DEVELOPMENT OF E-GOVERNMENT TRUSTWORTHINESS TO INC

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DEVELOPMENT OF E-GOVERNMENT TRUSTWORTHINESS TO INCREASE PUBLIC TRUST

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Abstract—The development of Electronic Government (e-government) has become a research topic of interest for the researchers worldwide. Various government agencies in Indonesia, mostly, have adopted e-government technology in government management. But the tendency of declining public trust in government becomes a challenge for the government to increase public trust in government. This research aimed to develop trustworthiness of e-government to increase public trust in the government. The e-government in this study was developed based on trustworthiness which has three factors: security, transparency and accountability. This study used interviews with the Head of Department of Communication and Informatics (KOMINFO) Muara Enim, staff of each of the Department of Communication and Informatics and Local Development Planning Agency (Bappeda) Muara Enim and the public (people of Muara Enim). The development of this *e-government* was using a prototype model to simplify the system design. Result from this study was an e-government prototype refers to the three indicators of trustworthiness which aims to assist the public in reporting (making a report (to the government)).

Keywords—Public Trust, Trustworthiness, E-Government, Security, Transparency, Accountability, Prototype.

I. PRELIMINARY

The current development is always followed by developments in technology, every technological developments should be followed in order to not outdated. Technology enables the data delivery and management facilities done online. Innovation in today's technology has proven to give a substantial contribution in various areas, including in the governance field. The development of information and communication technologies make complex things become simpler, including the public service sector. This online system is expected to improve the relation between the government and other parties. The sophistication of this technology can be utilized in the implementation of e-government.

E-government is a system or component of government information and communication technology to exchange information so as to improve governance[1]. E-government technology ease the government to manage the needs of delivering information from the government to the public, business partners, employees, business entities, and other institutions online. This—of course—can make public service better and easier, in various forms of service that they want.

Various government agencies in Indonesia, mostly, have adopted e-government technology in the government management. The implementation of e-government in developed countries have shown remarkable success, public service has brought great satisfaction to the public. Successful implementation of e-government in the developed countries has inspired the developing countries to follow the steps in the implementation of e-government. Muara Enim Government also do not miss (the chance) to adopt e-government in the governance and public service. All regional organizations, ranging from the regional secretariats regent's office, departments, agencies, offices and other technical institutions have implemented e-government in the management of the organization.

Some experts warn the tendency of declining public trust in the government [3]. It is a challenge for the government to increase its legitimacy, national competitiveness, and public compliance with government policies, so there is a clear need on the importance of the public trust issue[4].

Public trust is one approach to the development of trust between the citizens and the government to examine the public score of e-government[2][5]. To control the information given, the experience in using e-government with high credibility is needed/required. Credibility is related to the quality of information that can be trusted. The key to credibility identified by many the researchers are trustworthiness and expertise. Trustworthiness is described as a well-intentioned, truthful, impartial, and so on. Expertise is a combination of experience, intelligence, skills and knowledge. Both of these factors—trustworthiness and expertise—generate credibility. Therefore, public trust can be increased when the government increase the development of trustworthiness in the public.

This study focused on developing a system using a prototyping method according to the indicators of trustworthiness to build trust between the public and the government.

II. LITERATURE REVIEW

2.1. E-Government

E-governments a system or component of government information and communication technology to exchange information so as to improve governance[1]. The benefits that

can be felt with the implementation of e-government[2] include:

1. In order to improve quality of service from government to other stakeholders, especially in matters of performance effectiveness and efficiency in various fields of country life.
2. In order to increase the transparency of the control and accountability of the government administration in an order—to implement the concept of Good Corporate Governance.
3. In order to reduce the total of administrative costs, and their relation and interaction which was issued by the government for the purposes of everyday activities—significantly.

2.2. E-Government (in) Muara Enim Regency

Based on the IT strategic plan, Muara Enim in ICT implementation is included in the initial stage (Innocence). This stage is marked by the emergence of awareness of the importance of the information systems implementation, although (it has) not yet covered all of the components of government. As a result, the process of adoption and implementation of information and communication technologies in the governance is still very limited and generally not an integrated initiation. Another characteristic is the absence of adequate knowledge among the existing human resources on standards and best practices in the implementation of e-government. In the prepared ICT Masterplan, (it has been) identified some existing applications and duties analysis of the the respective departments/offices, to see whether the development of new applications is needed or not—meaning that they can simply use the existing applications. Based on the identification of the existing conditions it could be concluded as follows (a) the number of applications owned by the Regional Government of Muara Enim is still limited, so it is required to add other applications eventually, (b) the existing applications such as SIAK, e-KTP, etc., are applications from the Central Government/Department, (c) currently there are several agencies that have had applications developed by third parties. The development is based on the needs of each departments/offices and generally still operate on their own so that integration between the systems remains a constraint, (c) in relation to the maintenance of existing applications, the person in charge of the maintenance is either from each departments/offices or from outsiders with an almost balanced composition, (d) the frequency of the application use is 65% used every day, 4% used once a week, 7% used once month and the remaining 24% used based on the needs, (e) the existing application, 94% are already operating well, 4% is still under development, and the remaining 2% is not operating or idle, (f) in relation to the data owned, electronic data storage, mostly, still use a paid product (propitary) such as MS. Excel, MS SQL Server, Oracle, Access, MySQL and SQL Postgre, (g) data backup process, most of the departments/offices (64%) do backups that are not scheduled but according to the needs, 32% do backups once a week, 2% once a month, and the remaining 2% do backups four times in a year.

Based on the explanation above, it can be seen that the applications and information systems in e-government are still very small/limited and need development aimed at improving the image of the government that is transparent and trusted by the public in order to implement the good governance concept by empowering the people and other parties as government partners in the administration of public policy-making process equitable and transparent.

2.3. The Concept Of E-Government Trustworthiness

The development of trust between the public and the government is the primary dimension to examine the public score of e-government[5]. Some experts who have conducted a study about the trustworthiness of e-government (Carter[9], Belanger[10], Alzahrani[11], Kurfali[12])[6] reminded about the trust owned by the citizens who raises the initiative in the use of e-government influenced by the components of trust in the internet. The government's efforts to foster public trust some of which are making e-government services that provide security and transparency score for the public so that e-government can be applied in the government.

Information security and privacy of the citizens in e-government refers to the extent to which governments manage citizens' private information securely. This is often reflected by the individual organization's readiness to safeguard personal information of the citizens and the development of effective laws and regulations on the use of e-government. E-government transparency refers to the extent to which the organization revealed the work/occupation, decision processes and procedures.

Transparency of information is one of the supporting requirements for a government to be viewed as accountable. The linkage between accountability and transparency is when the government is able to account for all phases and results in the form of information that can be accessed easily, openly and transparently, so that there would be no “covered” impression.

Based on the explanation above, the indicators of trustworthiness can be shown in Table 2.1 below:

Table 2.1
Indicators Trustworthiness

No	Indicator	Implementation	Purpose
1.	Security	Data security	Protection of data from unauthorized authorization
2.	Transparency	Information Transparency	Disclosure of information
3.	Accountability	Accountability Systems	Accountability of accountability report that have been developed previously

III. RESEARCH METHODOLOGY

3.1. Interview

Interview is one of the technique in data collection, where it is used by the researcher(s) if they want to conduct a preliminary study to find the issues that should be investigated[7]. The researchers interviewed 10 people consisting of Head of Department of Communication and

Informatics (KOMINFO) Muara Enim, two staff of each of the Department of Communication and Informatics and Local Development Planning Agency (Bappeda) Muara Enim and the public (people of Muara Enim) to obtain preliminary information on issues or problems in Muara Enim.

3.2. Design

The steps taken in designing the e-government system based on public and government functions as the clean controller of Muara Enim Regency by using the prototype method. There are five early stages of prototype[8], as follows:

1. Communication

   The researchers communicate with the people in sub-district of Muara Enim. From the communication, the researchers get results to increase public trust by using indicators of trustworthiness.

2. Quick Plan

   Make a simple overview of the software that would be developed in accordance with communications made in the previous stage. This scheme/stage describes the forms of the user interface, use case and activity diagrams which are made as preparation to create design model prototype.

3. Modeling Design Quick

   Creating a simple prototype design as the software to be developed. Design was created using photoshop software to make it more attractive and understandable to the public. Prototype that has been created would then be submitted to the public and then they would perform specific evaluations of the prototype that was created/made.

   Feedback from the public was used to refine the specification of requirements. At the same time, (this would) allow the researchers to better understand the needs of the public.

4. Construction of Prototype

   The system that would be built according to the prototype that has met the needs of public. The system would be built in the form of a mobile application android operating system.

5. Deployment, Delivery and Feedback System

   The system that has been made/created was submitted to the public and they (the public) were asked for feedback. Feedback from the public is the answer of the question that formed by the researchers by using the indicators of trustworthiness.

IV. RESULT AND DISCUSSION

4.1. Implement Data Security Implementation in E-government

Data security is the protection of data from unauthorized authorization, modification, or destruction, and the protection of computer systems against unauthorized use. Based on the questions asked by the researchers to DISKOMINFO and BAPPEDA of Muara Enim Regency, (they) said that:

"Confidentiality of data and information from the public must be secured by the best cryptographic technique, so that the data is safe from third parties."

Therefore storage of personal data as well as reports from the public was encrypted using the merger between Rijndael cryptography algorithm and MD5 algorithm so that it becomes more secure and difficult to solve.

Implementation of data security for e-government System Thar bas developed is as follows:

1. The process of the public accounts registration

   The process is started from data registering/filling on the form provided. Then the system processes the data into encrypted data using Rijndael cryptography. Furthermore, the data is encrypted again using MD5 cryptography. After the encryption process is complete, the data encryption is put into a database and storage process is completed. The process flow can be seen in figure 4.1.

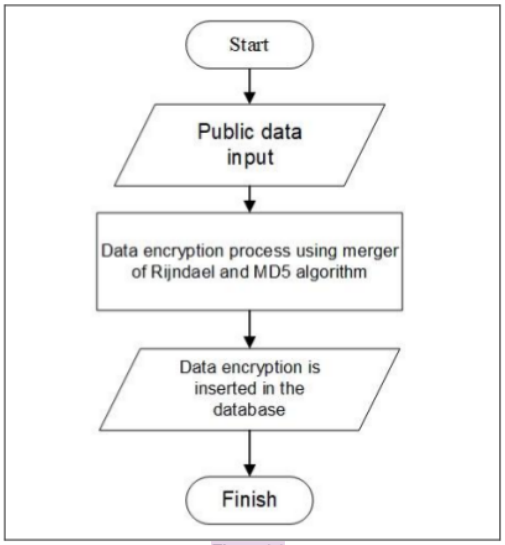

Figure 4.1
Flowchart Data Account Storage

2. Public reporting process

   The process is started by capturing pictures and filling information to be reported. Then the system retrieves the data location based on the corresponding GPS and process the data into data encrypted using Rijndael cryptography then the data in encrypted again using MD5 cryptography. After the encryption process is complete, the data encryption is put into a database and reporting process is completed. The process flow can be seen in Figure 4.2.

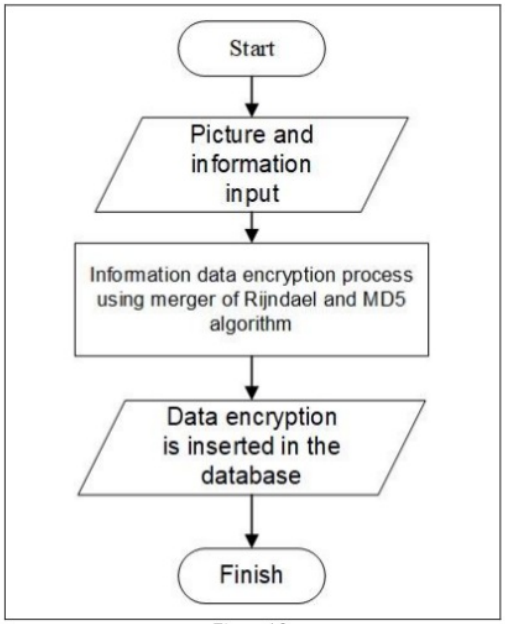

Figure 4.2
Flowchart Sending Report

4.2. Transparancy Information Implementation On E-Government

Transparancy of information is the disclosure of information. Based on the questions asked by the researchers to people of Muara Enim Regency, (they) said that:

"*The information displayed should be transparent, grading the rating from public to public. In addition, (there should be) written assessment in the system set based on the estimated time to deal with the reported location*"

Other people also said that:

"*Estimated processing time displayed on the reports from the public. For the responsiveness to public reports, administrators must respond to the report based on the reported location.*"

According to the results of the interviews conducted, the information transparency implementation for e-government system that was applied to estimate the time for responsiveness, rating system and rating from the public directly. Here are some views of transparency to the public:

1. The process of feedback report

   The process is started from the admin chooosing the report that would be addressed. Then the system will obtain data location from the public statements and GPS data location of the admin, then both locations are compared, if the admin location is currently on the reported location then system will open the camera, otherwise if admin is not on the reported location, then a notification that you are not on the location will appear. The process flow can be seen in figure 4.3.

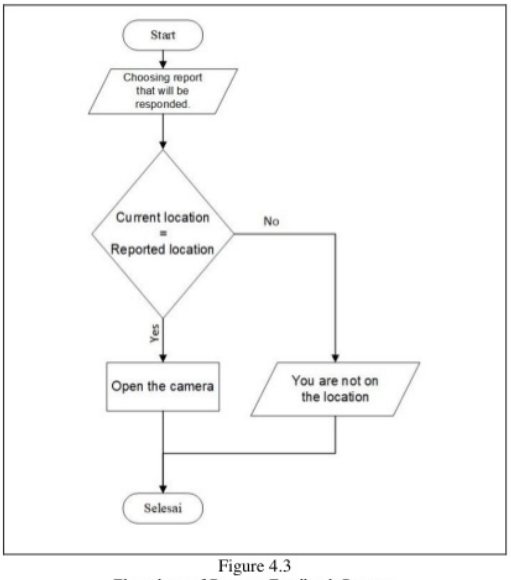

Figure 4.3
Flowchart of Reports Feedback Process

2. The estimation time process for responsiveness on the report given by the public

   The process is started from the public reporting. Then the system looks for the difference score between the present date and the date of the public report. Further, shown the estimated time for responsiveness of the public report. Here is a flowchart of the process and display of the estimated time for responsiveness to the public reports. The process flow can be seen in figure 4.4 and the display can be seen in Figure 4.5.

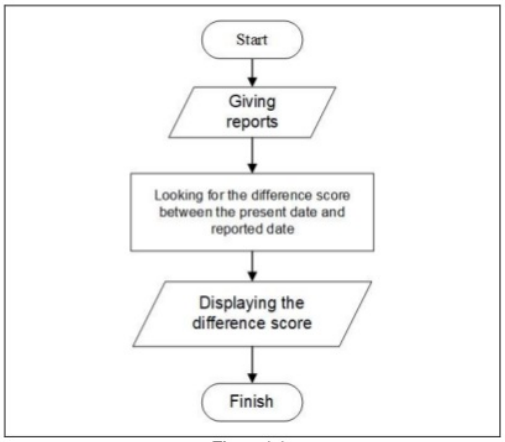

Figure 4.4
Flowchart of Estimated Response Time

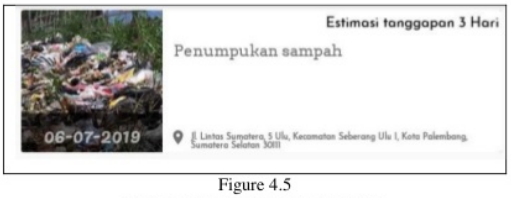

Figure 4.5
Display of Estimated Response Time

3. The process of rating accumulation area by the public

The process is started from giving the rating by the public. Then the score is accumulated with other public rating and divided to the number (of people) that give ratings based on the reported location. Furthermore, the result is displayed on the main menu of the application. Here is a flowchart and display of the rating accumulation process per are by the public. The process flow can be seen in Figure 4.6, and the display can be seen in Figure 4.7.

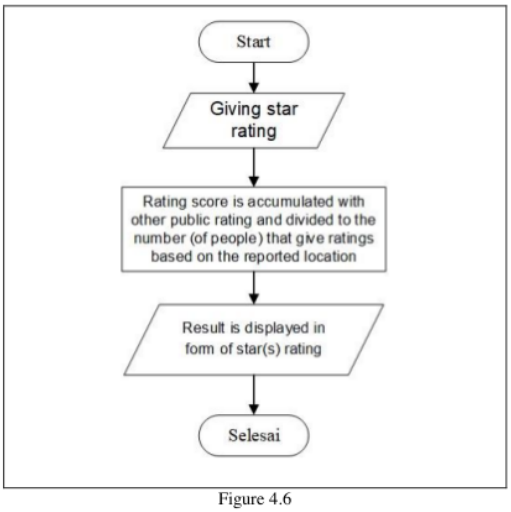

Figure 4.6
Flowchart of Public Rating

Figure 4.7
Display of Rating by the Public

4. The process rating accumulation area from the system

The process is started from the public reporting. Then the system looks for the score of the difference between the present date and the date of the public report. The difference is compared with the score that has been applied in the program, if the score of the difference is smaller equal to 12 and greater equal to 10 then the rating score is 5, or if the score of the difference is smaller equal to 9 and greater equal to 7, the rating score is 4, or if the score of the difference is smaller equal to 6 and greater equal to 4 then the rating score is 3, or if the score of the difference is smaller equal to 3 and greater equal to 1 then the rating score is 2, or if the score of the difference is smaller equal to 0 then the rating score is 1. Furthermore, the rating score is accumulated with other rating system divided by the number of all ratings based on the reported location. Furthermore, the result is displayed on the main menu of the application. Here is a flowchart and display of the rating accumulation process per area from the system. The process flow can be seen in Figure 4.8, and display can be seen in Figure 4.9.

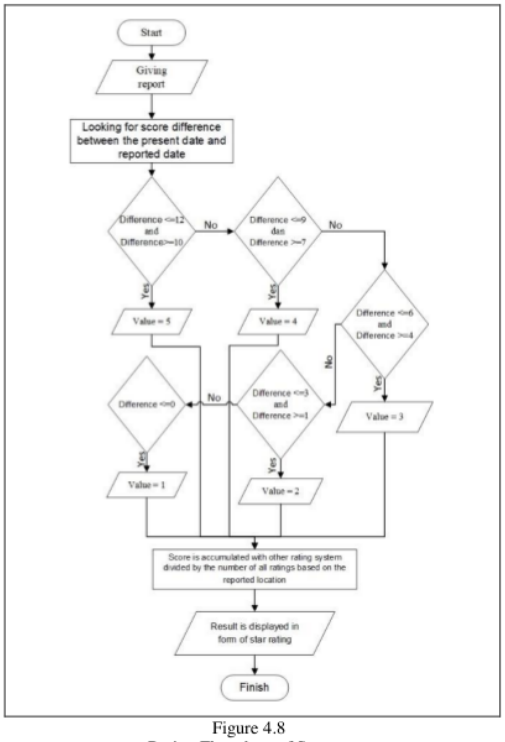

Figure 4.8
Rating Flowchart of System

Figure 4.9
Display of Rating from Systems

4.3. Implementation Of System accountability On E-Government

Accountability is the embodiment of the liability of e-government system that was developed to account for the report accountability that had been prepared previously. Based on the results of the interviews, implementation of the system accountability for *e*-government system that was developed is as follows:

a. Personal data and reports given by the public are kept confidential.
b. Admin responsiveness that is reviewed directly on the location, because the responsiveness of the public report can only be done on the reported location.
c. The availability of estimated response time.
d. The rating score from the public (is) directly accumulated and displayed based on the reported location.
e. The rating score from the system is in accordance with pre-programmed calculations provided based on the admin working time, then accumulated and displayed based on the reported location.

In line with the three indicators of trustworthiness, the display of the application can be seen in Figure 4.10

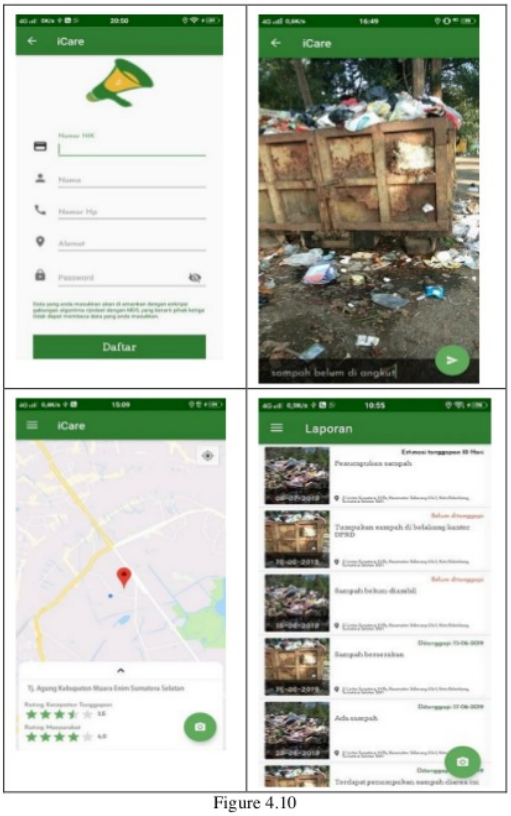

Figure 4.10
Display of Application

V. CONCLUSITON

This study presents the development of e-government service to increase trust in the government. The system was developed by reviewing previous studies collected in Muara Enim, Indonesia. The study concluded that e-government services in increasing public confidence can be enhanced through three indicator of trustworthiness, namely security, transparency and accountability.

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