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## Failure of E-Government Implementation: A Case Study of South Sulawesi

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### Abstract

*This study analyzes several factors that contribute to the failures of e-government implementation in local government of South Sulawesi, Indonesia during 1996 to 2000. ITPOSMO model clearly shows significant gaps in all aspects of the case study. Three key points are also addressed as main obstacles for further e-government development. The study ends up with recommendations as the solution for better e-government implementation in the future.*

**Keywords:** E-government; Evaluation; ITPOSMO

### 1. Introduction

Information technology has influenced all aspects of human activities. It is ranging from education, socio-economic, military to government services for citizens. The use of information technology to support governmental processes<sup>8</sup> is called electronic government. The main aim of e-government is to provide a bridge for improving communication and information access from government to citizens and vice versa.

#### 1.1. E-government

<sup>2</sup> E-government may be applied by the legislature, judiciary, or administration, in order to improve internal efficiency, the delivery of public services, or processes of democratic governance. The primary delivery models are Government-to-Citizen or Government-to-Customer (G2C), Government-to-Business (G2B) and Government-to-Government (G2G) & Government-to-Employees (G2E) [14][21].

Although these definitions look slightly different, the idea behind <sup>1</sup> various e-government definitions is similar which the new ways of listening to citizens and communities, and new ways of organizing and delivering government information. Ultimately, e-

government aims to enhance access to and delivery of government services to benefit citizens. More important, it aims to help strengthen government's drive toward effective governance and increased transparency to better manage a country's social and economic resources for development [2].

It can be seen that many countries have extensively develop e-government systems for their countries. In addition, several international organizations provide support for e-government development<sup>4</sup>; and measurement, such as OECD that launched OECD E-Government Project in 2001. The project helps governments to best exploit information and communication technologies (ICTs) to embed good governance principles and achieve public policy goals. The Project also produces reports on best practices and develops frameworks for addressing issues regarding e-government in the world [10].

Unlike developed countries that experience success stories, many developing countries experience different<sup>10</sup> situation. Although, it is argued that successful or failure of e-government programs is not depend on whether it is implemented in developed countries or developing countries. However, it is found that less developed countries has experienced more failures cases rather than developed ones in planning and implementing e-government [9].

There has been limited international research and publication concern with e-government in <sup>19</sup> Indonesia. The motivation behind this study is address the gap in the e-government evaluation literature by looking at the implementation of e-government by Indonesia.

The study discusses e-government implementation by local government of the province of South Sulawesi from its development phase until implementation phase (from 1996 to 2000). This was among few number of early e-government adoptions in Indonesia. In short, the implementation was unsuccessful due to several reasons. Critical factors that contribute the failure will be addressed using existing e-government evaluation framework.

## 1.2. Case study: E-government of South Sulawesi

Indonesia has approximately 17,000 islands with 5 big islands among the others. Sulawesi island is one of the big five islands in the country which is located in the center of Indonesia (others are Sumatera, Jawa, Kalimantan and Papua). Indonesia has 33 provinces. Six provinces are located in Sulawesi island, and South Sulawesi is the oldest and largest area in this island (figure 1).



Figure 1. Republic of Indonesia

In terms of information technology, this province is one of few local governments in the country that adopted the technology in the mid 1990s. It was addressed with the development of local area network in several government offices in the city of Makassar and also E-Government initiative which was promoted in 1996.

Before discussing more about the projects, it is important to note that during the period, Internet awareness were only shown in universities and national scale companies in the province of South Sulawesi. Therefore, it is obvious that most people did not have clear picture about e-government and its benefits [7][8].

At the earlier stage of the project, top management of both local government and national telecommunication company were involved. This was followed by an agreement to spend a relatively huge amount of government budget into the program. The program was planned and developed, then maintained by national telecommunication company in the period of 3 years as shown in Table 1 [6].

In general, the program was divided into two sub programs, which are official local government web site and local government information systems namely SIMTAP.

Table 1. Brief planning of e-government project

Kegiatan	1996	1997	1998
Desain Web Pemda			
Desain SIMTAP			

According to the planning, the official web site of local government should be online in the beginning of 1997. However, due to unconfirmed reasons it was then launched in the end of 1997.

Unfortunately, after six months online, the content of official web site is no longer well updated and maintained. Then, at the end of the third year (1998), the website was not maintained anymore. This can be addressed by unavailability of updated news since August 1998.

During this period, SIMTAP (local government information systems) was also coded and developed in Jakarta, the capital city of Indonesia, and was not in South Sulawesi. Unfortunately, there was no clear report on the progress of SIMTAP applications until the end of 1998.

Then, in July 1999, SIMTAP applications was finished and implemented in the main office of local government. However, the software had not been used anymore in 2001 due to unclear reasons [6].

Ironically, there was no brief explanation regarding the phenomenon by local government as well as by the national telecommunication company who developed the systems.

## 2. Literature review

This part describes relevant academic papers related to e-government evaluation which is worth for the case study and several evaluation frameworks specifically designed for e-government.

### 2.1. E-government evaluation

Basically, e-government application is a variant of information systems. Information system is a big umbrella of many specific software based applications with business in mind. It is widely argued that evaluating an information systems projects whether it has achieved its goals or not is not an easy matter [11][21]. Information systems evaluation can be quite tricky and often suffer from subjective interest [3][17]. The main problem in such evaluation is unavailability of specific IS assessment method that can be applied to all situations [18].

In addition to this problem, Heeks in [3] states that subjective evaluation can be depend on circumstances such as people, time, and environment. Therefore, it is

obvious that evaluation is not a simple process, but it requires broader perspectives as well as integrated knowledge of what is being observed. In this paper, evaluation refers to a process to observe and measure the ability of the system to (*e-government*) to achieve its predefined objectives.

In addition it is also stated that most implementations of e-government in developing countries fail, with 35% being classified as total failures due to it was not implemented or was implemented but immediately abandoned, and about 50% of them are considered as partial failures due to major goals were not attained and/or there were undesirable outcomes [4].

It is therefore reasonable to say there are serious problems facing by developing countries in implementing e-government in their region. Unfortunately, many fail to achieve e-government goals such as information media, transparency, accountability, and effective. This is a disturbing fact, especially as developing countries have a limited number of resources available to them, and cannot afford to wastefully spend large amounts of money typical of such projects.

## 2.1. E-government evaluation frameworks

To guide comprehensive analysis of the case, usually it needs a suitable evaluation framework. There are several evaluation frameworks available for measure the quality of e-government implementation.

The first framework is suggested by Heeks who introduces gap framework which is a useful approach to help analyst to study several variables or aspects that closely affecting e-government implementation. The framework illustrates the gap between reality and design of e-government application in 7 (seven) aspects, which are information, technology, process, objectives and value, staffing and skills, management structures and other resources. This framework is also widely known as ITPOSO model.

ITPOSMO model describes gaps between design process and reality of e-government implementations in seven perspectives. The level of gap is vary depend on difference exist between two points (design process and reality). As can be seen in figure 2, it is clearly understandable that the more gaps found, the more likely failure addressed to the e-government project. In other words, if there is no existing gap between design process and reality, the e-government project is implemented successfully.

Therefore, the framework is widely argued as a comprehensive approach in illustrating inequality

between the design of e-government systems and its actual implementations [3][16][21].

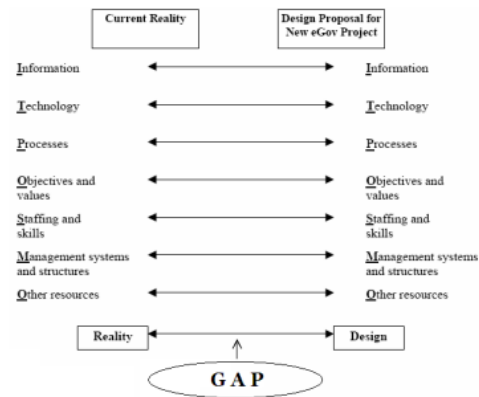


Figure 2. ITPOSMO model

In addition, this framework is inspired by [3] to identify archetypes of situations where design reality gaps are common. Then [4] is introduced as triangle gap approach as follows:

1. *Hard-Soft Gaps*, which is the difference between actual technology (hard) and the reality of social factor such as people, culture and politics in which the systems operates (soft).
2. *Private-Public Gaps*, which is the existing gap between systems design for the private sectors and applications for public sectors one. In short, information systems between these organizations do not match each other.
3. *Country Context Gaps*, is existing gap when implementing e-government systems for both developed and developing countries.

The triangle gap helps in precisely understanding what aspects mostly contribute to the failure of e-government systems. As a result, this would help to draw appropriate solutions to handle failure of e-government systems.

The second framework is proposed by Banerjee and Chau in 2004 [11]. They introduced e-government convergence capabilities framework. It is argued that developed countries have already enjoyed information in the governance-citizen cooperation in an open, transparent environment through convergence of information and services. However, developing economies, especially poor ones, lag far behind their more progressive counterparts. In addition, they underline some aspects at which some developing countries could collaborate for creating e-government convergence.

Due to its focus on well established e-government systems, it is not suitable as evaluation tools in this case.

The third framework is proposed by Makedon, et.al [12] who proposed a method to improve secure electronic information sharing framework among government agencies. As can be seen from figure 3, the framework is called SCENS: Secure Content Exchange Negotiation System, that provide guidelines for the inclusion of electronic records management and also provide a strategic framework and a set of milestones to move towards full electronic documents at all government agencies. This framework utilizes metadata by employing XML technology for determining trust among source and destination in communications of two or more agents. This can help reducing security threats that possibly occurs in e-government applications.

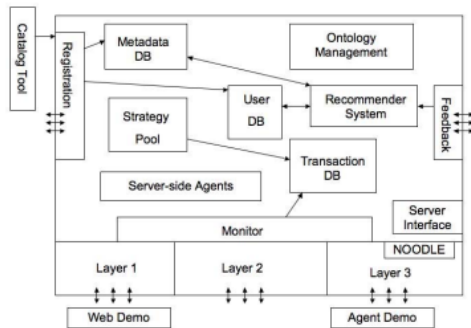


Figure 3. SCEN model

The last framework related to this study is introduced by Carbo and Williams [19]. The framework is center on e-government evaluation based metrics. They found that lacks of e-government evaluation metrics in existing literature of e-government is responsible for inappropriate evaluation in many countries. The framework employs a specific metric model to support evaluation of e-government implementation more accurately with exact numbers. It is affirmed that using the metric based framework analyst able to precisely evaluate e-government success and failures in quantitatively sounds which is difficult to do in the past.

However, the framework is only appropriate for evaluating mature and complex e-government systems which is also not well applicable in this case.

### 3. Hypotheses

In order to guide further investigation on the case study, the author develops several assumptions in the form of hypotheses. The hypotheses will be confirmed and tested based upon actual findings on the following chapters.

Hypothesis 1. : There is no guarantee that the earlier local governments have introduced e-government, the more they will successfully implement it.

Hypothesis 2. : All categories of ITPOSMO model applied to the case study will show significant gaps.

Hypothesis 3. : The main obstacles of e-government implementation in the beginning phase are coming from government side rather than citizen one.

### 4. Data collection and analysis

#### 4.1. Data source

In order to perform appropriate analysis on this object, secondary data is chosen [6][15]. Data is taken from BangKIT Institute, a private research institution which mainly focuses on social and economic issues located in Makassar, South Sulawesi. It was based on a survey conducted during 2001 to 2002 focusing e-Government implementation in South Sulawesi.

In brief, the survey was divided into 4 (four) sections as follows:

- Computer and networking infrastructures
- Computer related staff skills
- e-Government development
- e-Government implementation

Section a of the survey which consist of ten questions is designed to find out state of the art of information technology at government offices. This includes hardware and software, local area network (LAN).

Section b of the survey is designed to measure level of computer skills among government employees. In addition, it also counted number of employees who specifically use computers daily. There are 14 questions available for this section.

Section c which has 18 questions deals with e-Government development phase. The main objective of this survey is to understanding government employees' understanding of what is e-Government and how it

would benefit them in performing public services. Furthermore, it explores employees' attitude to the development model used by the developer. This mainly focused on user behavior of new information systems.

Section d which consists of 10 questions explores how the technology was implemented and why then failed. User perspectives were gained which is useful to understand government employees' appreciations in this phase.

The survey which total of 52 questions distributed to 160 public servants at eight government offices who are considered has experiences with the e-government project. However, there were only 67 respondents replied the questionnaires.

Based on survey result, there are several findings which are closely inline with the objectives of this study.

## 4.2. Survey result

As noted before, there were only 41,8% survey responses. Respondents categorized into 38% female and 62% male, by which 10% of them are at the age of 40 and more, 78% are between 30 to 40 years old, and rest of them below 30 years. The description in this section will be made based on 4 categories of survey.

In terms of computer and networking infrastructures (first section), inappropriate proportion of computer to employees was found. Number of computer in each office was only around 25% to 45% to the amount of employees. In average, there was 1 computer per 35 employees. In addition to this section, only 60% of government offices have been connected through local area network using Microsoft Windows NT. All workstations use Microsoft Windows 95 as operating systems and government staffs mainly use Microsoft Office (particularly Word and Excel).

Subsequently, for second section, it was found that computer related staff skills among government employees are very poor. Only less than 40% of respondents have basic e-literacy (able to use computer for writing document), about 12% of them can use computer to perform calculation, and approximately 10% of respondents have basic understanding of the Internet, particularly for searching information and electronic mail.

The 18 questions of third section which are related to e-Government development phase reveal interesting findings. Only 3 respondents have adequate knowledge in of e-government and understanding on how it useful in performing public services more efficiently and effectively. Additionally, it is also found that neither top management of government nor e-government

developer engaged any government staffs in all stages of the project.

Finally, the last section shows that all respondent agree that the e-government implementation was failed and there was no clear benefit of the program.

## 4.3. Analysis

Among several evaluation frameworks for e-government, ITPOSMO [3] is preferred, based on several reasons. Firstly, it is based on actual cases from developing countries. Secondly, it represents integrated aspects for evaluating e-government from initiation to implementation phase. Then the third reason is it clearly defines level of gap in various point of views. Finally, ITPOSMO approach is easy to understand even for layman.

In fact, all aspect of ITPOSMO Framework can be associated with the case being studied. The analysis of the case study will be based on 7 seven gaps of ITPOSMO Model with emphasize on the level of each gap. Then, to easily understand the level of each gap, three labels will be used, namely "good", "medium", and "poor".

### a. Information gap

This gap exists since the project only involved top management of local government and national telecommunication company. In this case, a wide information gap occurred due to only limited parties deal with the information from the beginning to the end of the project. Others have unclear information regarding what is e-government, why it is important, how it would help government services to citizens.

In addition, survey shows that even employees who in charge for the e-government implementation never informed and moreover involved at the early stage of systems development. They only participated in a basic training conducted by the developer at the last stage of e-government project period in 2000.

### b. Technology gap

Survey shows that there was a crucial hardware problem during the e-government implementation. It is reported that existing clients enabled to run SIMTAP application appropriately due to lack of memory and processor of each computer.

It is stated that the developer did not consider existing hardware capacity at which the program will actually run. As noted earlier the whole SIMTAP development in Jakarta, not in the object location.

Moreover, although there have been approaches to expand computer networks from LAN into WAN in 5 (five) government offices, it still lack in supporting SIMTAP and local government web site. As a result, SIMTAP could only be accessed from 8 of 15

government offices, while the web server should be moved to Jakarta at the national telecommunication office. Lacks in such basic infrastructures is often cited as responsible to failure e-government project in developing countries.

#### *c. Process gap*

Survey shows that there was a serious process gap exists during the project. Although it was argued that it had a clear project plan, there is no staff who deal with e-government implementation knows about objective statements of the systems. Neither has the picture of how the systems would benefits citizens and also how e-government simplifies their work.

The actual process of e-government project was only understood both local government and the company. In addition, e-government is mainly considered from business rather than public service perspective. It is expected to be a complex process of managerial, social, psychology and many other aspects [16].

#### *d. Objectives and value gaps*

Aligned with process gap, survey result clearly shows that there was unclear understanding among government employees of the aims of e-government and the value it carries. E-government is found only as a slogan rather than a solution. It is asserted by Jaeger and Thomson [9] that successful e-government implementation is difficult to achieve without strong government promotions.

#### *e. Staffing and skills gaps*

Gap in this area is very wide. As noted in survey result, government employees were poorly educated. Less than 10% of all respondents has appropriate skills in basic computer. Although computer and its application have been introduced several years before the project began, only few of them have appropriate computer literacy. This is mainly happened in developing countries where lack of qualified staff and training occurred which is affirmed as a huge obstacle in successfully delivering e-government [5].

#### *f. Management structures gaps*

Although this section was not addressed in the survey, it is also important to note that this is also actually occurred in the observed object. Delivering a new approach in government bodies without new management structures will be considered as additional workload by particular public servant. In addition to this, even though there has been a new structure in government who responsible in e-government progress, without adequate education, there is no guarantee that it will bring to succeed.

#### *g. Other resources gaps*

This section indicates lack of user acceptance to new technology. User behavior in e-government adoption should be considered as a significant issue. It

is obvious from survey that government staffs seem do not support e-government implementation due to unwillingness to adapt with new business process. In addition, they do not want to change their working flow which already enjoyed at the moment.

This is occurred due to incorrect development process of the systems. Whereas, it is highly recommended that during system development life cycle, user participation should be encouraged to gain better understanding between user and developer regarding the software. User participation is useful to avoid misperception and misunderstanding at the implementation phase of the system.

Although, there was a training conducted to them by the developer, misunderstanding and reluctant of users could not be avoided due to the systems is claimed totally different to their daily working flows. Consequently, it is impossible to expect e-government would benefit public if even government employees do not clearly understand how use the systems.

The next matrix in table 2, clearly summaries the level of seven gaps as mentioned above.

**Table 2.** ITPOSMO matrix

	Good	Medium	Poor
Information			
Technology			
Process			
Objectives			
Staffing/Skills			
Management			
Others			

Based on the ITPOSMO gap model, it can be stated that e-government implementation in the province of South Sulawesi was failed since almost all aspects addressed in the gap model show significant gaps except Information and Objectives sides. These facts clearly evidence our basic assumption of the first and the second hypotheses.

Therefore, it is essential to provide recommendations for better implementation in the future. However, there are several obstacles arise that should be overcome first before implementing the recommendations.

## **4.4. Obstacles**

Although all weaknesses of this case could be analyzed appropriately using ITPOSMO model, there

is no guarantee that recommendations made in this study can be well implemented in this case. There are some obstacles exist which make it somewhat difficult to recover the failures in the near future.

The main obstacle is digital divide that extremely exists both on government side as well as public side. High level of lack e-literacy is undeniable and there has been no research to measure their awareness of e-government.

The second obstacle is related to employee behavior. It is found that without significant incentives, we could not expect to government employees to improve public service quality. This was the difficult situation that occurred in the implementation phase of the e-government project which is predicted will keep occur in the future. The role of leadership is required to reconstruct paradigm and behavior among government employees.

Finally, software related project is intangible project until recently in the country. It means that there is no standard to follow to precisely determine the value of such projects. Hence, it can be assumed that IT related projects seem to be exploited by particular parties in government and business agencies. As a result, as long as business remains the main objectives of government management, e-government will never achieve the goal in providing better public services to citizens.

In short, these three obstacles obviously proof that our last hypothesis is also true, since the survey obviously reveals the failure of the project mainly came from local government side rather than citizens one.

## 5. Recommendations

In order to deal with the situation, several recommendations are offered mainly supported by international standard of e-government for developing countries by InfoDev and Center for Democracy and Technology and other selected research papers.

First of all, any local governments in Indonesia should follow national e-government framework introduced by Ministry of Information of Communication, Republic of Indonesia in 2005. Since mainly most local government processes are based on central government rules, they should share many aspects in government processes. Therefore, the main aim of such national e-government framework is to express commitment and knowledgeable leadership for integrated governments' resources in the future [13].

Then, it is recommended for local government to start with smaller project (based on national framework) rather than an ambitious one. Simple project of e-government plan is suitable for local

government such as South Sulawesi which has limited resources and human resource skills and also helping them for performing innovative organizational structures. This would help in educating government employees to adapt smoothly with the systems and organizational changes gradually [9][13]. This is strongly supported by the survey that the huge amount of government budget does not guarantee the result of e-government project.

Thirdly, top and middle leadership of local government should have clear and correct understanding about the main purposes of e-government. Survey result clearly shows how poor their understanding about the essence of e-government which only 3 of total respondents. It is highly recommended to view e-government from public services point of view and not from business perspectives which could lead to abusing government budget. Several key objectives of e-government are noted by Gichoya in [16] as critical factors such as utilizing information technology to enhance citizens' access to government information, fostering transparency, eliminating distance and divides, and even empowering people to participate in the political processes.

Fourthly, e-government development is useless without adequate e-literacy among government staffs and citizens. Survey result strongly underlines limited e-literacy capabilities among government employees (less than 40 percent). Therefore, it is recommended to government for stimulating such computer training to government staffs who will deal with electronic services to public. In supporting this effort, local academic institutions should be involved since they have sufficient human resources [7].

Next, government is recommended to actively involve key stakeholders outside of government, such as academia, business associations, local media, and NGOs. This is considered very important as they can contribute and share based on different point of views which is essential in shaping e-government with user-centric model. Through such process, misunderstanding and mismatch of e-government systems can be avoided significantly.

The sixth recommendation is related to infrastructures. Gradual improvement of IT infrastructures for supporting e-government systems should be highly considered. This is actually difficult in terms of hardware, since most local government's IT infrastructure are legacy hardware (approximately 60%). However, from software perspective, it is recommended to use low cost software such as open source solutions rather than employing high cost one. Although open source software sometimes comes with some limitations such as lacks technical supports, there several ways could be introduced to solve it such as involving academics and research centers in

the region to develop and maintain the systems as a kind research. As a result, this would promise considerable reduce in cost and particularly save government budget [8].

Finally, evaluation of actual e-government progress is the last recommendation. It should be done periodically, not only once. Evaluation helps to understand level of achievement for any activities [4]. This will give a clear picture of success and failure of e-government for further implementation.

For this purpose, clearly defined master plan with specific objectives as mentioned previously in the third point of these recommendations can be used to develop periodic evaluation as well as the use of sophisticated evaluation metrics.

## 6. Conclusion

In short, all three hypotheses are well confirmed. ITPOSMO model clearly shows that one of the earliest e-government implementation in Indonesia conducted the local government of South Sulawesi was failed. It All seven aspects of ITPOSMO model show very wide gaps (poor), except information and objectives ones (medium). The main obstacles for better e-government implementation mainly came from government side. The study ends with seven recommendations offered to the local government of South Sulawesi for better e-government implementation in the future.

Future research is suggested in the area of e-government planning and policies and also solution for public private partnership for sustainable e-government implementations in developing countries.

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