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MEASURING CITIZEN READINESS TO ADOPT ELECTRONIC CITIZEN RELATIONSHIP MANAGEMENT (E-CIRM) USING TECHNOLOGY READINESS INDEX (TRI)

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ABSTRACT

The basic principle of using ICT is to facilitate human life. Likewise, Electronic Citizen Relationship Management (e-CiRM) is used to provide the best service for citizens and to manage good relations between regional governments and their citizens. However, in several cities there are still several obstacles in the adoption of Electronic Citizen Relationship Management (e-CiRM). One of the important problems in adopting Electronic Citizen Relationship Management (e-CiRM) is the unpreparedness of human resources. Users who are not ready will reduce the efficiency of the system so that Electronic Citizen Relationship Management (e-CiRM) cannot be implemented and used optimally in its operations so that it becomes useless. The purpose of this study is to measure the level of readiness of citizens as technology users in Electronic Citizen Relationship Management (e-CiRM) in Serang Banten Indonesia using the Technology Readiness Index (TRI) method and to find solutions so that the implementation of Electronic Citizen Relationship Management (e-CiRM) can be implemented successfully with results that are well. The measurement results in this study indicate that four dimensions (optimism, innovation, discomfort and insecurity) have a significant effect on the TR variable. so that it can be seen the readiness of citizens in adopting Electronic Citizen Relationship Management (e-CiRM).

Keywords: *Citizen Readiness, CRM, e-CiRM, TRI, Serang Banten, Quantitave Explore.*

1. INTRODUCTION

According to the development of information technology, the lifestyle of the people of Serang city has also changed, various applications are present in the hands through the device. Starting from transactions to just social networking. This phenomenon cannot be separated from the easier and cheaper internet access. The Association of Indonesian Internet Service Providers (APJII) explained the results of the survey saying that the penetration of internet users in Indonesia increased to 143.26 million people, equivalent to 54.7% of the total population of 256.2 million [1]. The combination of these two has formed always on society. In turn, the digital era also influences the relationship between government and its citizens. The use of mobile government is something that is no longer negotiable. Mobile apps for urban public services are one indicator of an ongoing evolution namely "ubiquitous government" or "smart government" [2]. A more progressive response from the government is needed to adjust to the changes in the digital era. The bureaucratic structure must be improved to accommodate new technology and its use [3].

With the spirit of a smart city, Citizen Relationship Management (CiRM) is expected to be able to accommodate several changes related to bureaucratic work patterns in following up on citizen complaint reports. One of them is by adding a coordination feature from urban villages to regional government agencies. The coordination will be carried out by the urban village head and the regional government head. Then the urban village head will carry out a task disposition to the urban village officer and the regional government agencies will carry out a task position to the regional government unit officer as show in figure 1. Of course this change is not easy to accept, in the process of preparing a legal basis for the use of Electronic Citizen Relationship Management (e-CiRM). This idea was accepted after it was understood that the logic used was functional. This change will undoubtedly force regional government

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agencies to be more alert to Electronic Citizen Relationship Management (e-CiRM) and the various problems it reports. In the past, the focus was on the urban village, which had very limited authority and resources. With the existence of Electronic Citizen Relationship Management (e-CiRM), tasks will be carried out together in synergy because the mayor will always monitor their performance and monitor the level of citizen satisfaction.

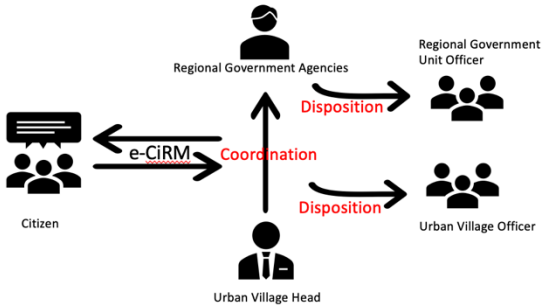

Figure 1. How e-CiRM Serang Smart City Works?

Citizen Relationship Management (CiRM) initiated a new method of ensuring that all reports and complaints from citizens are properly monitored. This is important to maintain citizen involvement. The results show that the use of technology has changed the interaction pattern in government communication, from being unidirectional to two-way or interactive. This finding is at the same time contradicting the opinion of Pasquier (2012) which states that the core function of government communication is to convey information and public policies from the government to citizens. With this awareness, Electronic Citizen Relationship Management (e-CiRM) will be a very useful application in ensuring the best service for citizens [4]. Now it is clear that Customer Relationship Management (CRM) is not only used by large companies in managing relationships with customers, Customer Relationship Management (CRM) plays an important role in improving services to the community, such as in Micro, Small and Medium Enterprises (MSMEs) and waste management (e-Sampah), [5-12].

Factors that need to be considered in order for the use of Customer Relationship Management (CRM) to be effective are: end user characteristics, technology problems, types of services and social aspects of the use of Customer Relationship Management (CRM) [10,13]. Much pre-implementation evaluation and formative research to identify community needs and readiness are important factors, accuracy is an integral step and early in the successful adoption of innovations [14]. Therefore, it is important to know how people react to new technology and their beliefs about Citizen Relationship Management (CiRM) to determine the best way for stakeholders to prepare Citizen Relationship Management (CiRM) services to ensure better implementation. Three dimensions of high-level readiness were identified: technological readiness, human resource readiness and motivational readiness [15]. Quantitative studies are well known for providing in-depth descriptions of community readiness or perceptions of local government [16].

Qualitative research on the readiness of Serang Banten residents in adopting Electronic Citizen Relationship Management (e-CiRM) has previously been conducted [17] but it is felt that they still lack confidence in the readiness of the population to adopt Electronic Citizen Relationship Management (e-CiRM) because interviews were only conducted with 30 residents and lack of detail in explaining the personality variables of the Serang Banten population. Therefore, quantitative exploration is needed to explain the readiness of citizens based on four personality variables, namely optimism, innovation, discomfort, and insecurity in using Electronic Citizen Relationship Management (e-CiRM) services and people's understanding of Electronic Citizen Relationship Management (e-CiRM). Distribution of questionnaires to community members was carried out to better understand people's perceptions, motivations and knowledge about Electronic Citizen Relationship Management (e-CiRM) services. Opportunities and challenges for Electronic Citizen Relationship Management (e-CiRM) services are also explored. Given the important role of quantitative exploration, this paper will present data from quantitative studies that complement the findings of a qualitative study [17] using the Technology Readiness Index (TRI) framework with the aim of finding out how people react to new technology and their beliefs about Electronic Citizen Relationship Management (e-CiRM) to determine how to prepare Electronic Citizen Relationship Management (e-CiRM) services, help facilitate effective Electronic Citizen Relationship Management (e-CiRM) intervention planning and modeling and ensure better implementation in Serang Banten. This research is also expected to become a reference for other cities in Indonesia or other cities in the world.

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This study does not discuss readiness in terms of infrastructure and finance. This study will only discuss the readiness of human resources: citizens as technology users in adopting Electronic Citizen Relationship Management (e-CiRM) in Serang Banten. In the future, the implementation of Electronic Citizen Relationship Management (e-CiRM) in Serang Banten can run well and optimally. The method used in Measuring Citizen Readiness to Adopt Electronic Citizen Relationship Management (e-CiRM) Using Technology Readiness Index (TRI) developed by Parasuraman (2000). This method was chosen because: (1) Technology Readiness Index (TRI) is able to distinguish well between users and non-users of a technology. (2) Technology Readiness Index (TRI) is able to group users based on positive and negative beliefs about technology that is more complex and more futuristic. (3) Technology Readiness Index (TRI) is able to identify user groups that have a significant sense of discomfort and insecurity because TRI is formed by four personality variables: optimism, innovativeness, discomfort, and insecurity.

2. METHOD

2.1. Technology Readiness (TR)

The Technology Readiness (TR) method is a contributor and a barrier that collectively determines a person's tendency to use new technology [18]. TR refers to the tendency of individuals to adopt and embrace new technologies at home and at work. A person's readiness to adopt a new technology can be determined through four dimensions: Optimism and Innovativeness which are beliefs of contributors, and Discomfort and Insecurity which are beliefs of inhibitors as shown in Figure 2, with explanations: (1) General optimism that technology and innovation has positive benefits. (2) Innovativeness - The tendency to want to experiment, learn and talk about technology. (3) Discomfort - There is a lack of control over technology. (4) Insecurity - The belief that technology can cause adverse effects on users and society.

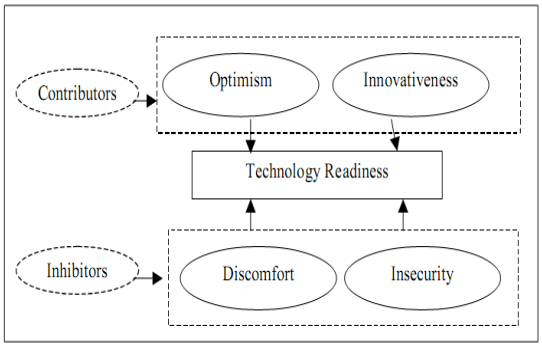

Figure 2. Flow of Technology Readiness (TR) (Parasuraman, 2000), (Ling & Moi, 2007)

The four dimensions are relatively unrelated to each other, especially dimensions with positive and negative beliefs. An individual has four dimensions about technology. The level of technological readiness for an individual is ultimately determined by the balance of positive and negative beliefs, although certain combinations in four dimensions have implications for when and how one adopts innovative products or services [19].

2.2. e-CiRM

Citizen Relationship Management (CiRM) initiated a new method in ensuring that all reports and complaints from citizens were properly monitored. This is important to maintain citizen engagement. The results of the research show that the use of technology has changed the pattern of interaction in government communications that had been in the same direction into two directions or interactive. This finding is at the same time the antithesis of the opinion of Pasquier M who said that the core function of government communication is to deliver information and public policy from the government to citizens [20]. With that awareness, Electronic Citizen Relationship Management (e-CiRM) will be a very useful application in ensuring the best service for citizens.

2.3. Population dan Sampel

The population used as respondents in this study are residents of the city of Serang who will use Electronic Citizen Relationship Management (e-CiRM). The sampling technique that will be used in this study is probability sampling using simple random sampling. This technique is used because the taking of 100 samples from the population is done randomly without regard to the strata in the population [21]. According to the

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Statistics City of Serang, the total population of Serang in 2017 is 666,600 people [22].

Researchers determine the number of samples in this study using the Slovin formula, by taking a percentage of the accuracy of the sampling error that can still be tolerated 0.1 [23]. The Slovin formula is further expressed by equation (1). Based on the results of calculations using equation (1), the total sample of Serang city citizens studied was 100. This amount is considered sufficient to represent the total population. According to Gay and Diehl the number of respondents was adjusted to the size of the sample that was feasible in the study, between 30 to 500 [21].

$$n = \frac{N}{1 + N(e)^2} = \frac{666600}{1 + 666600\,(0.1)^2} = \frac{666600}{6667} = 99.9850 = 100 \quad (1)$$

2.4. Research Tools

The research tool used in data collection is a closed questionnaire. The questionnaire lists questions that are likely to have been determined in advance and the respondent is not given the opportunity to give another answer [24]. The respondent must choose one of the available answers. The questionnaire was arranged according to the Likert scale developed by Rensis Likert [25], where this scale measures attitudes by expressing agreement or disagreement on certain subjects, objects or events.

Likert scale is a method that measures attitudes by expressing agreement or disagreement on a subject, object or specific event [24]. The Likert scale used is a five level Likert scale and neutral label in the middle / third position. The Likert Scale is used because (1) Scoring is easier compared to other measuring instruments, because each answer is given a number in the form of numbers that can be facilitated in addition, (2) Likert scale has a high reliability in sorting respondents based on certain intensity, and (3) Likert scale is more flexible than other measuring instruments. The instrument of the questionnaire was based on an instrument developed by Parasuraman [18]. The following scores on the point 5 Likert scale used in this study can be seen in Table 2.

Table 1. Likert Scale

No.	Answer Choice	Score
1	Strongly Disagree	1
2	Disagree	2
3	Neutral	3
4	Agree	4
5	Strongly Agree	5

Data processing and analysis tools used are Structural Equation Modeling (SEM) using the smartPLS 3.0 application. Structural Equation Modeling (SEM) was chosen as a data analysis tool because (1) Allows researchers to examine the relationship between complex variables both recursive and non-recursive to obtain a comprehensive picture of the overall model, (2) Accommodate the capabilities of various known statistical techniques Previously, it was combining the ability of path analysis with factor analysis techniques. (3) Being able to make construct models as latent variables or variables that are not measured directly, but estimated in the measured variable models, and (4) Can test jointly the measurement model and structural model [26]. PLS is a variant-based Structural Equation Modeling (SEM), which can simultaneously test measurement models while testing structural models [27]. The purpose of PLS is prediction, so that it focuses more on data with limited estimation procedures.

3. RESULT

3.1. Participant and Location

Respondents from this study were residents of Serang with a total sample of 100. The distribution of questionnaires was carried out online and carried out directly. Actually online questionnaires are felt to be more effective and can minimize the damage to questionnaires some respondents need to spread directly. Of the 100 samples, the majority of respondents were male. The respondents' demographics are grouped by sex, age, occupation, and level of education.

3.2. Data Analysis

3.2.1. Evaluation of Outer Models

Outer model / measurement model functions to test construct validity and instrument reliability. Validity test aims to determine the ability of research instruments to measure what should be measured [28]. Reliability test functions to measure the consistency of measuring instruments in measuring a concept and can also be used to measure the consistency of respondents in answering items in the questionnaire / research instrument [27].

3.2.1.1. Convergen Validity

Variables / manifest variables of a construct should have a high correlation. Convergent validity

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occurs when scores obtained from two different instruments in measuring the same construct have a high correlation [29]. Testing convergent validity on PLS with reflective indicators can be assessed based on the loading factor value of the indicators that measure the construct. The rule of thumb used in the initial examination of the factor matrix that is deemed to have met the minimum level is approximately 30. Loading values of approximately 40 are considered to have met the level better and loading values > 0.5 are considered to have met a significant level. The higher the loading factor, the more important the role of loading will be felt in interpreting the factor matrix. Outer loading > 0.7, communality > 0.5 and average variance extracted (AVE) > 0.5 are the rule of thumb used to test convergent validity [30]. The results of the iteration algorithm obtained six output indicators with a loading factor value below 0.70 namely OPT3, OPT5, DIS1, INS2, INS3 and TR5 which were excluded from the model. Then recalculate and the results of loading factors are three indicators with loading factor values below 0.70, namely DIS3, DIS4 and DIS5 which are excluded from the model. Then recalculate and the loading factor results show all indicators meet convergent validity with loading factors above 0.70.

3.2.1.2. Discriminant Validity

The manifest variables of a different construct should not have high correlation. Discriminant validity occurs when two different instruments in measuring the two constructs that are predicted to be uncorrelated produce scores that do not have a correlation [31]. Discriminant validity testing can be assessed from the cross loading value which is a measurement with the construct. Another method used to assess discriminant validity is to compare average variance extracted (AVE) roots of each construct with correlations between constructs and other constructs in the model. Discriminant validity in the model is said to be sufficient if the average variance extracted (AVE) root of each construct is greater than the correlation between constructs and other constructs in the model [32] as shown in Table 2.

Table 2. Comparison of AVE Root Value Against the Correlation Between Constructs and Other Constructions in the Model

	DIS	INN	INS	OPT	TR	AVE Root
DIS	1.0000					1
INN	-0.4188	1.0000				0.813063880
INS	0.6249	-0.4694	1.0000			0.876610391
OPT	-0.2075	0.5892	-0.2038	1.0000		0.786718223
TR	0.0645	0.2634	0.0460	0.2862	1.0000	0.780088982

Based on the results of the comparison in Table 2, the root value of average variance extracted (AVE) is greater than the correlation value between the construct and other constructs in the model. Thus it can be stated that all variables fulfill discriminant validity.

3.2.1.3. Construct Reliability

Testing reliability of a construct is done to prove the accuracy and consistency and accuracy of the instrument in measuring a construct [31]. Measurement of reliability of a construct with a reflexive indicator on PLS is done in two ways, namely with Cronbach's Alpha and Composite Reliability (Dillon-Goldstein's). Cronbach's Alpha measures the lower limit of the value of reliability in a construct, while Composite Reliability (Dillon-Goldstein's) measures the true value of the reliability of a construct [30]. But Composite Reliability (Dillon-Goldstein's) is considered better used to estimate internal consistency in a construct [33]. The rule of thumb value of alpha / Composite reliability must have a value greater than 0.7 even though with a value of 0.6 it is still acceptable [34]. A valid construct is a variable construct, whereas a reliable construct is not necessarily valid. So that the internal legal consistency testing is not absolute if the construct validity has been fulfilled [28]. The measurement results can be seen in Table 4. The measurement results in Table 4 show that all variables for composite reliability have values above 0.70. Then all variables for cronbach's alpha have values above 0.60. Thus it is declared valid and the reliability is quite high.

3.2.2. Inner Model Evaluation

In the SmartPLS application, an Inner model evaluation is done by looking at the R-Square value of the dependent construct. Whereas the significance test between constructs in the inner model is done by looking at the path coefficient values / t-values of each path. The greater the value of R-Square, it can be said that the prediction model contained in the research model is also getting better. However, R-Square is not an

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absolute parameter to measure the accuracy of a prediction model. This is because the basis of theoretical relationships is the most important parameter in explaining causality [27]. The R-Square value of the endogenous variables in the model used can be seen in Table 4.

Table 3. Composite Reliability and Croncbach's Alpha Values

	Composite Reliability	Cronbach's Alpha
DIS	1.0000	1.0000
INN	0.9074	0.8733
INS	0.9093	0.8529
OPT	0.8304	0.6990
TR	0.8619	0.7880

Table 4. R-Square Values

	R-Square
DIS	
INN	
INS	
OPT	
TR	0.1353

The Technology Readiness (TR) construct has a R-Square value of 0.135 which means that the variance in the TR construct can be explained by the constructs of DIS, INN, INS and OPT of 13.5%. While the other 86.5% are determined or explained by other variables not included in this study.

Furthermore, the inner model evaluation is done by looking at the significance value so that there is an influence between variables through the jackknifing procedure or by bootstrapping on the SmartPLS application. The approach using the bootstrap method represents nonparametric for the precision of the SmartPLS estimation. The bootsrap method was developed by Efron et al. (2004) around the 1970s and used all original samples in resampling again [35]. Hair, et al. (2011) and Henseler, et al. (2009) recommend that the number of bootstrap samples be 5000, provided that the amount must be greater than the original sample. However, from some literature [36-37] suggest that the number of bootstrap samples of 200-1000 is considered sufficient to be used to correct the standard error estimate of SmartPLS.

In addition to the bootstrap method, another alternative that can be used for resampling is the jackknifing method developed by Jackknife around the 1940s [35]. The jackknifing method uses sub samples from the original sample for resampling again. The disadvantage of the jackknifing method is that it is less efficient compared to the bootstrap method. Jackknifing methods ignore confidence intervals [38]. Therefore, the jackknifing method is less used in SmartPLS applications. Test results can be seen in Table 5.

Table 5. Test Results

Path		Path Coefficients	T-Value	Test Result
From	To			
OPT	TR	0.1791	2.3445	Significant
INN	TR	0.2686	3.4854	Significant
INS	TR	0.1181	0.9947	Not Significant
DIS	TR	0.1383	1.4152	Not Significant

The test results summarized in Table 5 can be explained as follows: (1) Optimism towards Technology Readiness (TR) has a T-Statistics value of 2.3445 > 1.96. This means that the greater the optimism of a person, the greater the tendency to use technology. The use of Electronic Citizen Relationship Management (e-CiRM) will have a positive effect on prospective users. (2) Innovativeness to Technology Readiness (TR) has a value of T-Statistics 3.4854 > 1.96. This means that the greater the desire of someone to make a change (to innovate), the greater the tendency to use technology. Prospective Electronic Citizen Relationship Management (e-CiRM) users have high innovative qualities in terms of adopting and using technology. (3) Discomfort with Technology Readiness (TR) has a value of T-Statistics 1.4152 < 1.96. This means that the greater the feeling of inconvenience a person will be, the smaller the tendency to use technology. (4) Insecurity against Technology Readiness (TR) has a value of T-Statistics 0.9947 < 1.96. This means that the greater a person's insecurity, the smaller the tendency to use technology.

The results of hypothesis testing conducted from H1-H4 using the Technology Readiness Index (TRI) method (Parasuraman, 2000) showed that not all hypotheses were significant for the variable Readiness Technology (TR). H1-H2 which is significant for user readiness in adopting Electronic Citizen Relationship Management (e-CiRM) in Serang Banten. While H3-H4 is not significant to the readiness of users in adopting Electronic Citizen Relationship Management (e-CiRM). The suitability level of each individual in e-CiRM is determined by the positive and negative balance, namely the four dimensions that exist within each individual. The combination of these four dimensions has implications for anytime and how someone approves a new technology.

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4. CONCLUTIONS

Based on data analysis and research results on user readiness in adopting Electronic Citizen Relationship Management (e-CiRM) using the Technology Readiness Index (TRI) method, it can be concluded that in general the user's readiness in adopting Electronic Citizen Relationship Management (e-CiRM) in Serang Banten has been said to be ready. An optimistic attitude and high innovation encourage citizens to use Electronic Citizen Relationship Management (e-CiRM) in the hope that the implementation process of Electronic Citizen Relationship Management (e-CiRM) can run better so that it can improve the quality of all e-Governance activities. Innovativeness is the biggest contributor affecting Technology Readiness (TR) and Optimism is the second largest contributor affecting Technology Readiness (TR) in Serang Banten. Future research can be done by adding variables beyond the four personality variables: optimism, innovativeness, discomfort, and insecurity in order to obtain a more complete picture of the readiness of citizens in adopting Electronic Citizen Relationship Management (e-CiRM) in Serang Banten Indonesia.

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