, and Social Cognitive Theory (Venkatesh et al., 2012).

In this study, we adapted UTAUT-2 which is the extended model of UTAUT-1. UTAUT-2 incorporates some constructs into UTAUT-1 such as hedonic motivation, price value and habit, as illustrated in Figure 4 as follows:

Figure 4. Model UTAUT-2 (Venkatesh et al., 2012)



In this study, we adapted the UTAUT-2 model without occupying the price value as one of constructs in the proposed model. In the e-Participation domain, especially e-Government, people are discharged to use any services provided by the government institution.

The Self-Determination Theory (SDT) proposes motivation to adopt technology, including intrinsic motivation and external motivation [23]. The SDT discussed three psychological needs: autonomy, competence and relatedness. Recent studies confirmed that the experiences of competence, autonomy, and relatedness were major contributors to technology enjoyment. The SDT stated that the three constructs will increase adoption and engage people to use technology (Karimi & Nickpayam, 2017).

Based on literature above, we proposed a user adoption model in e-Participation that consists of 18 constructs and 75 items. This study reuses these items and constructs in a context that is different from the previous research, and we do not know whether the items accurately represented the constructs when used in the e-Participation context. Therefore, we adapted and tested the proposed model by conducting a validity and reliability assessment.

Thus, the second step of this study is to ask experts to provide their opinions in order to evaluate a set of items proposed in this research. The method of collecting data was survey by convenient sampling of SMEs (Subject Matter Experts) to provide suggestions on items that best represent the content domain of research. Since this study employed the Kappa approach, there are two experts involved in this study to participate in conducting a validity and reliability assessment of items.

The SMEs were asked to answer a closed questionnaire based on the set of items proposed by quantitatively means. The questionnaire was designed by adopting the Guttman scale, which consists of 35 attributes or items. The Guttman is a scale that has a firm answer, with answers such as true or false, yes or no, positive or negative, high or low, good or bad and so on. In this study, the scale used responses, namely the answers "Important (Score 1)" and "Not Important (Score 0)" (Rothman, 2004). The Guttman scale was applied in the questionnaire because it fit with the Kappa approach as a statistical computation of inter-rater agreement for nominal-scale items (Viera & Garrett, 2005).

Since Kappa uses the 2x2 pattern to compute the Kappa coefficient in order to determine the relevant items, this study employed two SMEs that have more than ten years' experience in the IS/IT field, especially e-Government. Both experts also hold doctoral degrees and possess articles published in the context of e-Government. Thus, the experts were senior researchers in their institution. The Kappa coefficient is a measurement that states the consistency of measurements made by two observers (rater) or the consistency between two measurements or can also measure the consistency between two measurement tools. The Kappa coefficient is an index of agreement between the two observers (Viera & Garrett, 2005; Sim & Wright, 2005). Since its introduction, Kappa has been applied in thousands of research applications. Since Kappa has several useful interpretations, it is likely that it will continue to be a standard approach for summarising the inter-rater agreement on a nominal scale in the near future (Viera & Garrett, 2005; Sim & Wright, 2005; Fleiss, 1971; de Vet et al., 2018). In this context, the Kappa coefficient is often used to measure the agreement of two observers on the characteristics of the researcher's attention. The first step to calculate the Kappa coefficient must compile the assertions of the two raters of the research subjects into the 2x2 table as follows (de Vet et al., 2018):

Table 1: Subject Distribution Based on Raters

		Rater 1		
		Yes	No	
Rater	Yes	A	B	A+B
	No	C	D	C+D
		A+C	B+D	A+B+C+D=N

Cohen (1960) defined a formula to compute the Kappa statistic as an evaluation of agreement between two raters that is as in the equation as follows (de Vet et al., 2018):

$$(k) = \frac{Po-Pe}{1-Pe} \quad (1)$$

Where:
(k) = Kappa coefficient
Po = observed agreement
Pe = expected agreement

Further, Po and Pe formula is calculated through the formula below:

$$Pe = \frac{((A+B)(A+C)+(C+D)(B+D))}{N^2} \quad (2)$$

$$Po = \frac{A+D}{N} \quad (3)$$

According to Table 1, the variable of A means both raters agree, B and C mean one of the raters does not agree, D means both raters do not agree about a criteria proposed, and N (total subject) can be indicated as the total variable of A, B, C and D. Since the Kappa approach is on the experts' opinion (expert judgment), the authors' subjectivity element related to research results could be eliminated.

Table 2: Kappa Interpretation (Napitupulu, 2015)

Index Kappa	Agreement
< 0.40	Bad
0.40 – 0.60	Fair
0.60 – 0.75	Good
> 0.75	Excellent

The reliability test was also carried out to compare and determine the consistency between two experts (inter-rater agreement) in providing a rating (rating) to the criteria assessment by measuring the Kappa index interpretation of the Kappa value, as presented in Table 2 above (Napitupulu, 2015). In this study, we employed the minimum index Kappa of 0.60 to retain the best items which are believed to adequately measure a desired content domain (Grant & Davis, 1997).

Result & Discussion

Based on the explanation of the previous chapter, this study proposed a user adoption model

of e-Participation in Indonesia. The design of a conceptual model was obtained through an intensive review of previous literature, especially literature significantly related to technology adoption theories. The validity and reliability of the proposed model was evaluated using a quantitative analysis; whether the model is relevant to the context of e-Participation. This study reuses these items and constructs taken from within the business environment and thus, we should ensure the items accurately measure the constructs when used in an e-Participation environment. The Kappa approach is a robust tool to be adopted in order to evaluate the 75 items proposed in this study.

The assessment of item validity follows a rule that an item is valid in this research when only both experts (raters) have the same opinion, being agreeing (Yes) about an item. Whereas, if one of experts or both experts did not agree about an item, the item will not be valid and should be eliminated from the model. The tabulation of expert judgment could be shown in Table 3 as follows:

Table 3: Tabulation of Expert Judgment

Item	Expert (1)		Expert (2)	
	Yes	No	Yes	No
1.	1	0	0	0
2.	1	0	1	0
3.	0	1	0	1
4.	1	0	1	0
5.	1	0	1	0
6.	1	0	1	0
7.	1	0	1	0
8.	1	0	1	0
9.	1	0	1	0
10.	1	0	1	0
11.	1	0	0	0
12.	1	0	1	0
13.	1	0	1	0
14.	1	0	1	0
15.	1	0	1	0
16.	1	0	1	0
17.	1	0	1	0
18.	1	0	1	0
19.	1	0	1	0
20.	0	1	0	1
21.	0	1	0	1

22.	1	0	1	0
23.	1	0	1	0
24.	1	0	0	1
25.	1	0	1	0
26.	1	0	1	0
27.	1	0	1	0
28.	1	0	1	0
29.	1	0	1	0
30.	0	1	0	1
31.	0	1	1	0
32.	1	0	1	0
33.	1	0	1	0
34.	1	0	1	0
35.	1	0	1	0
36.	1	0	1	0
37.	0	1	0	1
38.	0	1	1	0
39.	1	0	0	1
40.	0	1	0	1
41.	1	0	1	0
42.	1	0	1	0
43.	0	1	0	1
44.	1	0	1	0
45.	1	0	1	0
46.	1	0	1	0
47.	1	0	1	0
48.	1	0	1	0
49.	1	0	1	0
50.	1	0	1	0
51.	1	0	1	0
52.	1	0	1	0
53.	1	0	1	0
54.	1	0	1	0
55.	0	1	1	0
56.	1	0	1	0
57.	1	0	1	0
58.	0	1	0	1
59.	1	0	1	0
60.	1	0	1	0

61.	1	0	1	0
62.	1	0	1	0
63.	1	0	1	0
64.	1	0	1	0
65.	1	0	1	0
66.	1	0	1	0
67.	1	0	1	0
68.	1	0	1	0
69.	1	0	1	0
70.	1	0	1	0
71.	1	0	1	0
72.	1	0	1	0
73.	1	0	1	0
74.	1	0	1	0
75.	1	0	1	0

Based on Table 3, it can be said that the first expert agreed about 74 items, whereas the second expert only agreed that 73 items were valid. Based on the validity test explained above and based on the inclusive criteria, there are sixty (60) of the same items that were agreed upon by both experts because both said yes. Thus, 15 items should be deleted from the list to retain the best items in the proposed model.

The reliability test is conducted by the computing of the Kappa coefficient to measure the degree of consistency of the two observers (inter-rater agreement), as illustrated by Table 4 as follows:

Table 4: Rater 1 and Rater 2 Cross Tabulation

		Rater 1		
		Yes	No	
Rater	Yes	60	3	63
	No	4	8	12
		64	11	75

Based on the Table 4 Cross Tabulation, the Kappa coefficient could be calculated using the formula described as follows:

$$Pe = \frac{(63 * 64) + (12 * 11)}{75^2} = \frac{(4032) + (132)}{5625} = 0.7402$$

$$Po = \frac{68}{75} = 0.9066$$

$$(k) = \frac{0.9066 - 0.7402}{1 - 0.7402} = \frac{0.1664}{0.2598} = \mathbf{0.6405}$$

Based on the calculation expressed above, the Kappa coefficient in this research was 0.6405. If we assign the Kappa Interpretation and Kappa index from Table 2, the result is determined as a good agreement because the Kappa coefficient is (k) > 0.60.

Thus, the total items obtained were the remaining 60 valid and reliable items from the total of 75 items of the proposed model. By developing and testing the proposed model, this research has contributed to fulfill the literature gap of user adoption in e-Participation in Indonesia. This research also successfully demonstrated Kappa statistics to conduct a validity and reliability assessment of items. This will provide beneficial knowledge to IS/IT researchers to assess their validity and reliability by considering a quantitative analysis.

Conclusion

This study proposed and tested the user adoption model of e-Participation in Indonesia. The contribution of this research is to provide literature regarding a technology adoption model in the e-Participation environment. Since the items and constructs were reused in this study, which are may differ from their previous research domain, the items were re-evaluated through an experts' judgment analysis using Kappa statistics. A total of 60 items, which are valid and reliable, are based on the proposed model in this study. This study also contributed to expanding the currently lacking available literature related to the user adoption model in the e-Participation environment.

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