

Citizen Behavior: The Evaluation of Complaint Application that Connected to Smart City

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ABSTRACT

SIARAN is application which is created by Government of South Tangerang City, Indonesia. The application is e-government services social media based. It is designed for citizens to be able to report problems that occur around South Tangerang City. The research was conducted to find out the factors that affect the intention of SIARAN's users. The research model in this research was Theory of Planned Behavior which was combined by several variables of several acceptance models. The methods which were used to collect the data were literature review and questionnaire. The findings of the research were going to be developed and proceeded by using SEM-PLS (Structural Equation Model - Partial Least Square). The results of this research indicated that Information Design, Architecture, Security, Esthetical Design, give significant positive effects towards attitude. Whereas, Perceived Usefulness and Perceived Ease of Use did not give significant effects towards Attitude. Facilitating Condition and Participation Efficacy gave significant positive effect towards perceived behavior control. Perceived Behavioral Control and Attitude gave significant positive effect towards intention.

1. Introduction

As implementation steps of the smart city in South Tangerang City, the government of the city together with South Tangerang City Communication and Information Office (DISKOMINFO) developed South Tangerang Live application. The application is able to have features that which support an integrated smart city concept. One of the features is the Complaints Service (SIARAN) which is the object of this research. SIARAN is one of the parts of smart city, that is a smart government in which the citizens are able to participate to give opinions in term of public services. Due to it has social media based, SIARAN becomes e-government service which can be used on android platform. The features on SIARAN provide opportunities for citizens to make complaints related to problems which occur around South Tangerang City. The complaints will be known immediately by South Tangerang official, such that they can be followed up immediately. In the process of developing and implementing in Indonesia, it has been carried out in several cities. The cities which have applied smart city are DKI Jakarta, Bandung, Balikpapan, Makassar, and Surabaya. Smart city has 6 (six) dimensions, which are Smart

Economy (innovation and competition), Smart Mobility (transportation and infrastructure), Smart People (creativity and social capital), Smart Environment (sustainability and resource), Smart living (quality of life and culture), Smart Government (empowerment and participation) [1]. There are various reasons which cause an organization invests on information system. There are pressures for cutting costs, increasing productivity without increasing costs, and increasing product or service quality [2], [3] various organizations are beginning to see the power of social media technology in creating new information technology capabilities that will help them to develop new strategies for services as well as for products [4].

Internet and social media are technology which is predicted can change the communication process between the government and the citizen. An innovative mode of communication and open government can encourage public participation in government decision making, the statement is also supported by several studies [5]-[9]. Online Media is believed can facilitate citizen to access on government information. It will encourage to share the information and public participation on the process of decision making which is government's responsibility [7], [9]. This research is related to online communication media which takes a

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role as public space, such that it has an impact on political communication between government and citizen.

The research on acceptance of information technology has become the focus of development model and testing in estimating intentions [2], [10], [11]. The research study evaluation of social media-based e-government service is conducted using several merging models. Based on the result of the analysis of the merging model, it will be finding out the factors which affect the level of interest in using social media-based e-government application. Previous research has focused on e-Government in general, while the novelty of this research lies in the intention to use citizens to support government-based social media.

2. Smart City Definition

Smart City is able to create the components and urban infrastructure services smarter, interconnected, and efficient through the use of intelligent computer [12]. In understanding according to [13], Smart City is city that guarantees the freedom of speech, access to information and public services which are strengthened by information and communication technology. Smart City has a concept that is through smart city order, thus it facilitate the citizen in terms of getting information quickly and precisely.

IBM defines “Smart City” that using information and communication technology to understand, analyze, and integrate information from prime system in running a city [14]. Smart City is well-defined geographies, where technology such as ICT, logistic, energy production, and others works together to create benefits for citizen in term of inclusive welfare and participation, environment quality, smart development; it is managed by a well-defined set of subject, able to state the rules and policies for development and city government [15].

3. Social Media Based Government

In the use of social media web and tools by citizens, business and public organization, in term of the government needs to look for the ways to take benefits from the social media’s users, in case of participation and level of involvement [16]. As a public e-government site, this is certainly important in its efforts so that citizens always visit the site. Meanwhile in a sense, social network is a site where people interact and enter the site in order that the government and the citizen are able to have closer relationship [17]. The increase of the performance and welfare of government employees or civil servants who have worked serving the citizens is one of the objectives of e-government applications [18]. The performance of public service is getting more professional and able to satisfy the customers, is citizens’ expectation of as the customers of public services [19].

The government changes the way of communication to the citizens by using communication technology, such as internet and social media. It is because, the citizens have decreased the level of trust in the government. The increase of government transparency makes citizens more motivated to participate in government’s decision-making process, therefore, several studies suggest the innovative communication mode [9]. It is expected that the efforts will strengthen public trust and democratic values, effective and operational efficiency. Transparency and government response, as well as citizens’ participation based on

innovative communication technology will contribute for the main foundation of democracy [9]. In terms of the main foundations of democracy, government transparency and government-citizen interaction are important in increasing citizens’ trust in government [6], [8]. In this case, social media is considered as the right solution. By direct interaction, the citizens will trust in government increasingly. Therefore, the citizens have a better chance to interact directly through social media channels which are managed by the government [9].

The foundation of democracy is citizens’ participation. In the process of decision making, the citizens are able to give suggestions and comments to the government by following government’s social media account. The citizens’ perception towards transparency, efficiency, and corruption is able to be influenced by social media and cellular technology. Hence, the technology becomes important [20]. The result of this research indicates that the citizens’ perception towards transparency, efficiency, and corruptions have increased due to interactions between the government and the citizens which is supported by information technology through social media, websites, and other technologies.

4. Research Methodology

The main model that was used in this research was TPB (Theory of Planned Behavior), that was added with several variables. Several theories and models which support, were TAM, TRI, UTAUT, TPB, and Delone. The questions on questionnaire distributed contained certain values based on variables and indicators in the TPB (Theory of Planned Behavior). TPB is a theory in social psychology that predicts and refutes behavior that can be done by someone [21]. This theory states that one's intention to conduct behavior (behavior intention) can be a strong predictor of actual behavior (actual behavior).

The TPB theory suggests that a person's behavior intention can be a powerful predictor of the actual behavior. BI can be understood as the degree that a person is willing to try or perform certain behaviors and is determined by three conceptually independent determinants: Attitude, Subjective Norm, and Perceived Behavioral Control.

TRI measures individual readiness to use new technologies that use four personality traits that are optimism, innovativeness, discomfort, and insecurity.

Technology Acceptance Model (TAM) is a theory about information system that models the process of how users are willing to accept and use the technology. This model can explain that when users use information systems, several factors can influence their decision about how and when to use the information system.

UTAUT that integrated eight models of behavioral theory. Those theories are Theory of Reasoned Action (TRA), Adoption Model Technology (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM - TPB), PC Utilization Model, Innovation Theory Diffusion (DOI), and Social Cognitive Theory.

Delone argued that the success of IT implementation can be assessed or predicted from user acceptance and user satisfaction using IT, where external factors influence user acceptance and satisfaction.

4.1. Hypothesis

Based on research model framework above, it can be formulated as follows:

Table 1: Regression Hypothesis Test (Simple Regression)

#	Hypothesis
H ₁	Perceived Usefulness variable has effect on variable Attitude in Siaran application usage.
H ₂	Variabel Perceived Ease of Use Variable has effect on Attitude Variable in Siaran application usage.
H ₃	Navigation variable has effect on Attitude variable in Siaran application usage.
H ₄	Accessibility variable has effect on Attitude variable in Siaran application usage.
H ₅	Privacy variable has effect on Attitude variable dalam in Siaran application usage.
H ₆	Security variable has effect on Attitude variable in Siaran application usage.
H ₇	Design Information Architecture variable has effect on variabel Attitude in Siaran application usage.
H ₈	Design Aesthetic Values variable has effect on Attitude variable in Siaran application usage.
H ₉	Innovativeness variable has effect on Attitude variable dalam Siaran application usage.
H ₁₀	Precision variable has effect on variabel Attitude in Siaran application usage.
H ₁₁	System Integration variable has effect on Attitude variable in Siaran application usage.
H ₁₂	Trust in Government variable has effect on variabel Attitude in Siaran application usage.
H ₁₃	Participation Efficacy variable has effect on variabel Perceived Behavioral Control in Siaran application usage.
H ₁₄	Facilitating Conditions variable has effect on Perceived Behavioral Control variable in Siaran application usage.
H ₁₅	Attitude variable has effect on Behavior Intention variable in Siaran application usage.
H ₁₆	Perceived Behavioral Control variable has effect on Behavior Intention variable in Siaran application usage.

4.2. Reliability Test

Reliability test can be conducted by using Cronbach’s alpha which assumes that all indicators are equally reliable. In this case, these indicators which reflect a construct must have the same outer loading value. However, due to the value of Cronbach’s alpha tends to understate internal consistency reliability, therefore, another method is introduced which is composite reliability. Cronbach's alpha values and composite reliability of 0.6 to 0.7 can be accepted [22]. Based on Table 2. Cronbach's Alpha value of all statements above 0.6 can thus be concluded that

all statements have been reliable as research instruments. The following below are the results of the Cronbach's alpha test and composite reliability:

Table 2: Cronbach’s Alpha

Construct	Cronbach’s Alpha	Composite Reliability
Perceived Usefulness	0.722	0.843
Perceived Ease of Use	0.761	0.862
Navigation	0.823	0.893
Accessibility	0.764	0.863
Privacy	0.646	0.789
Security	0.639	0.766
Design Information Architecture	0.806	0.885
Design Aesthetic Values	0.771	0.845
Innovativeness	0.851	0.91
Precision	0.669	0.856
System Integration	0.676	0.822
Trust in Government	0.89	0.922
Participation Efficacy	0.866	0.934
Facilitating Conditions	0.622	0.841
Attitude	0.714	0.84
Perceived Behavioral Control	0.691	0.827
Behavior Intention	0.806	0.873

4.3. Hypothesis Test

Based on the results of research which has been discussed above, hypothesis test can be conducted. The test is to determine the hypothesis which proposed previously, whether it can be accepted or not. To determine the effect or coefficient of relationship between variables can be seen from the original sample value, if the value positive or greater than 0 then the relationship has a positive effect. Vice versa if the value is negative or below 0, then the relationship has a negative influence. To analyze whether the hypothesis can be accepted or rejected, the standard used as a reference is the path coefficient value above 0.1. In addition to determining the coefficient, also checking whether the relationship is significant or not. According to [23] if coefficient lane is value above 0.1 and T-statistics value is greater than 1.96, it indicates significance in hypothesis testing.

Table 3: Hypothesis Test Results

Hypothesis	Lane Connection	Original Sample	T-Statistic	Inference
H1	PU > AT	-0.027	0.369	Not significant
H2	PEU > AT	0.195	2.701	Significant
H3	N > AT	-0.075	0.957	Not significant
H4	A > AT	0.081	0.848	Not significant
H5	PV > AT	0.016	0.226	Not significant
H6	SC > AT	0.257	4.495	Significant
H7	DIA > AT	0.046	0.559	Not significant
H8	DAV > AT	0.118	1.964	Significant
H9	IV > AT	0.039	0.46	Not significant

H10	PR > AT	0.228	2.333	Significant
H11	SI > AT	0.115	1.954	Significant
H12	TIG > AT	0.145	1.965	Significant
H13	PE > PBC	0.168	2.318	Significant
H14	FC > PBC	0.4	6.654	Significant
H15	AT > IT	0.594	9.653	Significant
H16	PBC > IT	0.254	3.258	Significant

5. Discussion

The following is a discussion of the test results based on the researcher's hypothesis:

- Perceived Usefulness towards Attitude. The results of data process on this research indicates that Perceived Usefulness (PU) factors does not have effect on Attitude (AT) significantly. The result is in line with the research which was conducted by [24]. It states that perception of usability has a poor relationship with user attitudes. The results of research that have been done, the users make complaints more concerned with the final results rather than increasing the speed of complaints.
- Perceived Ease of Use towards Attitude. The results of this data process in this research indicates that Perceived of Use (PEU) factor has a significant effect towards Attitude (AT). The result is in line with the research which was conducted by [25]. The research which has been conducted states that ease of use affects user behavior.
- Navigation towards Attitude. The Result of this data process indicate that Navigation (N) factor does not have significant effect towards Attitude (AT). The result is in line with the research which was conducted by [26].
- Accessibility towards Attitude. The results of data process in this research indicate that Accessibility (A) factor does not have significant effect towards Attitude (AT). The result is in line with the research which was conducted by [27]. The research that has been conducted states that the users are more concerned with the final results compared to the access speed. They prefer to make another complaint via email.
- Privacy towards Attitude. The results of data process in this research indicate that Privacy (PV) factor does not have significant effect towards Attitude (AT). The result is in line with the research which was conducted by [28]. In this research, the users feel privacy is not an important thing, due to the government has guaranteed to protect their privacy (trust the government).
- Security towards Attitude. The results of this data process in this research indicates that Security (SC) factor has a significant effect towards Attitude (AT). The result is in line with [29], [30] that state security factor has big effect towards attitude.
- Design Information Architecture towards Attitude. The results of data process in this research indicate that Design Information Architecture (DIA) factor does not have significant effect towards Attitude (AT). In this research the citizens tend to prioritize the functional system rather than the organizational structure of the complaint application interface.

- Design Aesthetic Values towards Attitude. The results of this data process in this research indicates that Design Aesthetic Values (DAV) factor has a significant effect towards Attitude (AT). The result is in line with [31].
- Innovativeness towards Attitude. The results of data process in this research indicate that Innovativeness (IV) factor does not have significant effect towards Attitude (AT). The result is in line with the research which conducted by [32]. The research which has been conducted stated that the users are more concern with the final result rather than application innovation. They feel that the complaint application is sufficient for their needs.
- Precision towards Attitude. The results of this data process in this research indicates that Precision (PV) factor has a significant effect towards Attitude (AT). The result is in line with [33].
- System Integration towards Attitude. The results of this data process in this research indicates that System Integration (SI) factor has a significant effect towards Attitude (AT). The result is in line with [34].
- Trust in Government towards Attitude. The results of this data process in this research indicates that Trust in Government (TG) factor has a significant effect towards Attitude (AT). The result is in line with the research which has been conducted by [35].
- Participation Efficacy towards Perceived Behavior Control. The results of this data process in this research indicates that Participation Efficacy (PE) factor has a significant effect towards Perceived Behavior Control (PBC). The result is in line with [25], [36] which stated that the level of participation is one of the determinants of perceived use behavior
- Facilitating Conditions towards Perceived Behaviour Control. The results of this data process in this research indicates that Facilitating Conditions (FC) factor has a significant effect towards Perceived Behavior Control (PBC). The result is in line with [25], [30] which stated that the condition of the facility is one of the determinants of perception of usage behavior
- Attitude towards Behavior Intention. The results of this data process in this research indicates that Attitude (AT) factor has a significant effect towards Behavior Intention (BI). The result is in line with [25] which stated that attitude factor is one of the main determinants and has a positive relationship to intention.
- Perceived Behavior Control towards Behavior Intention. The results of this data process in this research indicates that Perceived Behavior Control (PBC) factor has a significant effect towards Behavior Intention (BI). The result is in line with [25] which stated that the perception of usage behavior has a positive relationship with intention.

6. Conclusion

This Research aims to find out the factors which can affect the intention to use SIARAN e-government service by using Theory of Planned Behavior which is added by several variables. Several conclusions are obtained based on the results of testing between variables using the Structural Equation Modeling (SEM) method.

Therefore, the government is expected to improve services by increasing the interaction and integration, and communication between the community and the government through the exchange of ideas. This study has identified 17 main variables that will increase public confidence in e-government services. The results of the hypothesis test are:

- Accessibility factor has no significant effect on Attitude
- Attitude factor has a significant positive effect on Intention
- Aesthetic Design factor has a significant effect on Attitude
- Design Information Architecture has no significant effect on Attitude
- Facilitating Condition factor has a significant positive effect on Perceived Behavioral Control
- Innovativeness factor has no significant effect on Attitude
- Navigation factor has no significant effect on Attitude
- Participation Efficacy factor has a significant positive effect on Perceived Behavioral Control
- Perceived Behavioral Control factor has a significant positive effect on Intention
- Perceived Ease of Use factor has a significant effect on Attitude
- Perceived Usefulness factor has no significant effect on Attitude
- Precision factor has a significant positive effect on Attitude
- Privacy factor has not significant effect on Attitude
- Security factor has a significant positive effect on Attitude
- System Integration factor has a significant positive effect on Attitude
- Trust in Government factor has a significant positive effect on Attitude

In the end, the government must consider the unmet user needs and use them in e-government strategies. This aims to increase public trust in the government.

Conflict of Interest

The authors declare no conflict of interest.

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