FEATURES IN SOCIAL MEDIA-BASED E-GOVERNMENT APPLICATION: A HOPE FROM SOCIETY DESIRE

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Abstract. *Social media has entered the government sector as a platform to do public service activities. Government has spent a lot of time, money, and sources to improve the public service but there are always challenges to improve public interest in using social media-based e-government applications. Web 2.0 and social media provide opportunities to user that is the community, stakeholders, and service providers to discuss and share opinions about features regarding people's expectations. This study involved 349 people as end users and 10 service providers in producing e-government features based on social media according to their expectations. Society as application's user was asked to see the current quality of social media-based e-government services based on end users. This aimed to conduct evaluations so that they could propose features for the development of social media-based e-government application.*
Keywords: Features, E-government, Social media, Public service

1. **Introduction.** Advanced communication technologies, such as the Internet and social media, have changed how governments communicate with their citizens. Some studies have suggested that innovative communication models can improve government transparency and encourage people to participate in government decision-making processes [1-4].

The emergence of online media is expected to provide an opportunity for the government to meet government responsibilities better [4]. Online media is believed to facilitate public access to government information. Thus, it encourages information sharing and community participation in government decision-making processes [2]. Social media plays a significant role in two-way communication between the government and the public. Since social media is based on the connectedness of users through their direct communication or sharing information, opinions, and ideas, government-society communication through social media has a greater chance of being dialogical and interactive [4].

Tangerang administration together with the Communication and Information Agency of Tangerang developed a social media application called Tangerang Live. Tangerang Live is an application from Tangerang as the manifestation of smart city. Features that support the smart city concept are presented in an integrated manner in the Tangerang live application. One feature that is the object of this research is Layanan Aspirasi Kotak Saran Anda (LAKSA) – People's Aspiration and Suggestion Box Service. LAKSA supports the concept of smart city in the dimensions of a smart government in order to

provide public services for the community to participate in providing aspirations. LAK-SA is a social media-based e-government application that can be used on the Android platform. LAKSA allows the citizen to report and complain related to problems that occur around Tangerang so that the Tangerang administration can immediately know it and it immediately followed up. Society as the user of e-government services can become consumers and also sources of information on LAKSA. Users can interactively communicate and collaborate in distributing information. The utilization of social media-based e-government application has still had to increase the number of users. The Android-based service application has only been used by 0.3 percent of Tangerang residents. The additional features in Tangerang Live are expected to increase the application usage [5].

Citizens have not utilized the application of public services (e-public) and government (e-government) of Tangerang. Of the approximately 2 million people, there are only 6334 people who used this application. Communication and Information Agency of Tangerang will pursue the development of this application to other platforms (Apple) in 2018. However, first, it will focus on capturing the interest of citizens to use this application. In various meetings of Communication and Information Agency of Tangerang it continued to socialize and implement the Tangerang Live portal in which there were several applications for services and complaints, but until now the number of Tangerang Live portal users is still not optimal [5].

From the description above, there are two research questions: how far people in Tangerang as application user see the current quality of social media-based e-government services based on end users? What features should be improved so that they are following people's expectations?

Contribution and prior significance of this research were developed features of LAKSA to facilitate planning process among stakeholders to form their own need and expectation. This is very important because the e-government characteristics like e-service design quality must continually improve. This kind of changes must be accepted as prior factors to fulfill users need [6].

2. **Features in Social Media-Based E-Government.** Social media application allows users to create content and exchange information. Various classifications of social media increase the use of social media. It encourages the development of social media applications every year. Each social media has unique features that can be an attraction for users in deciding to have an account in a social media. Design feature factors that are very important for smartphone user acceptance and behavior. Acceptance was measured by perceived ease of use (PEOU) perceived usefulness (PU), and intention to use (IU) [7]. Font size and character complexity had significant effects on the legibility, while the effect of stroke width was not significant [8]. Use of smart phones and smartphone applications in South Korea resulted in sociodemography and personality predicting smartphone innovation [9].

One of the social media-based e-government developments carried out is the addition of features following people's expectations. Applications designed in accordance with the people's expectations are called EBMES (E-government Berbasis Media Sosial). Table 1 shows a mapping of social media features, functionality, features in LAKSA (Layanan Kotak Saran Anda), and features on EBMES (E-government Berbasis Media Sosial).

3. **Empirical Study of LAKSA Application Evaluation.** Adoption evaluation and acceptance of social media-based e-government application in Tangerang (LAKSA) have been carried out based on the conceptual model by applying a user-based evaluation survey. Service characteristics and design of e-government to consumer services must consider the needs of its users [28]. The pilot study was conducted in Tangerang, Indonesia in 2018.

TABLE 1. Features and functionality of social media-based e-government application

Features	Functionality of social media	Journal	LAKSA	EBMES	Activity description
Social event/ calendar system	Sharing	[10]	√	√	Explain the date for the next event, e.g., upcoming event
Communication	Conversation	[11]	√	–	Can make reciprocal relationships and communicate with other users
Information sharing	Sharing	[12]	√	–	Share information to other users
Sharing knowledge	Sharing	[13]	√	–	Share knowledge to other users
Blog	Conversation	[11,14]	√	–	Share information and give comment about information in the application
Forum	Sharing, Groups, Conversation	[15]	√	–	Discuss, ask, and share information with other users
Contact people (Interaction)	Relationships	[14]	√	–	Make calls/contact other users so that they can interact with each other
Collaboration and creation features	Sharing	[16]	–	–	Share information and can correct each other as well as add that information, e.g., wikis, content editing, tagging
Photo sharing	Sharing	[17]	√	–	Share photos to other users, so they can see and comment the photo
Video casting and sharing	Sharing	[17]	√	–	Share video to other users, so they can see and comment the video
Rate (Like/Dislike)	Reputation	[18]	√	–	Give like/dislike to some information
Teaching and learning	Conversation, Sharing	[13]	–	–	Teach other users so they can understand
Group	Relationships	[19]	–	–	A group formed based on references and consist of many users
Comment	Conversation, Reputation	[18]	√	–	Give comments about information or things provided by other users
Subscribing	Relationships	[18]	–	–	Follow other users' activities and get new information from them
Private message	Sharing, Conversation	[20]	√	–	Send private messages to other users confidentially through social media
Cloud Computing	Sharing	[11]	–	–	Information and data storage on the Internet server
Emergency warnings	Sharing	[18]	–	–	To notify emergency announcement to citizens
Status updates	Sharing, Conversation	[19]	√	–	Update user's status
Tag	Sharing	[19]	–	–	Labeling information by involving user in that information
Games, virtual worlds	Conversation, Sharing, Relationships	[20]	–	–	Play social games on social media, e.g., second life
Visible profiles	Sharing	[22]	–	–	- Make others see our data - Can explain yourself
Social bookmarking	Sharing	[22]	–	–	Recommend new story, music, video to other users, e.g., reddit
Event	Relationships, Presence	[19]	–	–	Make or attend an event on the calendar
News feed	Sharing, Conversation	[19]	√	√	Real-time news page or updates
Friend	Relationships	[19]	√	–	Establish relationships with other users in the application
Chatting	Conversation	[20]	√	–	Send messages to other users at the same time
Music or audio sharing	Sharing	[23]	–	–	Share music content to other users, e.g., jamendo.com
Voting	Conversation	[24]	–	–	Give advice, opinion, or support to people, good things, information or goods
Integrate other social media for information	Sharing	[24]	√	–	Share information from one social media to other social media
Advertisement	Sharing	[25]	–	–	Advertisements in social media by companies, organizations and others that are shown to the user of the application
Connectivity	Conversation	[24]	√	–	Can always connect at anytime and anywhere with other users through the application without having to meet face-to-face
Micro blogs	Sharing, Conversation	[26,27]	–	–	Can write information and stories in the application and can be seen by other users, e.g., Twitter

This study used the questionnaire to collect quantitative data in identifying significant factors that influence the adoption and acceptance of citizens towards social media-based e-government services. Respondents perform tasks based on direction, to identify a list of factors and requirements that affect the quality and efficiency of social media-based e-government services. The level of service quality and efficiency is determined through statistic.

3.1. **Research participants.** Research procedures in the form of questionnaires have been distributed to 349 participants with different demographic backgrounds. There are 311 respondents that completely filled the questionnaire, and 38 respondents only filled some parts. Thus, 38 questionnaires were considered invalid and were not used. 89% of respondents aged 18-24 years old, 69% of respondents were male, and 88% of respondents had a high school/vocational education level. 35% use social media for 4-6 hours per day, 53% have moderate ICT skills, and 51% use computers 1-3 hours per day for different purposes.

Based on discussion results and questionnaire results on social media-based e-government application to meet the needs of users through the results of the questionnaire, it can be concluded that people need applications that can:

- Allow user to report complaints that equipped with picture or video
- Have direct chat and comment feature that allow user to socialize with other user
- Share information from one social media to other social media
- Update user status
- Make calls/contact other users so that users can interact with each other
- Give comments about information or things shared by other users
- Give like/dislike on some information
- Share photos and videos with other users so user can see and comment
- The government can announce the date for the next event held by government, e.g., upcoming events
- The government can announce real-time important news or updates on the page

3.2. **Research procedures.** There are 72 items in the questionnaire that have been validated. All items were evaluated with six Likert scales with the first point being 'Strongly Disagree' and the sixth point being 'Strongly Agree'. The variable of information quality is assessed on differential scale (each pair represents extreme opponents rated on a scale of 1 to 6). All scores are converted to 6 Likert scales to the System Usability Scale (SUS) which has a value between 0 and 100. According to [29], SUS is used after respondents have an opportunity to use the system. In calculating SUS score, first is the number of contribution scores of each item. Each item contributes a score ranging from 0 to 5. For positive items, the score is obtained by subtracting 1 from the scale position. For negative items, the score is obtained by reducing the position of the scale from 6. The score is multiplied by 2.5 to get the overall value of the SUS [29]. Figure 1 shows further explanation about how SUS assessment is operated. $M0 > 70$ = acceptable [30].
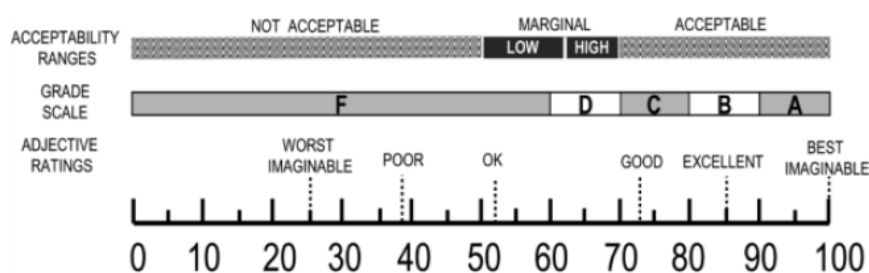

FIGURE 1. Rate and conversion scale of mean score of *system usability scale*

3.3. **Descriptive statistic.** The result of descriptive statistic from the use and the acceptance of e-government services is following the phases described in Table 2. Variables show the results of questions designed to measure whether respondents accept or reject e-government services, based on perceptions and expectations.

TABLE 2. Summary of test results using System Usability Scale (SUS)

No	Construct	#Items	*Mean (SUS)	Stand Dev (SUS)
1	Perceived of Usefulness (PU)	4	61.13	14.39
2	Perceived Ease of Use (PEU)	3	63.42	12.51
3	Navigation (N)	2	64.39	12.96
4	Accessibility (A)	4	58.87	12.24
5	Privation (PV)	3	66.15	13.48
6	Security (SC)	4	63.30	14.18
7	Design-Information Architecture (DIA)	5	63.65	11.57
8	Design-Aesthetics Value (DAV)	5	58.82	10.40
9	Innovativeness (IV)	4	59.81	13.97
10	Precision (PR)	3	57.44	12.16
11	System Integration (SI)	3	64.01	13.62
12	Participation Efficacy (PE)	2	50.95	14.84
13	Facilitating Condition (FC)	3	59.47	14.82
14	Attitude (AT)	4	62.73	12.62
15	Perceived Behavioral Control (PBC)	3	57.74	13.51
16	Intention (IT)	4	61.50	12.16
17	Trust in Government (TG)	4	62.06	18.99

The inferential statistic, such as independent sample of t-test and one-way ANOVA, is used for verification if there is a significant statistical difference in the average value of the criterion variable that is related to several demographic variables: age, sex, education, ICT skills, computer use, and Internet access. The result shows that Accessibility (A), Design-Aesthetics Value (DAV), Innovativeness (IV), Precision (PR), Participation Efficacy (PE), Facilitating Condition (FC), and Perceived Behavioral Control (PBC) are the 7 most significant demographic variables (≤ 60) in influencing the use of e-government services. Overall, this study shows some significant findings that can inform the design of social media-based e-government services in Tangerang.

4. **Discussion.** Artifacts are used with appropriate contexts to solve problems in building social media-based e-government application. Descriptive statistical test results taken from 311 respondents indicated that the application needs improvement. According to [31], this can be taken from experiments, case studies, or other things that are appropriate. In this research, the platform was built based on interviews of relevant officials and was an improvement from the artifact design in the previous stages, which was used as blueprints. This prototype is considered a simple version that is implemented from system features that want to be developed quickly and used for initial evaluation [32]. According to [33], the prototype took from the architecture, design, features, and system functions as input and was tried through prototype implementation.

The development of prototype was carried out by 3 IT practitioners who had worked at reputable software companies for 2 years. The development process takes 12 weeks. The developer provides all the improvements to artifacts. All key features have been implemented. The results of the implemented prototype phase are based on blueprints. Prototype can be used on web, Android, and iOS platforms. The user display is very

FIGURE 2. Main page of EBMES (E-government Berbasis Media Sosial) mobile application

simple, and the application that has been uploaded must use the same programming language as the prototype (Figure 2).

5. **Conclusions.** LAKSA was developed and validated by field testing held in Tangerang as the main contribution made by this research, adopting various design tools and methods in the service design process that have been tested and evaluated in Tangerang. LAKSA was developed to facilitate the involvement of stakeholders during the design process, to shape their own needs and expectations. This is important because the design characteristic of e-government service such as the quality of e-service design must be improved sustainably, and these changes must be considered as important factors to form unfulfilled user needs [30]. With this in mind, and to improve the ability of the framework, LAKSA was tested on various interaction experiences, and the results proved the validity of the framework from the use by the society and government. The results of society input indicate that from all aspects of the application, LAKSA needs to be improved. This can be seen from the result of the SUS score that all variables have a score of < 70. Future research must be testing the relationship and influence between construct variables.

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