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EVALUATION OF E-GOVERNMENT INITIATIVES IN DEVELOPING COUNTRIES: AN ITPOSMO APPROACH

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Abstract: Previous literatures have found that many e-government initiatives in developing countries failed to achieve its objectives. In order to deeply understand what factors contributed to the failure of early e-government initiaves in developing countries, this study chooses such municipality e-government project of South Sulawesi in Indonesia that failed to fulfill its promise. Using ITPOSMO approach this study reveals actual gaps that responsible to the failure. In addition, several key performance indicators for better e-government implementation are also addressed for further e-government development. Finally, the study ends up with recommendations for policy makers for shaping the future of e-government in the local municipality government.

Key words: E-Government, Developing country, ITPOSMO, Evaluation.

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 services 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.

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 (G2C), Government to Business (G2B) and Government to Government (G2G) (Dittrich, et.al, 2003).

Although it has various forms definitions and look slightly different, the main concept or idea behind them is that to provide effective ways of communication, efficient method 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 all citizens (Ndou, 2004).

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 (Hee, 2004).

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 and easurement, such as OECD that launched OECD E- Government Project in 2001. The project helps governments to bestexploit 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 (CDT, 2002).

Unlike developed countries that experience success stories, many developing countries experience different 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 (Jaeger and Thomson, 2003).

There has been limited international research and publication concern with e-government in 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 municipality of Makassar in the province of South Sulawesi Indonesia from during its very early development phase (between 1996 and 2000). This initiative 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.

E-GOVERNMENT INITIATIVES

In this section, we briefly describe the history behind the e-government initiatives in the chosen object.

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).
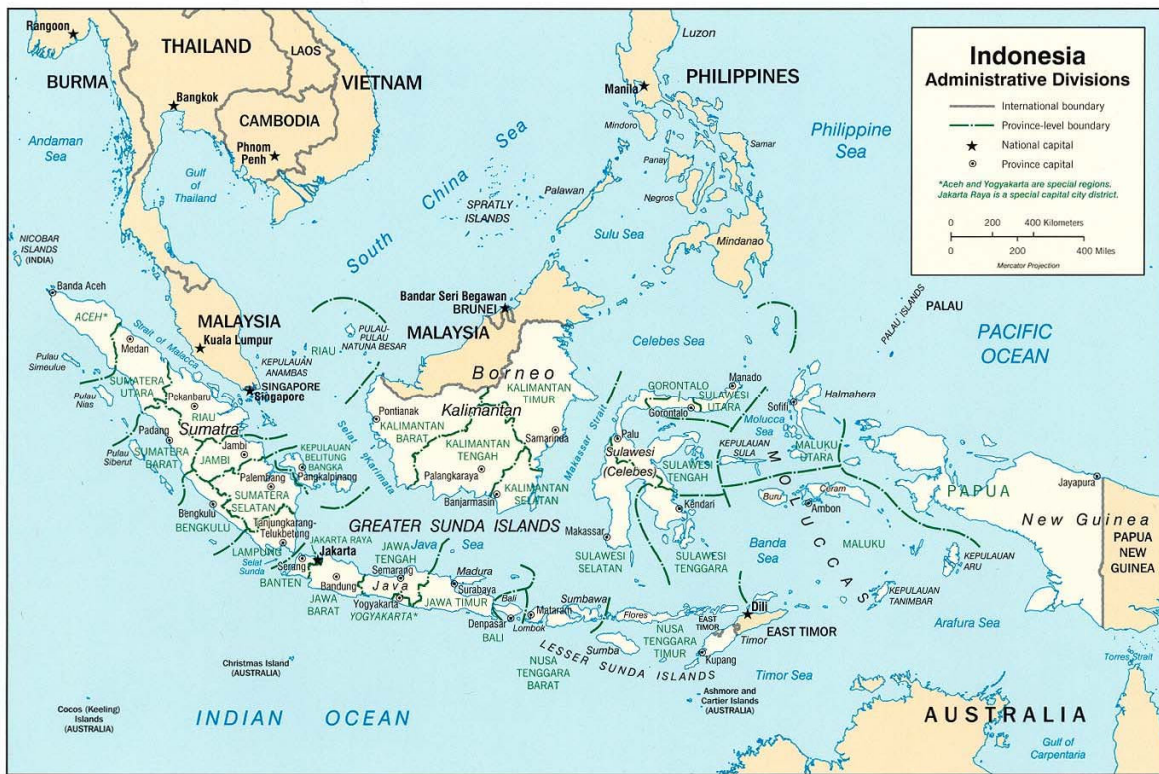
Figure 1. The map of Republic of Indonesia.

In terms of information technology, this province is one of few municipality 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.

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.

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. Proposed e-government plan.

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.

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

III. ITPOSMO : A MODEL FOR E-GOVERNMENT ANALYSES

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 (Banerjee and Chau, 2004). Information systems evaluation can be quite tricky and often suffer from subjective interest (Delone and McLean, 1992; Heeks, 2002). The main problem in such evaluation is unavailability of specific IS assessment method that can be applied to all situations (Khalifa, et.al, 2004).

In addition to this problem, Hee (2003) 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 almost all early implementations of e-government in developing countries failed, while 35% being classified as total failures due to it was not implemented or was implemented but immediately abandoned, and approximately 50% of them are considered as partial failures due

to major goals were not attained and/or there were undesirable outcomes (Heeks, 2004; Dada, 2006).

It is therefore reasonable to say there are serious problems faced by developing countries in e-government in their region. Unfortunately, many of them failed 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 spending large amounts of funding typical of such projects (Dada, 2006).

Therefore it is reasonable to question the fact by applying appropriate model to analyse it. In this paper, the author proposes the applicability of a model 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 which is known as ITPOSMO

Model 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.

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 (Heeks, 2003).
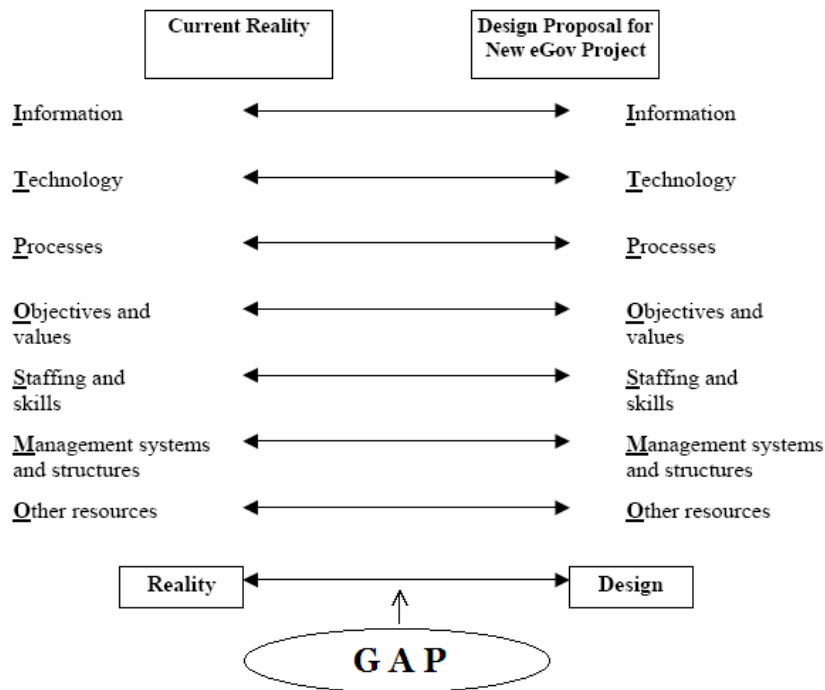

Figure 2. The ITPOSMO Model.

Basically, this framework was firstly discussed in (Heeks, 2002) to identify archetypes of situations where design reality

gaps are common. Then in (Heeks, 2004) it is introduced as triangle gaps 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 meaning of each factor of ITPOSMO model is presented as follows.

"I" means Information types required in communication between government and the stakeholder. "T" means The technology used in the agency (comparing the requirements contained within the design of the e-government application vs. the real situation now). "P" means the work processes undertaken in the agency (comparing the processes needed for successful implementation of the e-government application vs. the real situation now). "O" means the objectives and values that key stakeholders need for successful implementation of the e-government application vs. their current real objectives and values. "S" means the staffing numbers and skill levels/types required in/by the agency (comparing the requirements for successful implementation of the e-government application vs. the real situation now). "M" means the management systems and structures required in the agency (comparing the requirements for successful implementation of the e-government application vs. the real situation now) and finaly "O" involves the time and money required to successfully implement and operate the new application compared with the time and money really available now.

In presenting the results, Heeks (2004) introduce the rating numbers for all seven ITPOSMO dimensions and interpret them according to the following values.

a. Value between 57 – 70 means the e-government project will almost certainly fail unless action is taken to close design-reality gaps.

b. Value between 43 – 56 means the e-government project may well fail unless action is taken to close design-reality gaps.

c. Value between 29 – 42 means the e-government might fail totally, or might well be a partial failure unless action is taken to close design-reality gaps.

d. Value between 15 – 28 means the e-government project might be a partial failure unless action is taken to close design-reality gaps.

e. Value between 0 – 14 means the e-government project well succeed.

In addition, the scores for each individual dimension can be presented using a table or a diagram arranged to show the gaps in size order from largest to smallest (Heeks, 2004).

Considering the research scope, three hypotheses are proposed to be tested in this study.

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.

DATA ANALYSIS

In brief, the survey is required to be delivered and it consists of 4 (four) sections as follows:

a. Computer and networking infrastructures

b. Computer related staff skills

c. e-Government development

d. 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.

Government officers are the intended participant of this survey. Approximately 160 public servants are targeted particularly those who have experiences with the e-government project. Response rate of 40% is acceptable in this study.

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

In this study, ITPOSMO quatitative analysis is simplified by three conditions, "Good", "Medium", and "Poor". Good represents 0-14 score, while "Medium" represents 15-42 and Poor represents 43-70 which a simlification of Heeks approach.

The following are deep analysis derived from on survey constructed.

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. Lacks in such basic infrastructures is often cited as responsible to failure e-government project in developing countries.

c. Process gap

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.

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 then 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 (Ndou, 2004).

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. The issue occurs 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 also center 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.

Based on the ITPOSMO gap model, it can be stated that early e-government implementation (during 1996-2000) by the municipality of Makassar 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 proove the first and the second hypotheses while the third

hypothesis is not supported.

POLICY RECOMMENDATION

Concerning analyses discussed above, several policy recommendation are derived in order to properly deal with the issue of ITPOSMO gap.

First of all, there should be an official e-government framework used by any municipalities in developing their e-government websites. Therefore, the main aim of such national e-government framework is to express commitment and knowledgeable leadership for integrated governments' resources in the future (Krishna and Walsham ,2005).

Then, it is also 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. This is strongly supported by the fact 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. It is evidence that many of government management have 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 (2005) 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. 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 (Khalifa, et.al, 2004).

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.

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. This will give a clear picture of success and failure of e-government for further implementation.

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