Understanding Strategy For E-Government Development Using Actor-Network Theory

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Abstract - **The potential benefits of e-government are not easily manifested due to its high implementation failures. These failures partly come from inappropriate assumptions used to conceptualize its nature and implement it as a socio-technical entity. Using two cases of e-government development in a developing country, the paper argues that Actor Network Theory (ANT) offers framework and ontological foundations to formulate strategy for developing e-government. The strategy flows from its four moments of translation framework and its assumption about the relationship of social and technical entity, agency, and power. The proposed strategy is directed to help decision and policy makers as well as developers of e-government to better implement it.**

Keywords- e-government; Actor Network Theory; strategy; developing country.

I. INTRODUCTION

Since 85 % e-government initiative in developing countries failed [16] and one source of these failures relies on the realigning process and power structure then e-government development needs strategy to manage its heavy reengineering process. This process requires the establishment of an appropriate and context tailored strategy. As Tan et al. [34] believe that the core of e-government strategy involves a fundamental realignment of development objectives with the needs of primary stakeholders, the development of e-government must start with the stakeholder management: identifying who stakeholders are; understanding stakeholder interests; and working out how to align stakeholder interests [35].

This approach bring consequence that e-government operates in the context of interconnected relationships among various stakeholders that form a networks. From a strategic viewpoint, these relationships affect the nature and the outcome of the systems actions and are their potential sources of efficiency and effectiveness. Therefore strategy for e-government development is then about 'identifying the scope for action, within existing and potential relationships and about operating effectively with others within the internal and external constraints that limit that scope' [15]. Further, Johanson and Mattsson [20] argue that 'strategic action' in the literature on strategy usually concerns efforts by one actor to influence relationships with an outer environment.

In this respect, Actor-network Theory (ANT) seems to offer an appropriate framework for strategizing e-government for at least two reasons. First, by perceiving e-government as a network of diverse actors or stakeholders, ANT provides framework and vocabulary on how to identify actors and their relationship that affect its performance. Second, ANT offers mechanism to understand why a network becomes stable or unstable. This mechanism is very important since it can be used by actor to influence relationship within the network. Therefore it relates to strategic action as notified by Johanson and Mattsson [20].

One relevant question is then how effective can ANT be used to develop strategy for e-government development. Answering this question will have significant contribution as research on e-government strategy was developed from resource based view in which its formulation pays less attention to the process of reengineering (e.g. [9]). In addition, strategizing e-government using ANT may result context-sensitive strategy as ANT holds assumption on the nature and context of the relationship among actors within network. This assumption in turn will offer more appropriate conception of agency, power, and action that are heavily involved in e-government development.

II. BRIEF LITERATURE REVIEW

A. E-government development Strategy

The most common proposed strategy to develop e-government is to focus on assuring bureaucratic reform. Since such reform is difficult then it should be carried out by significantly incorporating variables that are within the social and political context [27]. In other words, developing e-government should consider their respective characteristics and conditions [9]. For example, "*self-reliance*" has been identified to be an effective strategy in much successful e-government development in India [26]. Another strategy is the stakeholder participation since understanding between the roles of government agencies and its citizen created a more profound impact than technology [1], [2].

Strategy is systematic and long-term approaches to problems [13]. It is based on the knowledge of the field and the available relevant resources. This made most formulated strategies for developing e-government are based on resource based view that focus on requiring hard as well as

soft resources such as ICT infrastructures, legal provisions, user readiness, and financial support. This strategy formulation approach might not be appropriate since the core of e-government development is to make sure that all those resources interact positively toward its objective [17]. Therefore, it should be directed to manage the relationship all involved elements rather than solely providing them.

B. Theory on Strategy Formulation

There are many ways in defining strategy but it is always about conscious set of guidelines that determines decisions into the future [24]. In management theory, Chandler [8] defines strategy as "the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals". Based on this definition, strategy has three main properties, (a) explicit, (b) developed consciously and purposefully, and (c) made in advance of the specific decision to which it applies. In other word, strategy is simply a "plan". For Mintzberg [24], strategy in general and realized strategy in particular, is defined as a pattern in a stream of decision. When a sequence of decision in some area exhibits a consistency over time, a strategy will be considered to have formed.

Another approach for strategy formulation [25] suggests the use of constructivist methodology. Constructivist perspective offers some benefits compared to using realist perspective. First, it will facilitate a more context-driven strategy formulation. It is especially important to the diverse context of e-government setting and environment. Second, since constructivist methodology works at the level of assumption rather than at the level of technique, it facilitates researcher to bring those assumptions into the foreground of the research where other perspective are silent on. It will make strategy formulation localize the result that in turn will help researcher and practitioner avoid overgeneralization [25].

From constructivist perspective, ANT (Actor Network Theory) perhaps provides an appropriate foundation for formulating e-government strategy development. ANT is classified to embrace constructivism [5], therefore there is no inconsumable epistemology to use ANT for strategizing e-government from constructivist perspective. As ANT deals with some sociological aspect of the phenomena and it has relativistic epistemology then it could produce belief of improved "truth" or competence in reference [7].

C. ANT and Strategy Formation

Some specific characteristics of ANT need to be mentioned to lay foundation in using it as a framework for strategy development.

a) ANT perceives social reality as a complex network of relationship that always involves human and non-human entities [23].

b) It holds radical assumption that neither human nor non-human should be given a privilege in determining the stability of certain social reality.

c) It rejects essentialism and instead embraces "relational" point of view by stating that both human and non-human entities are just an effect or outcome of a network (in relation to one another) [10].

d) ANT refers all entities (human or non-human) involved in this complex network of heterogeneous element as "actors" or "actor-network" [22].

e) It labels a stable actor-network as a black box so its analysis may focus only on its inputs and outputs. The black box could be opened up and analyzed as an actor-network by tracing all its relevant actors and their relationship [24].

In opening up a "black box" of reality, ANT uses the notion of translation [6] to make sense why certain social reality finally becomes stable/unstable over time. Translation could be described as a process in which actor(s) mobilizes resources or another actor-network to form allies that result in a stabilized actor-network. The translation process involves four moments (phases), namely:

a) *Problematization.* In this moment one or more key actors define the nature of the problem and the roles of other actors to fit the proposed solution. The solution is offered in such a way that all actors that participated will be subjected to some centralised control mechanism labelled as an "obligatory passage point (OPP)."

b) *Interessement.* Here all actors identified in the first phase are given specific roles and identities and the strategies that need to be acted upon which will attract them. This attraction is the interessment device that will lead them to the next phase.

c) *Enrolment.* The success of the strategies related to the interessement device will result in the enrolment of actors to establish a stable network of alliance. However, the stability of this alliance depends on the negotiation process to define their roles in the network.

d) *Mobilization.* Once the proposed solution gains wider acceptance, then an even larger network of absent entities are created through some actors acting as spokespersons for others.

Meanwhile from strategic management literature, strategy formation includes two steps namely strategy formulation and strategy implementation. Strategy formulation includes steps of :

a) Doing a situation analysis of both internal and external, micro-environmental and macro-environmental.

b) Crafting vision statement (long term review of a possible future), mission statements (the role that the organization gives itself in society), overall corporate objectives (both financial and strategic), strategic business objectives (both financial and strategic) and tactical objectives.

c) Suggest a strategic plan which provides the details of how to achieve these objectives.

Whereas strategy implementation involves steps of:

a) Allocation of sufficient resources (financial, personnel, time, computer system support).
b) Establishing a chain of command or some alternative structure
c) Assigning responsibility of specific tasks or process to specific individuals or groups.
d) Managing the process which includes monitoring results, comparing to benchmarks and best practices, evaluating the efficacy and efficiency of the process, controlling for variances and making adjustments to the process.
e) When implementing specific programs, this involve acquiring the requisite, developing the process, training, process testing, documentation and integration with legacy processes.

Contrasting these steps of strategy formation with ANT, it is apparent that ANT translation process could be related to them. All steps in strategy formulation could be associated with the problematization stage and all steps in strategy implementation relate to interessement, enrolment and mobilization stages. However, ANT translation process views the steps from network perspective. Thus it gives more attention to systematic steps to create and stabilize a network.

III. METHODOLOGY

The analysis will be carried out as follows. Based on some basic features of ANT the paper will propose a strategy for e-government development. The strategy flows from some assumptions made by ANT in understanding the phenomena as a network of relationship among actors. Therefore, the proposed strategy will be based on the assumption how to make this network stable and grow dynamically. As ANT offers the four moments of translation as a framework to understand network stabilization, the proposed strategy will also be based on this translation process.

The proposed strategy will be eventually used to evaluate the development of the two e- government projects (cases). Each case will be described from the proposed strategy perspective to justify its strength. Based on these descriptions, the paper provides conclusion on the effectiveness of using ANT as framework for strategizing e-government development.

Data used for this interpretive case study were gathered from two e-government projects in Indonesia. Yogyakarta Cyber Province Initiative (YCPI) and Sragen One Stop Service project were selected. These two projects are the appropriate case for this e-government development strategy for the first is considered as problematic but the second is a successful one. Data gathered include factual (numerical), textual, audio, and visual event. Data were collected by observing at the two project sites, inspecting archival documents, browsing their websites, and recording semi structured interviews. The interviews were conducted in local language and involved 22 and 15 personnel respectively. All interview sessions lasted from 30 to 90 minutes. Recorded interviews were transcribed fully before they were analyzed thematically.

IV. THE PROPOSED STRATEGY FOR E-GOVERNMENT DEVELOPMENT

The starting point to formulate strategy using ANT is from its assumption that e-government is a network of diverse entities in which the role, interest and the capacity to act is the result of their relationship. These entities (human and non-human) are equally important in stabilizing the network. The successful development of e-government then depends on the effectiveness to make this network stable or even grows. Its stability depends on how to maintain and develop relationship among involved actors. ANT offers the four moments of translation as framework to understand the stability of this network. The network will tend to be stable and developed if there is actor (s) able to formulate e-government problem and solution in such a way will interest all participating actors. To do so there should be some attractive programs that give benefits to all actors. Those interested actors will then enroll to the network. The network will grow and expand if the relationship among actors could result some spokesperson that can represent the rest to negotiate with other actors for aligning their interest.

Using actor-network perspective, the proposed strategy for e-government development is:

1. Formulating realistic and context-sensitive problem(s) and objective(s) by considering the potentiality of involved actors/stakeholders.
2. Identifying all possible related actors, their interest, and their role in the network
3. Proposing a solution that could give benefits to most participating actors
4. Designing and implementing attractive programs to strengthen the relationship among actors toward solving the formulated problem that trigger representation process along the project development.

This proposed strategy is in line with the recommendation that all government agencies should create incentive for all involved actors [18] and with relational strategy in which building and maintaining relationship of actors is the core of the strategy [11]. Moreover, the most important factor when meeting the challenge of e-government implementation is to develop a strategy that is realistic, particularly in terms of the scope and size of the programs [32]. It is especially important since e-government strategy is rarely seen as a problem of institutional design, that is, in terms of actors, their interests, their power bases and resources, their relationships and their conflict and compromises [3].Though the emphasis is on the relationship

but here resources, activities and actors are involved since relationship is the result of an activity involving some actors using their resources.

V. CASE 1 : YOGYAKARTA CYBER PROVINCE INITIATIVE (YCPI)

YCPI development stages will be shortly described using the proposed strategy. Afterward, its development will be evaluated to see how the proposed strategy helps to pinpoint factors and processes affecting its success.

A. Employing the Proposed Strategy to YCPI

a) Formulating Problem and Objective

Realizing the potential contribution of ICT to improve the low quality of public services from the provincial administration of Yogyakarta, YCPI aimed to promote a new model of managing province in such a way that it would transform the way the state government efficiently and effectively delivered its services to public. The model aimed to enable the provincial government to be more public service-oriented and to speed-up the state development by intensively using ICT.

b) Indentifying actors and their roles and interests

To solve this transformational problem, YCPI involved many actors. Table I provides list of actors involved in the project. It also provides description roles, interest and conditions of each actor. These two steps could better be described by a network of interests owned by each actor. This network represented the fact that government transformation would only happen if an alliance amongst (a) the head of various offices want to fully participate in government reform program to serve people better; (b) BID staffs was consistently willing to manage the implementation of YCPI; (c) Sultan kept wanting to serve people better; (d) ICT infrastructure functionally operated well; (e) TiMPII was continuously supporting change initiatives; (f) Partnership wanted to make governance reform successful.

TABLE I: LIST OF ACTORS AND THEIR ROLES IN YCPI.

Actor	Description
The Sultan	The idea of YCPI was from Sultan. His position in YCPI is very important and even mystical because people understand his role not only as a governor of Yogyakarta province but also its king.
BID	BID is an office in province administrations that is responsible to develop and maintain its computer-based system. This office is also responsible to implement YCPI.
The heads of state offices	The focus of YCPI was to transform the six province offices related to their service of excellence. It was only assumed that each of them was willing to participate actively and at the end they will operate effectively and efficiently. However, there were only two offices that actively support YCPI, namely that of Education and of Industry and Commerce. The office of tourism was even described as the one that strongly opposed and three others seemed to follow the initiative passively.
TiMPII	TiMPII was a team to promote change management to all offices in Yogyakarta province administration. TiMPII was formally headed by the Sultan's secretary but the head of BID was the one who really organize its day-to-day activities. This condition was not an accident but was designed to strategically align TiMPII with YCPI agendas. This resulted in the head of BID be a central actor and played an important role related to the formation of OPP during this problematization process.
The ICT infrastructure	The ICT infrastructure managed by BID had been in operation more than two years. It connected all major offices in the provincial administration. The existing ICT infrastructure was basically ready and was able to play its role in transferring the provincial goal. However the installed infrastructure tended to be idle since its main use was just for accessing internet, managing email, and hosting province government website.
Partnership Governance Reform Institution	This was a non government institution committed to promote good governance in Indonesia. The Partnership worked with government agencies and civil society organizations to advance the national reform agenda. The Partnership funded a project entitled "Integrated Regional Decentralized Governance Reform in Yogyakarta Special Region" and aimed to establish an accountable system of bureaucracy and provide support to building capacity for public servant.

c) Proposing solution

To solve the above mentioned problems, YCPI involved six offices to develop its own service of excellence as follows:

- Education Office: To improve education quality through Yogyakarta learning gateway, regional digital library and knowledge center network.
- Industry and Commerce Office: To improve revenue and welfare of the society by enhancing commercial growth. It is achieved by increasing access to global as well as regional market and building SME (Small Medium Enterprise) business center.
- Agriculture Office: To improve farmers' welfare through agro-business programs by providing information on agro-business and market.
- Transportation Office: To improve regional economic activities through the development of a good transportation services.
- Tourism Office: To improve people's welfare and competitiveness through tourism promotion.
- Fishery Office: To facilitate the development of fishery community and their competitiveness.

d) Designing and Implementing Attractive Programs

Among the limited attractive programs introduced by the head of BID like socialization meeting, conference, coordination, training and the introduction of new reward system, the weekly meeting organized by TiMPII was the most effective one. TiMPII's activities reflected not only the important role it played but also reflected that it should be considered both as an actor and as an activity. However, its effectiveness as an attractive program should be measured from its ability to enforce as many actors as possible to get themselves interested and to achieve goals formulated in the problem definition. Using this criterion and aware that many head offices were not eagerly participating in YCPI,

TiMPII's activities had not yet been an effective attractive program.

All the attractive programs were not able to provide enough space and opportunities where the negotiation process among actors can happen systematically. There were at least two crucial problems to negotiate among actors. These were the implementation of new a reward system that legally had been approved by the Sultan and the benefits formulation gained by each office in joining YCPI. Solving the first problem might eventually also solves the second problem. However, solving this first problem in a government system setting is not easy as it might involve a bigger and a more complex actor-network.

Since the attractive programs were not so effective then it was difficult to effectively mobilize all involved actors. It was because the spokesperson could not become legitimate representative to mobilize them. As a result, some important actor who should had been legitimate spokesperson felt voiceless in mobilizing actors. The BID head expected Sultan to use an ''iron hand'' approach as a precondition for him to act faithfully. Similarly, the head section of the ICT infrastructure in the BID office also expected heads of offices and their staffs to change their work culture so that the operated computer network could be optimally used. He also expected the finance office to implement a new reward system that previously had been approved by Sultan.

B. The YCPI Evaluation

Staffs of BID expressed differently in perceiving the progress of YCPI ranging from being realistic to pessimistic. Those who were realistic consider YCPI as a long term dream and it would automatically be successful as public's readiness and demand increases over time. Those who were pessimistic argued that such similar initiatives had been introduced many times long before the notion of e-government existed and had never been successful. One of BID staffs who had been actively involved in developing computer-based application for government sectors expressed his pessimistic stance by saying,

"Though there are many small-scale IT applications that have been used to support government activities like SIMPEG (personnel records system), but after waiting for a long time many people keep questioning what the real contributions to society of all these initiatives are?"

Among the six sectors mentioned in the blueprint, only education and commerce programs were considered moving to achieve their goals. The education service of excellence even received support from Ministry of Communication and Information (Menkominfo) through a Japan-funded project to strengthen school ICT-readiness by distributing computers and connecting school computers to the province's library network. The industry and commerce service of excellence program managed to setup and

maintain the so called Yogyakarta Business Service Center (YBSC) to help business community easily get support and exchange information with government agencies and business communities. This center offered several services to SME (Small Medium Enterprise) in the form of advice, consultation, and training in the area of marketing, management, ICT adoption, and partnering.

Agriculture Office was responsible to manage a service of excellence to improve farmers' welfare by developing a sort of virtual market to facilitate sellers and buyers of domestic products. The virtual market system was named *Agricenter* and could be accessed through its website of www.agricenter.com. It aimed to provide facilities for farmers and agro-business community to have closer relationship and to easily exchange agricultural products and demands. On July 1st, 2009 Sultan of Yogyakarta officially launched the *Agricenter*. Less than one year later (May 2010) *Agricenter* was down and could no longer be accessed. When it was confirmed to staffs managing the website in Agriculture Office, they sincerely confessed that they had no competence to maintain the system.

The service of excellence for Transportation office was to improve economic activities through the development of good transportation services. To support this objective, Transportation Office planned to develop an ambitious transportation information system by integrating it with IP-based digital camera installed in some crowded main road in Yogayakarta. The system was projected to provide real time vehicles traffic in some main roads in down town of Yogyakarta. Unfortunately, until March 2010 the transportation information systems had never been implemented.

The tourism service of excellence program struggled hard to have a good website to promote tourism in Yogyakarta. The website published some tourist destination sites, hotels, events, and tourism activities. It also published news related to tourism and tourism office activities. Unfortunately, the website was written only in the Indonesian language. Many foreigners were disappointed and felt cheated since the name of the website was www.visitingjogja.com which is an English term.

A promising result from fishery service of excellence was the development of Fishery Business Center. It was a website (http://fbc.perikanan-diy.info/home.php) to effectively connect buyers and suppliers of fishery product. Buyers could easily distribute their demand via SMS (Short Messaging Systems) to Fishery Office that subsequently distributed them to all registered suppliers. Conversely, anytime a supplier could send information about their available products by sending massage to Fishery Office that will forward it to all registered buyers. Although the initiative was in line with the formulated service of excellence from Fishery Office but the number of user of this facility was very limited. As of March 2010, there were less than 20 registered supplier and less than 15 registered buyers

VI. CASE 2: SRAGEN ONE STOP SERVICE (SOSS)

As in the first case, the description of the second case will employ the proposed strategy. This description also aims to evaluate its effectiveness therefore, this section includes employing the proposed strategy to SOSS and evaluating its performance.

A. Employing the Proposed Strategy to SOSS

a) Formulating Problems and Objectives

The main idea to establish SOSS was very simple but fundamental, namely how local administration of Sragen regency fulfilled its mandate to better serve public license inquiry by providing simple, transparent, accountable, and one-stop service. This new kind of service tried to replace the common practice of government service where citizens had to undergo complicated and unclear process as through several different offices. Using this idea, the local administration of Sragen tried to implement not only an effective and efficient government administration but also a new paradigm of work culture that focused on treating citizens as government's customers.

b) Identifying Actors

The most crucial part in establishing SOSS was to get support from various heads of offices who were currently holding authority to issue licenses. It was common that not only the head office but also some lower-level government staff abused "power" and authority to manage, control, and complicate the issuance of licenses for their personal benefits. Another problem was how to efficiently run the one-door service just like a private entity. To manage this situation, the head of Sragen regency (the common term for the head of regency in Indonesia is "Bupati") conducted many meetings to promote, explain and solicit support by involving related heads of offices, some important personnel from his own office and other local legislative bodies. He then problematized the establishment of SOSS by defining the roles of each involved actor. Table II provides the description of the roles and relationship of some important actors involved in the problematization process. This description precisely portrays that the establishment of this one stop service involved complex actor-network of heterogeneous elements.

c) Proposing solution

With the assistance of some NGOs, the Bupati of Sragen finally decided to reform the existing one-roof service unit and adopted a one-door service one. One-roof service unit is less problematic compared to one-door service since there is no delegation of authority from offices holding the authority to issue license to the one-stop service unit. In the one-door service approach, it was always problematic because it needed not only delegation of authority but also involved intense bureaucratic reform.

However, one-door approach gave better and easier services to citizen.

d) Designing and Implementing Attractive Programs

The Bupati attempted to influence and stabilize all the actors he defined in the previous step by introducing several attractive programs. These programs extended and materialized the hypothesis he made concerning the success of SOSS which included:

(a) License inquiry should be simple, fast, and transparent,
(b) Offices involved should support by returning its authority back to Bupati,
(c) SOSS staffs could be transformed to become professional workers,
(d) ICT and private sector practice could be fully adopted,
(e) Excellent license services would attract more investors.

TABLE II: LIST OF ACTORS AND THEIR ROLES IN SOSS PROJECT.

Actor	Description
The heads of participating offices	There were 10 different offices directly involved in the development of SOSS. At first, the heads of these offices were not willing to delegate their authority to personnel in SOSS. But the Bupati always reminded them that in principal he himself has the sole authority to issue the licenses. But in practice the authority were delegated and empowered to the various offices for smoother operations. Thus finally, the Bupati decided to retract the authority given and pass it on to whoever he wishes. He made the decision to pass it on to SOSS personnel. However, the Bupati also clarified that each office still had the authority to monitor the operation of every related activities. In addition, each office still participated in the license decision process and fees collected would be posted as revenue for the respective office which formerly had the authority.
SOSS staffs	SOSS had 31 staffs managing 59 various licenses and 10 certificates. At the initial establishment in 2002, the number of SOSS staffs was only 21. All of them had good performance records and worked at different offices before they were recruited. All SOSS staffs got additional monthly salary as incentive.
Technology infrastructure	SOSS had an appropriate ICT infrastructure. Every staff in SOSS were provided with a computer that was connected to the local computer network and internet. The local computer network was part of a bigger network connecting almost all important local government offices and village offices across the regency. Although the ICT infrastructure and its related information systems were regarded as the most important non-human technological actors but there were other actors such as air-condition, CCTV, and TV units that were as important. The technology infrastructure seemed to cooperate well since Bupati regarded it as important actor for his government innovation initiative.
Stipulations	These are conditions, provisions or terms that are created to be placed on to SOSS's shoulders for serious considerations. Historically, the notion of improving public services quality came from Indonesian President Instruction No. 1/1995. It was then operationally stipulated by the Ministry of Government Officer Discipline No. 81/1998. However, the notion of one-stop service was first articulated by the Ministry of Internal Affairs through the stipulation No. 25/1998.
KPDE	KPDE was an office responsible for managing ICT infrastructure across Sragen regency as well as developing e-government systems to support local administration. Most of the license processing systems were jointly

	developed by these two offices. However, the permanent role of KPDE toward SOSS was maintaining the ICT infrastructure and also assuring the data and systems integrity among various e-government systems in Sragen. *Kantaya*, (stands for 'Kantor Maya / Virtual Office', and was developed and maintained by KPDE), was the most frequently used systems to support SOSS.
Citizens of Sragen	Although many staffs at SOSS voiced their concerns wanting to serve the public better but interestingly, none was ever directly involved in the development process. Their only direct participation was involved in a survey to evaluate SOSS performance twice a year.

Using these hypotheses, Bupati implemented three new important interessement devices which are:
(a) Granting SOSS unit an authority to issue licenses after retracting that authority from various offices.
(b) Facilitating SOSS to adopt corporate work culture and management equipped with new reward system.
(c) Providing incentives to members of the business community who wants to initiate operation in Sragen.

B. Evaluating the Development of SOSS

Some indicators could be attributed to account for the success of SOSS. From the citizens' point of view, the simple, transparent, and accountable services are found satisfactory for them. Based on service satisfaction survey with 150 respondents conducted twice a year, the customer satisfaction index increased from year to year. On the last two surveys, the customer satisfaction index scored 83.995 % and 84.005% respectively. The index involved 14 variables to measure overall SOSS performance in serving its customers. This index was developed using guidelines provided by the Indonesian Ministry of Government Staffs Empowerment and Discipline. One customer who was also an entrepreneur justified SOSS performance by saying:

"This SOSS is very beneficial for business since I always get help whenever I apply a business license. To get a business license I do not have to wait for a long time, I am provided with convenience facilities and served excellently by SOSS staffs. Based on my experience, I just needed less than one week to get license to start my business."

From some government and non-government organizations' point of view, SOSS has also been considered as a good model of a quality public service provider. It was no wonder then if SOSS got some recognition from different parties starting from non-government organization, local government nation-wide, to the president of Indonesia. Moreover, the central government of Indonesia had chosen SOSS as the best practice public service agency in Indonesia and encouraged other local government to use it as a model. Consequently, many times Sragen had been appointed by central government to be the consultant in developing some government stipulations on public services. Sragen was recently (December 2008) also consulted by Indonesian Commission on Anti-Corruption because the way SOSS promoted transparency, was able to minimize corruption practices.

From the Sragen local government point of view, SOSS was really something to be proud of. Now, local government and people of Sragen were so proud of having at least two visitors coming to SOSS every day doing comparative studies. Being proud as a model of service excellence, staffs in SOSS eventually felt confident that they were able to contribute good things not only to the people of Sragen but to people and government of Indonesia at large. This kind of accomplishment also happened particularly every time Sragen was invited by other local government to help the establishment of similar services. Staffs of SOSS now started believing that employing new paradigm of work to serve public and not to be served was really meaningful and got valuable rewards.

From the economic point of view, SOSS has managed to directly and indirectly increase revenue and investment to local government. In 2002 Sragen's revenue was only IDR 22.56 billion but in 2006 it rose to IDR 72.77 billion. Similarly, total investment to Sragen was only IDR 592 billion in 2002 but it increased to IDR 1.2 trillion in 2006.

Throughout the project cycle of SOSS, only few individuals were directly involved and became the spokesperson to represent other individuals who chose to be silent (Callon, 1986). Some of these representations will be reviewed to understand the role of a legitimate spokesperson. During the design stage of SOSS, Bupati represented citizen of Sragen in general and business community in particular who demanded excellent licenses processing service. Bupati was a legitimate spokesperson of Sragen's citizen since people had voted him as their top leader. Though there was no process to appoint him as representative of the business community but his long experience as a manager in a private company made him a legitimate spokesperson for them. After being inaugurated as Bupati, he was officially also a legitimate spokesperson of central as well as provincial government that had concern to improve public services quality.

In promoting his idea to establish SOSS, Bupati stressed that ICT would be intensively used. In many occasions Bupati unintentionally became a legitimate spokesperson of voiceless ICT too especially when he himself frequently used ICT to present his ideas. One day he even removed old-fashioned media of over-head projector (OHP) from his meeting room to condition all his staffs to used laptop and projector instead. Bupati also acted as a legitimate and powerful spokesperson of ICT when he strongly encouraged KPDE to come up with a computer-based system which enabled him to digitally monitor all office performance at any time.

VII. DISCUSSION ON THE EFFECTIVENESS OF THE PROPOSED STRATEGY

The problems and objectives formulation in YCPI were clearly less realistic than the one in SOSS. Providing simple, quick and transparent licenses processing in SOSS was easier to manage compared to focusing on treating citizen as its customers n YCPI. It is then apparent that the objective of SOSS project is easily to achieve and measure.

Although both YCPI and SOSS involved human as well as non-human actors but SOSS had more non-human actors than YCPI. SOSS also included office technology, such as the CCTV, local regulations and ISO standards in addition to the ICT infrastructure as non-human actors. YCPI only involved the ICT infrastructure. These findings have strengthened the ANT ontological assumption that both humans and non-humans must participate in stabilizing the actor-network, and so SOSS was more stable than YCPI. This also means that the comprehensive inclusion of actors done in SOSS resulted in better participation among them (as reflected in their commitment to maintain SOSS performance) than YCPI, which centered around TiMPII, did.

The step to design and implement attractive programs are not easy to formulate in a government setting since they can not be easily based on economic and organizational measures, such as efficiency and customer satisfaction. It is because government agency is not a business entity. Therefore, attractive programs formulation should be more based on the assumption that e-government is a network of heterogeneous actors having diverse interests. Using this assumption, the programs should account for the sociological perspective in which the actors' interest relates to their sociological interrelationship, such as trust, political alliance, resource access, and power sharing. In the SOSS case, the programs were more sociologically-oriented than in YCPI because they accommodate many aspects of social life: economic (incentive salary), managerial (ISO standards), technical (ICT infrastructure and its system), legal (local and central regulation), as well as spiritual (the notion of "ikhlas") and ideal ("coloring" Indonesia).

Related to the role of non-human entities involved in the attractive programs of SOSS, the new reward system, the ISO standards, the ICT, the local regulations, and the office technology, such as the CCTV, contributed significantly to the network stabilization as ANT assumes that durability of a network depends to the durable materials participating in the attractive programs. This findings help explain why the SOSS network was more stable than YCPI network since YCPI had fewer durable materials in the attractive programs. As many interviewees were convinced, those durable materials in SOSS were also significant aspects they used to give assurance that SOSS would keep stable even if the Bupati retracted himself from the network.

The sociologically comprehensive attractive programs in SOSS finally enrolled all related actors. On the other hand, weak and limited attractive programs in YCPI failed to enroll most actors especially heads of offices though their offices had been appointed as parts of the excellence service program. Interestingly, the comprehensive attractive programs in SOSS also resulted in more committed staffs since they involved the spiritual aspect, namely the notion of "ikhlas" (sincerity). Many staffs gave assurance that they were happy if they could serve public better. Their enrolment to SOSS was not based merely on the benefits they got but was attached to something deeper within their belief.

As all relevant actors enrolled faithfully to the SOSS network, some of them became spokespersons and represented the rest. Through this representation all involved actors were easily mobilized by those who acted as spokespersons. This representation involved different actors for different mobilization. However, most of the time, the Bupati represented many other actors, both human and non-human.

The fact that many actors finally became spokespersons in SOSS supports the ANT assumption that in practice power is de-centered. This understanding can be used as a framework to understand how to exercise leadership in an e-government project. Leadership that has been identified as one key factor in the success of an e-government initiative can be better understood with the ANT translation process [30]. This understanding helps explain why leadership did not effectively work in YCPI as a result of the weak stages in the translation process.

VIII. CONCLUSION

The ontological stance to view e-government as an actor-network entails the concern of e-government development is to stabilize the identified network. ANT offers four moments of translation as framework to understand how such stabilization process takes place. Using this assumption, the proposed strategy for e-government development has showed its strength as SOSS was more successful than YCPI. As given in the case descriptions, steps used to develop SOSS was closer to the proposed strategy than to the YCPI. The stage to formulate problems and objectives has provided framework to e-government designer not only to formulate goals but also to realize that goals will only be reached as a result of competing interest from many actors involved in a complex network. To enroll all involved actor toward the defined goals, e-government designer should formulate and implement some attractive programs. These programs will only be effective if they could direct actor to resolve his/her obstacle toward goals. The enrolled actors could eventually be mobilized through representation mechanism. Certain actor will represent the rest during the stabilization and expansion of the network.

As introduced in the first section, the problem to answer in this paper is how effective ANT could be used as a framework to formulate strategy for e-government development. Learning from the description of the two cases, the study broadly conclude that ANT provides strong foundation to formulate strategy for e-government development. The foundations center around the assumption that e-government is a network of relationship involving diverse actors and their interest. The proposed strategy that pays much attention to manage these relationships starting from the formulation of the problems and objective to the definition and implementation of some attractive programs has been approved as an effective strategy.

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