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Innovation in the Governmnet of Sidoarjo Regency Using Systems Thinking Approach

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Abstract

Innovation is a important factor for public sector in order to fulfil public needs. It means the public demans and public needs would increase to meet of service. One is the licensing service. The Government of Sidoarjo Regency has made an innovation to improve the service. The method of research is combining quantitative-qualitative, it called dominant less dominant design with systems thinking approach. The results of the study show that the typology of innovation in the Government of Sidoarjo Regency. Also show the model of innovation system can be identified events, patters, and systemic structures in order to goal seeking.

Keywords: Innovation, Governmnet of Sidoarjo Regency, Systems Thinking

1. Introduction

In this era of decentralization, the governmnet must be do innovation to get the new way for old problem solving. It uses human resources more efficient and fulfil of public need and improvement of strategy. This is supported by Wijayanti (2008, p.41) caused of public sector is have task od state implementation (public interest oriented), so the innovation is very important and urge. Therefore the innovation is possible to achieve the fulfil needs more better.

Based on the above description, the governmnet forced to innovate in order to provide the needs and demands of the citizen. It is refer to Mulgan & Albury (2003, p.2), which states that sucessful innovation is the creation and implementation of new processes, products, services and methods of delivery which result iin significant improvements in outcomes, efficiency, effectiveness or quality. It is related with this study about licensing service. In generally the citizen often complained about the licensing service process organized by the governmnet include red type, not transparent, there is ni clarity and certainty in time and extra cost of service (Mursitama *et al*, 2010).

However the governmnet must be responsive for public necessary with way make program of innovation to impro the service. According to Padayachie (2009, p.7), innovations in the public service must simplify procedures, enhance service delivery and access to service, reduce the cost of service, motivate public servant and contribute to economic development. It is related with ststement the government of sidoarjo regency has been innobating (license package) to improve the service.

According to Adriana Alberti and Guido Bertucci (2006, p.1) governments as the service provider are need to operate and provide more far-reaching and higher quality services with reduced resources and limited operational capacities. That is to say, governments need to use their resources and build capacities not only more effectively, but also more creatively. It is related with large industry sectors in the Sidoarjo Regency area become the strategy location to investment activity. The innovation of licensing services package is a service for creating a new business license. So expect the applicant (business community and citizen) can more easily and quickly in applying for new business licensing services. So the research objectives in this study are: 1) to describe the typology of innovation in the Government of Sidoarjo Regency; 2) to construction model of innovation system in the Government of Sidoarjo Regency based on systems thinking approach.

2. Theoritical Study

2.1 Innovation

Innovation means something new, whether is a new idea, product, method, or service. Public sector innovation is required to provide public services that better reflect the availability for public choices and create diversity of service methods. The traditional approach is influenced strictly legalistic approach will create a one-size-fits-all approach in the practice of public administration (Muluk, 2008, p. 43). This approach of course is outdated

because it does not give you a choice in public services while public needs and demands of increasingly complex. Innovation in the public sector could also be implemented in order to improve efficiency and reduce costs as we know that essentially public sector organizations continue to face scarcity of resources and budget constraints.

Moreover Damanpour said that innovation can be a new product or service, a new process technology, a new system of structure and administration or a new plan for members of the organization (Damanpour in Suwarno, 2008, p. 9). Accoring to Peled (2001, p. 189) defined public innovation as a political process that people organizations to launch a significant new public project that alter rules, roles, procedures, and structures that are related to the communication and exchange of innovation within the organization and between the organization and its environmental surronding.

2.1.1 Typology of Innovation

Governments can and do innovate in a variety of different ways. Developing a suitable typology of innovations is central to efforts to transfer them. Muluk identifies five typology of innovation. In practice, it is important to bear in mind that a particular change may result from the application of more than one type of innovation. The major types of innovation identified by Muluk (2008, p. 44) are: innovation of product or service; innovation of process; innovation of method; innovation of strategy or policy; and innovation of system.

Product or service innovation from a change of the shape and design of the product or service while process innovation comes from the reform movement and the ongoing quality refers to the combination of changes in organization, procedures, and policies needed to innovate. Process service innovation is also not as simple as translating it with a renewal, but it is more complex rather than it, because it involves many aspects, especially in the public sector.

The new developments include in the methods service innovations was also still evolving again into innovation strategy or policy. Method service innovation is a new change in terms of interacting with customers or new ways of providing services. Strategy or policy innovation refers to the vision, mission, objectives, and strategies and the reasons that from reality. The other type is now also developing innovation of system in interaction that includes new or updated ways of interacting with stakeholders or in the other words the changes in governance.

2.2 Innovation in Government

In the context of government innovation refers to new products, new policies and programmes, new approaches, processes and methods of delivery that result in significant improvements in efficiency, effectiveness or and quality of outcomes (Rahman, 2010, p.2). Hence public organization must find new insights and develop new ways of working. In short, need to build on government capacity to innovate, to make innovation to government work (O'Donnel, 2009). So, innovation defined as the processes and ideas about how to do things differently that work to create or improve public value and outcomes. Then innovation within the public sector should represent a new idea or approach to an issue, which challenges the prevailing wisdom (Travis Bland *et a*l, 2010, p.2).

Government and public sector organisations are working towards building capacities to use their resources effectively and more creatively to help make government be more accountable and responsive to its citizens (Rahman, 2010, p.1). Governments can and do innovate and it can occur at all levels of government, i.e., central, state, district or local levels. They can also be jump started by citizens with the government playing only a facilitating role. In fact, many of the local governance innovations in Indonesia. One of Local Government of Sidoarjo Regency has been make the innovation to improve the service as fulfill the public needs.

2.3 Systems Thinking

Before the understanding the system thinking, i would like to explain the system. According Aminullah (2001, p. 3) explains that the system can be defined as the overall of interaction between element of an object within a certain environment to work toward goals. These terms can be determined a few key words in the concept of system namely: whole, interaction, elements, object, scope, and goal.

First, an understanding of the meaning of the term whole in a system is not about an accumulation of system's elements, it closes to the synergy of the elements. Naturally, the synergy creates a power that will affect the sustainability of the system. Second, an interaction is a machine to move the synergy of system. In other way, interaction can be meant as a connector between elements.

Third, an element can be understood as a thing or stuff that is naturally abstract or concrete arranges the object of system. The performance of a system is determined by the function of each element, one element bothers other

element will cost a systemic impact on the whole performance of the system. It means element in the concept of system is commonly defined sub system and it does also play as a system.

Forth is object. It is a focus of interest. It means that the focus of attention in this research is a certain system that is going to be asses in the research. Here means the innovation of the government of sidoarjo regency. There are components of object, including input (an initial part of system that provides operating requirements for certain system), process (it is a way to explore input into output. This process is performed as machine), and output (it may be in the form of physical and non-pysical of intended or extended result; output is the result of the operation of the process, where the target system resides).

Fifth is scope. Scope of system gives a limitation of the system want to assess. It could explain a place, part, site, or any other things which can distinguish the one system to another, a bigger system has a bigger scope. In this stud, system scope is government of sidoarjo regency. And the last is goal. Goal of system is concerned and intended to the performance of system. Concerned performance refers to the achieved result of the system and then intended performance reders to the result system wants to gain or attain. Furthure the intended performance of the innovation here would be increase the public service that government provider to achieve.

Systems thinking are the fifth discipline introduced by Peter Senge (1994). Systems thinking is an approach that sees the world as a complex systems, all interconnected, so it may only do one thing (Steman, 2000, p.4). For more detail is about systems thinking follow these guidelines by Balle : (1) Focus on the relationships rather than the parts. A systems is a set on interconnected parts. In our usual reductionist view of things the emphasis on the parts. To understand things we take them apart and study the pieces. With systems thinking, the interrelationships are important. We can understand how elements of a system interact on each other to produce a global outcome. (2) See patterns, not event. In order to perceive the forces underlying these events. This will also help us to avoid the “boiled frog” syndrome. Too often, if only see events might only identify what is happening when it is too late to do anything about it. (3) Use circular causality. Causality is seldom one way. Cause becomes effect, which then becomes cause and so on. In generally relation cause-effect brings feed back in which became circular causality. (Balle, 1994, p. 41). Thus system thinkning is efforts dicipline to understanding of complexcity and dynamics. So systems thinking is a way of thinking and describing dynamic relationships about that influence the behavior of systems. (Maani & Cavana, 2000, p.7).

3. Research Method

The type of research is combining quantitative-qualitative, it called dominant less dominant design with systems thinking approach. The dominant less dominant design was chosen because of its advantages in accommodating the data that is qualitative as a social reality difficult quantitative (Creswell, 1994, p. 179). Data collecting technique used in this study includes observation, interview, and documentation. Moreover, data analysis in this study uses system dynamics.

3.1 Data Collection Technique

Data collection techniques are the most strategic step in the study, because the main objective of the research is to get the data. So the data collection techniques used in this research includes:

3.1.1 Observation Method

Data collection by direct observation of the object that is researching on the circumstances and the actual reality and to obtain answers to the problems.

3.1.2 Interview Method

Data collection through interviews directly to the informant. Interviews were conducted in this study to: Regent of Sidoarjo, Chief of division for Business Licensing, Chief of division for Planning and Reporting, Some staff of business licensing.

3.1.3 Documentation Method

Data collection by copying documents from Government of Sidoarjo Regency. Documentation conducted to capture the process of collecting data and research by using a camera phone, and recording interviews conducted on sources by using existing voice notes in one mobile phone.

3.2 Data Analysis

In this study, researcher use the data analysis of system dynamics with softwer powersim 25d constructor. According to Coyle (1996, p. 348-349), system dynamics deals with the time-dependent behavior of managed

systems with the aim of describing the system and understanding, through qualitative and quantitative models, how information feedback governs its behavior, and designing robust information feedback structures and control policies through simulation and optimization. The process of analysis of system dynamics organized by Coyle (Fig. 1):

3.2.1 Problem Recognition

The first stage is the problem recognize and to find out which people care about it, and why. A primary issue in this study is license service. License is a form of public service and the community used to be the most important part in the development. Problems of licensing service in the Sidoarjo is a long procedure, there is no certainty in time and cost and also in the maintenance of completeness need a business licensing. Its mean that licensing process for investing in the Sidoarjo was still dominated by realtor.

3.2.2 Problem Understanding and System Description

This stage is understand a systemic through model of influence diagram or causal loop diagram. This diagram is an overview of various force at work in a system which is related to the phenomenon that is becoming concern. The system description in this study is about public service order to meet needs of the community more complexity and dynamic. So its needed responsivenes from governments, one of the respons its a make and implementation innovative programs in public service. An innovation infuences public service. It means that good or bad implementation innovation of public service effect good or bad of public service. Hence, the implementation of public service innovation determine by several factors that relationship cause-effect.

3.2.3 Qualitative Analysis

Qualitative analysis was based on the data reduction and data presentation data. Data reduction is the process of data selection which means summarize, choosing basic things, focus on the important things gained from the study site. Data presentation can be done in the form of a short description, charts and or relationship category to provide explanation to readers about the relation between elements in the influence diagram that have been compiled on the previous studies. In addition, a qualitative analysis is intended to understand the pattern of events by comparing between models in influence diagram that have been built with the realities; Analysis also intended to obtain an explanation about the pattern of change of the elements and its relation along with shown by the continuation of behavior over time

3.2.4 Simulation Modeling

Simulation modeling by drafting stimulation model based on influence diagrams that have been produced in the second stage above. Simulation of this model can also be passed on the activities of model validation (model testing) so that the model is constructed in accordance with the objectives to be achieved at once constructed properly. In this study the simulation modeling use software powersim 25d constructor.

3.2.5 Policy Testing and Design.

This step is useful to understand the impact of the policy loop systems thinking. Assessment of the progress of the system behavior can be done with qualitative evaluation and appraisal stimulation results. Policy design is done by capturing the essence of what is to be achieved by a system. Suggested policies through policy design often leads to further understanding of the issues and the workings of the system so that calls for thinking that leads to another policy. In this study the research result two policy to improve the innovation in the licensing service. They are training for employee and provision of access technology and knowledge.

4. Result and Discussion

4.1 Type of Innovation in the Government of Sidoarjo Regency

The quality policy of the Government of Sidoarjo is development of human resources, information technology and innovate in order to improve the licensing service. Thus the licensing service innovation in the Sidoarjo has been done to improve services to citizen. This innovation can be make citizens more comfortable when they are in the office. Moreover the innovation services in the Sidoarjo Regency faster, easier and cheaper rather than service before. (Table.1). Many kind of activities has been done by Government of Sidoarjo Regency to improve the licensing service so it refer to the Government of Sidoarjo Regency is responsivenes to citizen as service user.

According to Mulgan & Albury (2003, p.2), which states that successful innovation, is the creation and implementation of new processes, products, services and methods of delivery which result in significant improvements in outcomes, efficiency, effectiveness or quality. According to Muluk (2008, p. 43) divide into

separate typology of innovation have specific caracteristic includes: innovation of product is a change of the shape and design of the product or service. Innovation of process comes from the reform movement and the ongoing quality refers to the combination of changes in organization, procedures, and policies needed to innovate. Innovation of method is a new change in terms of interacting with customers or new ways of providing services. Innovation of policy refers to the vision, mission, objectives, and strategies and the reasons that from reality. While innovation of system that includes new or updated ways of interacting with stakeholders or in the other words the changes in governance. For more detail the analysis typology of innovation in the Governmnet of Sidoarjo Regency refer to Muluk show on Table 2.

Therefore innovation has been done by the Governmnet of Sidoarjo Regency is good because the Government of Sidoarjo was having four typology of innovation to improve the service to citizen. They are innovation of service or product; innovation of process; innovation of method; and innovation of system. But innovation of strategy or policy has not implemented in the Government of Sidoarjo Regency. So Innovation in the public sector will not be able to thrive in conditions of the status quo. Innovation has a fundamental nature which nature of novelty. This novelty is the nature of innovation in knowledge, ways of replacing, objects, technologies or inventions that long, it's been ineffective in resolving a problem or answer a specific need (Suwarno, 2008, p. 9).

4.2 Construction Model of Innovation System In the Government of Sidoarjo Regency Based on Systems Thinking Approach

4.2.1 Sub System of Innovation in the Government of Sidoarjo Regency

According to Balle (1996, p.44), says that " a system is a collection of parts which interact in such a way that the whole has properties which are not evident from the parts themselves. Like the system of innovation, it have the sub systems (leadership's role, capability of employees and culture of innovation) of parts innovation and interconnected between sub systems.

The sub systems of innovation includes leadership's role, culture innovation, and capability of employee. The next section, the writter will description each sub system.

4.2.1.1 Leadership's role

Leadership is the core dynamic of innovation implementation (Muluk, 2008, p. 49). As the basic principle of innovation, the leader must provide an innovative vission and goals for the organization and must personally participate in innovation efforts as well as support innovation efforts by members of the organization.

The relationship among elements in the sub system of leadership's role results a reinforcing loop. When the leadership's role increases, it is bring the rate of motivate employee that accually increases, and it rate the rate influences on building the innovative vision as the targets or goals of organization in the implementation for their job. And then automatically the culture of innovation will also increase. Finally the culture of innovation will dominate in the organization to strengthen the leadership's role to doing innovative program. (Fig.2)

4.2.1.2 Culture of Innovation

Various approaches to creating an innovative organization or transforming stagnated organizations into innovative ones have become established in recent decades (Drucker, in Ibrahim *et al*, 2009, p.13). The rationale behind this is that a high level of organizational innovativeness leads to better organizational performance.

The organizational culture is respected and value system developed by the organization where it guides the behavior of the members of the organization itself. Almost the same opinion in raised by Robbins (1996, p. 289), organizational culture is a shared perception shared by the members of that organization. It can be concluded that what is meant by cultural organizations in this study was organizational value system embraced by members of the organization, which then affect how it works and behaves from the members of the organization.

The relationship between elements in the sub system of culture results a couple of balancing loop. In one side, if the culture of innovation low, it cause the system of organizational high. Automatically the rate of behavior of officers will increase to reinforcing the situation in system of organizational. To the good rate needed personal development results reinforcing loop, so automatically the rate of capability of employee will increase. It is good impact for the service innovation and also innovation culture in the organization. In the other side, if the rate of culture of innovation low, it causing the public demands (environmental) is increase. So rate of using technology will also increase and automatically the service quality will increase. It means that the culture of innovation would develop. (Fig.3).

4.2.1.3 Capability of employee

Capabilities at the level of individual and organizational positions is important and a key to how organizations and people who are in it's creative input in the process of managing innovation. According to Vernona (in Lawson & Samson, 2001, p. 379) the capability can be distinguished into two categories, namely the functional capabilities that allow companies to develop technical knowledge; and the integrative capability allows companies to absorb knowledge from external sources and mixes technical competencies developed in the different departments of the company.

The relationship between capability of employee results balancing loop and reinforcing loop. Starting the relationship between capability of employee with level of innovation or innovation capacity was result reinforcing loop. It was assume that if the capability of employee is good and the number of service quality is increase of course, and then the rate of level of innovation is increases will also. It means that the number of innovation capacity or level of innovation influenced by capability of employee. In the other side, relationship between capability of employee with personal development, if the stock of capability is low, it is influenced on personal development will increase to improve the capability of employee. Furthure the rate of personal development increase, it is causing the build of innovation team will also increase and it is impact for the performance of innovation is good. So the rate of performance of innovation influences in the level of capacity or innovation capacity. (Fig.4).

Further figure of whole innovation system is needed to be easier to read a whole. So it was got a complete understanding of the operation of innovation system. Whole figure is obtained by way of integrating all of sub systems into a larger system as can be seen from figure 5.

The figure 5 is collection of sub systems (leadership's role, culture of innovation, and capability of employee) which interact such a way that the whole has properties which are not evident from the parts themselves. The leadership's role rise causes the vision innovative for the increase the innovation capability in the organization. So the innovation capability will influence by capability of employee in the organization so it is the needs of team work in order to make it collaboration to create the innovation program for public and the culture of innovation is very important also, with the culture strengthen the implementation of innovation will good. But actually the capability of employee is lack in the building the innovative program, because the capability of employee in the organization influenced by (personal development) education, team work, and performance to implement of innovation. So the capability of employee is the sensitive sub system to can implementation the innovation.

For the purposes of simulation models, diagram of CLD or models of innovation system have been set in previous, next converted into model Stock Flow Diagram (SFD). Conversion model of CLD and SFD are use of software Powersim 25d. After the model of SFD complete would result behavior over time from this innovation system can be seen from the figure 6.

However, this research is make accerelation of innovation capacity (innovation system) in the Government of Sidoarjo by developing alternative solution from scenarios. Because innovation capacity the biggest chalange comes from the lack of capability of employee which play as the most important element in innovation system For that reason, the scenarious are important to be build. Some alternative scenarios and consideration of the capability of employee development are: training of employee and provision of access to technology and knowledge.

1. Training of Employee

According to Moneir (1995, p.169) training is an effort aimed to advancing employees in terms of carier, knowledge or abilities. It means a process of enchancing employee skills and capabilities through the implementation of formal education. Training apparatus leads to increase the attitude and passion, interest oriented of the community; the competence of managerial techniques; and efficiency, effectivenees, and quality of implementation of task performed in accordance with organization.

2. Provision of Access to Technology and Knowledge

Ability to innovate will be sustainable if the employee provide of access to technology and knowledge. This access is a means of adoption of knowledge that always needed to innovate. Without provision of access to technology and knowledge adequate, so the knowledge and skill of employee will be quickly outdated time to time. So knowledge sharing is a process which is needed for development of employee as well as the provision of access to knowledge (Muluk, 2008, p.55).

The dynamic modeling is made to give a prediction of innovation capacity. Based on the dynamic modeling of

innovation capacity with scenarios intervention (training of employee and provision of access to technology) results distinction of innovation capacity of normal condition and condition with scenarios, the curve is shown on figure 7.

The growth of innovation capacity increase more significant after the implementation scenarios. The high growth happens when the innovation is done without scenarios, it is over 37.000 capacity. Then the high growth of innovation capacity can be seen from scenario of provision of access to technology (intervention 2) is 49.000. which is the intervention two is higer rather than without scenario, and the last is training of employee (intervention 1) is 64.000. which is the intervention 1 is higherst score rather than intervention 2 and condition without scenario.

Therefore innovation in the Government of Sidoarjo Regency based on systems thinking approach is thinking and describing dynamic relationships that influence the behavior of systems. Each of sub systems have role important in system of innovation. Based on the system dynamic modeling (simulation modeling) the capability of employee become leverage point in system of innovation. It is accordance with the logical think. The affact of innovation capacity for public organization influenced by capability of employees. Also the sensitive testing of capability of employee allows on element of personal development. As we know that the knowledge and education of employees must improve. Its very important. Because the good or bad the service provided by government dependent to competency of employees. Hence the systems thinking approach, the researcher would like to condition actual as whole in the system. So the researcher found the best policy suggestion in order to improve innovation capacity in public organization.

5. Conclusion

Innovation in the Government of Sidoarjo Regency is almost successful in the era of decentralization. They are innovation of product or service; innovation of method; innovation of process; and innovation of system. By using systems thinking the construction model of innovation system can be identified events, patters, and systemic structures like shown on elements (leadership's role, culture of innovation and capability of employee). In additiion by using systems thinking, innovation in service refers to the pattern of the S-curve (Sigmoid-curve) which means there is an increase in the initial stages of the era of decentralization, but gradually increased to a deceleration experienced when experiencing stagnation. However, innovation in service is higher than previous innovation growth period. Based on the system dynamic modeling (simulation modeling) the capability of employee become leverage point in the system of innovation. It is accordance with the logical think. The affact of innovation capacity for public organization influenced by capability of employees to build the innovation system in the Government of Sidoarjo Regency would be better.

Suggested future works innovation in service must improve the quality and quantity of human resources to made the innovation will be better. To build the good model of innovation is needed the a better understanding to system of innovation. This is necessary to goal seeking of innovation. this acceleration can be obtained if understood framework of this innovation system works. So it is need to study more about this.

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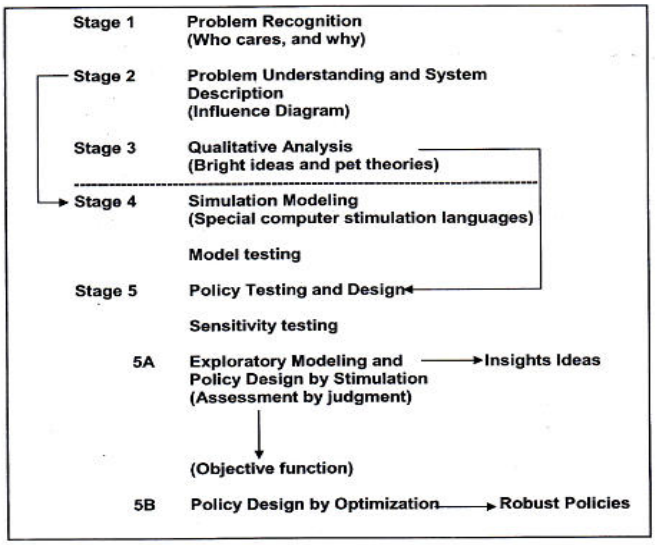

Figure 1. Process of System Dynamic
Source: Coyle R G. (1996, p.11)

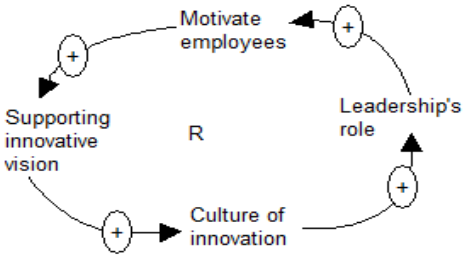

Figure 2. Sub system: Leadership's Role

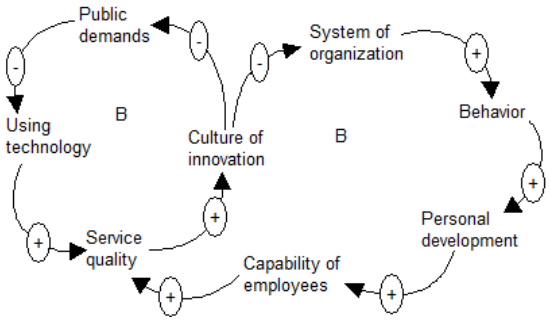

Figure 3. Sub system: Culture of Innovation

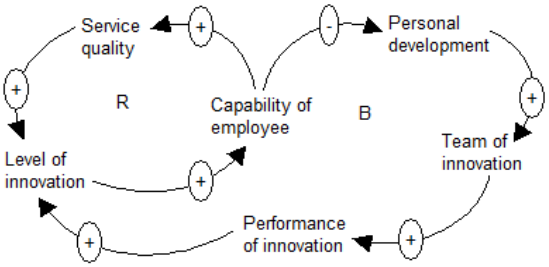

Figure 4. Sub system: Capability of Employee

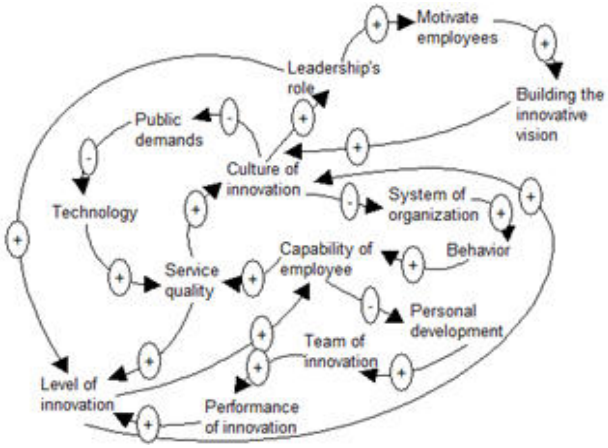

Figure 5. Model Causal Loop Diagram (CLD) of Innovation System

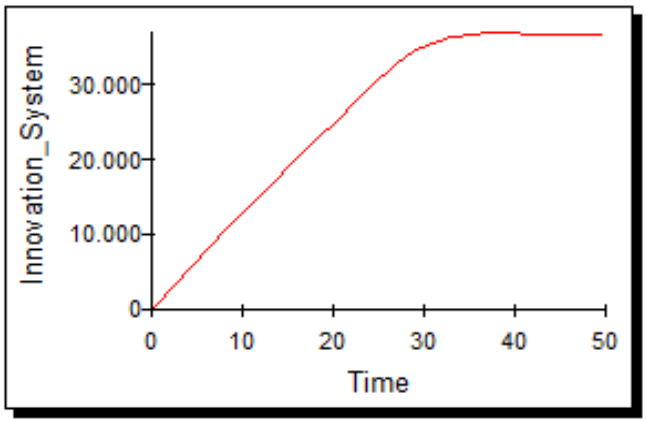

Figure 6. S-Curve Growth of Innovation System

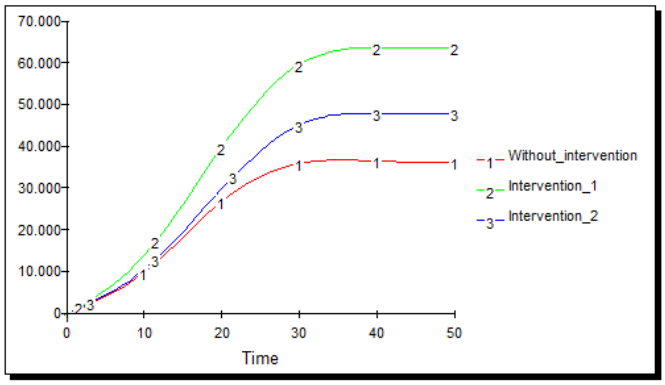

Figure 7. Distinction of Innovation System of Normal Condition and Condition After Intervention (Scenario)

Table 1.Type of Public Service Innovation in the Government of Sidoarjo Regency

No	Activity	Target
1	Implementation of the quality management system ISO 9001:2008	Monitored quality of licensing service
2	One Stop Licensing Service using online and tracking system	Transparency of information related to activity of one stop licensing service
3	Service information and investment licensing using online system	Transparency of information related to activity of investment
4	The data based on computer	Monitored all of data in effective and efficient
5	Implementation of Community Satisfaction Index Survey	Monitored directly by the applicant's response licensing service satisfaction
6	New Mobile Service	Services quickly and effectively related services business licensing
7	Report of Investment activity using online system (http://kpmonline.bkpm.go.id)	transparency of information related to investment activities
8	Media public information (workshop & one day service)	Transparency of information & socialization in the district level
9.	Electronic media of public complaints	Transparency of public responesive to service
10	Promotion of licensing services (internet, radio, newspapers, and investment exhibition)	Transparency of information and socialization for licensing service
11	Licensing one (1) package using online system	Services quickly and effectively in submission licensing package application

Source : Government of Sidoarjo Regency, 2013

Table 2 Analysis Typology of Innovation Based on Muluk Perspective

	Innovation of or service	Innovation of process	Innovation of method	Innovation of policy	Innovation of system
Implementation of the quality management system ISO 9001:2008	x	x	x	X	x
One Stop Licensing Service using online and tracking system	x	x	x	X	√
Service information and investment licensing using online system	x	x	x	X	√
The data based on computer	x	x	x	X	√
Implementation of Community Satisfaction Index Survey	x	x	x	X	x
New Mobile Service	x	√	x	X	x
Report of Investment activity using online system on website http://kpmonline.bkpm.go.id	x	x	x	X	√
Media public information (workshop & one day service)	x	x	√	X	x
Electronic media of public complaints	x	√	x	X	x
Promotion of licensing services (internet, radio, newspapers, and investment exhibition)	x	x	x	X	x
Licensing one (1) package using online system	√	x	√	X	x

Source : Processed, 2013