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DESIGNING A DATA GOVERNANCE MODEL BASED ON SOFT SYSTEM METHODOLOGY (SSM) IN ORGANIZATION

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ABSTRACT

Today, many emerging various models of data governance like DAMA, DGI and the latest is a model from IBM. Model DAMA International is a data governance model designed by industry associations. The model requires the fulfillment of the entire artifact in a matrix that has been determined that too many components that must be built in data governance in an organization. While the data governance model is built from the data DGI consulting organization which requires the development of data governance is formed of several related items (including programs, stages, decision domain, universal objects, and components) that this requires significant effort to learn and use. While IBM's approach is a model of data governance that is built from the vendor data governance software provider, so as to establish a data governance will ultimately require software support. So in this case we need a model that can be easily adopted in accordance with the needs and resources of the organization's information. Designing a model that fit the needs of the organization is not easy. One way to build a model with based on the problems encountered is the concept of soft systems Methodology (SSM). SSM is used because basically change the way of thinking of a person or group as a system for solving problems encountered.

Keywords : *Data governance, Soft System Methodology (SSM).*

1. INTRODUCTION

The concept of data governance can be adopted directly by the various organizations. However, not all organizations are able to easily implement it. So in this case, organization need a model that can be easily adopted in accordance with the needs and resources of information. Designing a model that fit the needs of the organization is not easy. Many factors must be taken as considerations are:

- Is the existing data governance can directly resolve the problems in organization?
- How does the organization want to implement data governance but have the limited resources?

One way to build a model based on the problems encountered is to use the concept of Soft Systems Methodology (SSM). SSM is used because basically change the way of thinking of a person or group as a system of looking at and solving problems. This viewpoint will produce a variety of approaches to produce something that can be used as stage repair.

2. LITERATURE REVIEW

2.1 Data Governance

Data governance is different from information technology governance(IT Governance). In principal, IT governance makes decisions about IT investments, IT application portfolio, and the portfolio of IT projects. CobiT (Control Objectives for Information and Related Technology) provides IT governance standards, but only a fraction of the CobiT framework which deals with the management of the information on DS11, especially for COBIT 4.1[4]. Data governance is specifically designed for the management of data assets[10].

In principle, data governance is decision-making and authority for matters relating to the data. Data governance is a system of decision rights and accountability for process-related information, is carried out in accordance with the model and describe who can take what actions with what information, when, under what circumstances, using what methods [3]. This can be seen in the background of the emergence of the model. Today many emerging various models of data governance like DAMA Model, DGI and the latest is a model from IBM. DAMA international Model is a data governance model designed by industry associations. The model requires the fulfillment of the entire artifact in a matrix that has been determined that too many components that must be built in data governance in an organization. While the data governance model is built from the data

DGI consulting organization which requires the development of data governance is formed of several related items (including programs, stages, decision domain, universal objects, and components) that this requires significant effort to learn and use. And the last, IBM's approach is a model of governance that is built from the vendor data governance software provider, so as to establish a data governance will ultimately require software support.

2.2 Data Governance Model of DGI

In the framework of data governance as figure 1, DGI divide activity into three (3) components, namely the determination of the component rules and roles, people and organizations have processes [11].
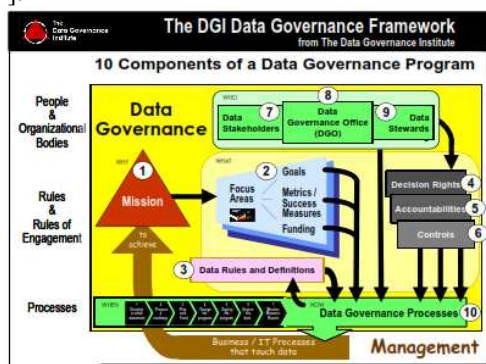

Figure 1: DGI Data Governance Model[10]

2.3 Data Governance Model of DAMA

DAMA International classifying data governance function to be 10 (ten) area[6], as figure 2.

Figure 2: DAMA International Model[6]

As for the ten functions is

a. Data governance that includes planning, supervision and control of management and use of data.
b. Management integrates data architecture
c. Development of data
d. Operational management of the data

e. Privacy guarantees of data security management.
f. Reference and Master Data Management.
g. Management Data warehouse and business intelligence
h. Document management
i. Meta Data Management.
j. Defining data quality management

2.4 Data Governance model of IBM

Integrated data governance process is shown in Figure 3. IBM charted fourteen (14) step phase consisting of 10 (ten) steps required and 4 (four) additional optional step[9]. This Model shows that the organization needs to ensure that the business problem must be clearly defined, and that the executive support identified in the business and IT.
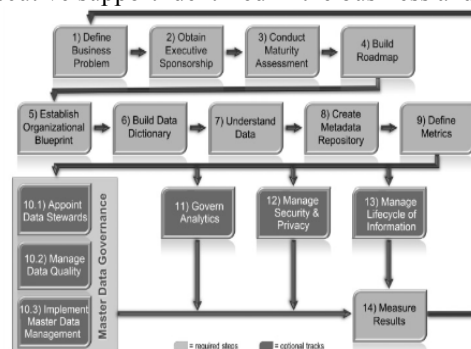

Figure 3: IBM Data Governanve Model[9]

2.5 Concept of *Soft Systems Methodology* (SSM)

Mid-1970s, Checkland and his colleagues developed an approach that is designed to help decision makers in studying and understanding the unstructured problems. They call this approach Soft System Methodology(SSM). Called SSM because of its focus on learning and innovation on the problems encountered [2]. SSM is also a participatory methodology that can help to understand the perspective of each stakeholder. SSM focus is to create a system of activities and human relationships in an organization or group in order to achieve a common goal.
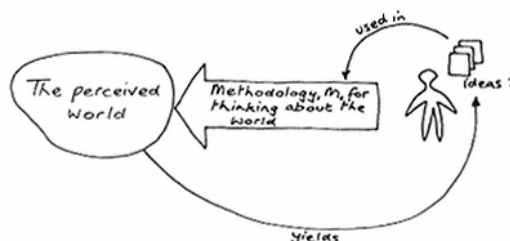

Figure 4 : Perspective of SSM building[2]

SSM is based on the premise that if a person participating in a process of understanding the problem and how to fix it, then that person would feel to have these problems, and committed to change it. SSM is a suitable methodology to assist an organization in explaining their goals and then design a system of human activities to achieve these goals. SSM has 7 (seven) stages of the process which starts from clarifying the situation unstructured problems through human activity system design, in order to produce a conceptual model for later comparison with the situation of the problem in order to identify changes that decent.

2.6 Development Initiative of Data Governance

Here are a few common problems related to data management either through individuals within the organization and the organization itself.

Table 1: General Data Problems faced by organisation

Problems encountered	Related questions
Business strategy created refers to Information - Driven Company, so that every decision must be based on the data. But often faced with the data that is often unclear and inconsistent.	• Who is responsible and lead-related data management? • How to obtain valid data, and quality?
Data Cleansing organization has done a massive but the data still 'dirty'.	• How does the overall requirement analysis?
The fact gives the condition that all the data has been archived but no one person or unit knows where the data is stored and how the procedure to obtain it.	• How should the form and the task of data management committee? • How to describe the team involved in the management of data? • How to determine the appropriate role?
People often make mistakes, mistakes are often in the organization resulting in a loss that affects every aspect of IT and business	• How to communicate the policy? • How to determine the rules of data governance?

sources: [1] , [7], & Researcher Analysis

These problems became the basis of the initiative needed data governance program for the organization or enterprise. In developing a data governance program certainly should be able to answer the questions related. To answer these questions, organization need a model that can describe the development of data governance. In the construction of governance, one of the standardization that can be used is ISO 38500: 2008. ISO 38500: 2008 is an international standard for corporate governance related to information

technology. Based on the ISO 38500: 2008 was obtained 6 principles to be followed to produce a good governance, namely Responsibility, Strategy, Acquisition, Performance, Conformance, Human Behavior[5]. These principles can be used to support the objectives of data governance. The general purpose of data governance is as follows:

a. Ensuring that stakeholders can gain confidence in the data management of the organization concerned.
b. Inform and provide guidance to directors in terms of governance to improve the quality of data, align data inconsistencies, and widespread data sharing, utilizing data aggregation to gain competitive advantage, manage data changes with respect to patterns of data usage, as well as comply with internal and external regulations and agreed standard data usage.

Thus, based on these elements generally requires a data governance council membership data. member is a representation of the relevant stakeholders and supported by a data governance team responsible for data management.
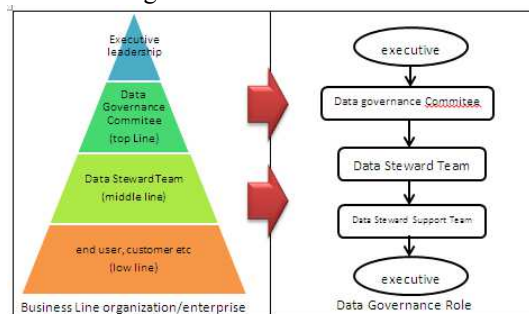

Figure 5 : Business line on Data Governance Program[1]

Figure 5 shows that each manager is a group that has a corresponding interest in the organization's business lines and making policy decisions on behalf of the interests of the organization. Clear structure ensures clear accountability for all aspects of data governance in any line of business as well as the entire organization. As the task of governance board to set appropriate policies and procedures to ensure that everything is done in a proper manner, it is necessary referrals, monitoring and evaluation.

a. Direct

Steering giving responsibilities, direct jobs, and the implementation of all plans and policies. Steering give support a culture of good governance in the organization of data using a data governance team who provide information appropriate time, to comply with the directives and 6 (six) the principles

of   good   governance.

b. **Monitoring**

Steering monitor, through appropriate measurement systems, performance data management processes. In this case it must be ensured again that the performance according to plan, especially for business purposes. Steering should be able to ensure that the data governance team adhere to policies/ regulations outside and inside the organization.

c. **Evaluation**

Steering board check and make policy concerning the management of the current data and future, including strategies, proposals and rules (both internally and externally). In evaluating data management, directors should also consider internal or external parties associated with current business needs and future goals of the organization in accordance with the current and future to be achieved.

3.   SSM METHODOLOGY

In applying the SSM approach in this case, the user has to think the problem that he faced as a system. Then try to see the form of unstructured problems and create a conceptual model as an ingredient in decision making. The development model of the system is done by extracting unstructured problems, discuss intensively with stakeholders and conduct joint problem solving. The steps used in SSM:

✓ Step 1 & 2, Find out (discover), Using a rich picture and methods / techniques for structuring in understanding the problems faced.

✓ Step 3(three), Formulate Root Definition of Relevant System that identifies the stakeholders involved, transformation, Weltanschaungg (point of view), and the environment to establish the definition of human activity system that is needed to fix the problems encountered [2].

✓ Step 4(four), Build conceptual model, Based on the Root Definition for each element are defined, then build a conceptual model is needed to achieve the ideal goal.

• Step 5(five), comparing the model with reality, comparing the conceptual model of the system are made with what is happening in the real world.

• Step 6(six), Define feasible and desirable change

• Step 7(seven), Take action, build a plan of action to improve the situation the problem.

4.   DESIGNING DATA GOVERNANCE MODEL

4.1 Steps of SSM

✓ *Step first*, define existing problems

In this case that is used as a case is the organization in general. Almost the average organization has not implemented data governance. In addition to data governance concept is still relatively new problems of data and information unwittingly by a common organization. The questions that arise as

• Is there a required data?

• Is there any quality data?

• Is there any guarantee data security of the organization?

• Who is owner of the data?

✓ *Step second*, understanding the problems faced. Based on the issue drafted situation issues related to conditions such as the organization of the table 2, Table 2 can be determined root defenition to illustrate the exist problems.

Table 2 : Basic Issues

Performance Indicators	discussion
E1 (*efficacy*)	Does the organization need data governance?
E2 (*efficiency*)	Is the using of data governance, business organizations will be able to run well and there is hope for increased?
E3 (*effectiveness*)	Is the data governance program created can be used and adopted easily?

Today, organization will not easily increase its business by investing in IT and IT-related enforcing compliance. In many cases it gives IT related problems of data and information generated. Organization have problems like Not all organizations have a large IT investments, the organization does not yet have a clear concept related to IT management, and organization Environmental rapidly changing
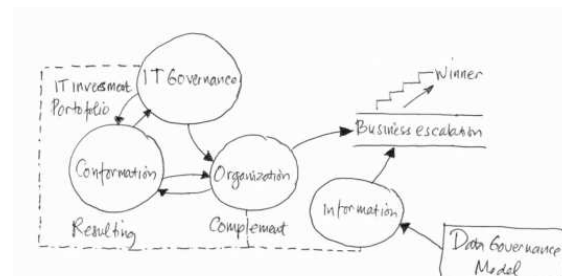

Figure 6 : Problems Model

✓ *Step third*, defines CATWOE based on the description above, the problem can be determined by CATWOE as follows:

- Customer → Industrial, management, stakeholder
- Actor →leaders, managers, staff
- Transformation → need good data management program
- World view → to produce a program of good governance, the model should be easily understood, easily accepted and easy to adopt, easy to administer, and flexible in accordance with organizational problems.
- Owner → management organization
- Environment → business environment.

✓ *Step Fourth*, Build conceptual model.

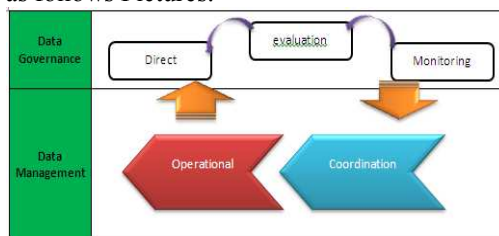To build a conceptual model is needed rich Picture as follows Pictures:

Figure 7 : Data Governance Rich Picture

The model shows that data governance is a cycle that includes planning and evaluation of strategic, operational coordination and then divided by the role that data governance under the Board of data governance and data management is the responsibility of data steward team

✓ *Step fifth*, comparing the model with reality

For comparing process can used the following table 3.

Table 3: real conditions current that occur in the organization

Activity	Is it done in the real situation? How is it done?	Comments, Recommendation
There are no good data management.	the achievement of the organization's business objectives have not been achieved	The existence of simple models adopted, accepted, executed and in accordance with the requirement of the organization to the problem that occurred.

source : researcher analysis

✓ *Step Sixth*, establish a data governance model

Begins with selecting a data governance model that is easy to understand, easy to adopt and easy to administer as needed based on the organization's problems. Data governance model that used as a reference (dedicated model) is a model of IBM.

✓ *Step seventh*, designing data governance model with SSM approach, holistic models and build a framework of development model.

To facilitate understanding of the systematics, here is a picture of the SSM model design in building a data governance model.
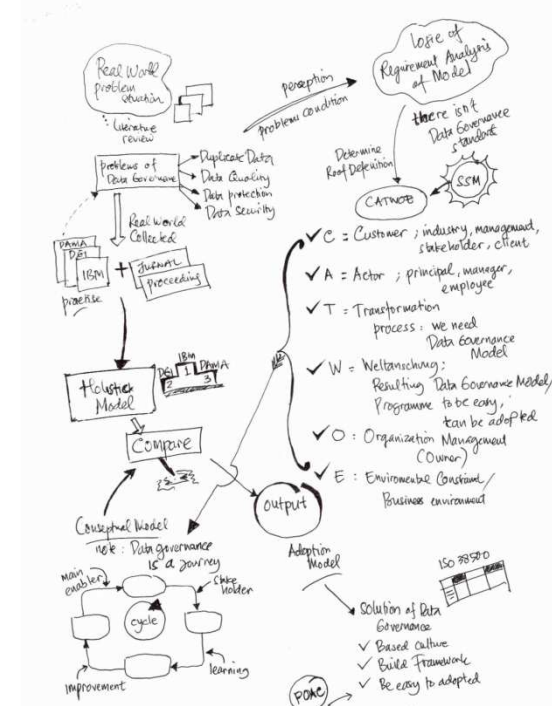

Figure 8 : Conceptual Model SSM for data governance model (Researcher Analysis)

4.2 Designing of Data Governance Model

After establishing the core processes and problems, determine the principles and objectives of data governance as well as the perception of the role based on business lines, the general conceptual model of governance of the data used as basis for development of a model as a Figure 8. Based on this, it can be described framework of effective data governance model in Figure 9.
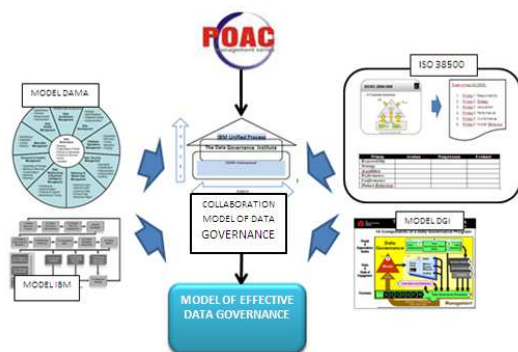
Figure 9 : The framework model of effective data governance

Framework proposal illustrates that the model is based on the concept of cycles of data and information, this concept underlies the determination of the role and governance structure element of data that supported effective data governance. ISO 38500: 2008 recommends the concept of governance as the standardization of governance management processes and decisions related to information and communication services used by an organization[5]. To generate a simple model as the previous discussion that builds a system involving humans must be adapted to the environment and culture by observing the behavior of the environment in which it is located. Given the adoption of the IBM data governance, DGI and DAMA an ideal concept as our analysis in Figure 9, it is proposed that the proposed model uses a more effective approach is POAC management approach. The POAC include planning, coordination/ organization, implementation and monitoring / evaluation and with this grouping is easy to understand the model to be used while still applying the whole of the aspects of management to strategy. On this basis, the cultural aspects of development and POAC underlying conceptual model in Figure 8[8]. In addition, the proposed model also provides convenience in selecting the process as needed based on the information resources of the organization. The grouping is based approach POAC aligned with governance model data based on table 4.

	• Ensure Executive Support • Developing Roadmap	identification of business problems, determine the commitment, and build a roadmap
Coordination/Organitation	• Determining the Organization Blueprint • Understanding organizational data • Build Data Dictionary • Build metadata repository • Determine KPI	group of organizing both the organizational structure and role of the governance and organization of data
Implementation (Data Management)	• Management of Data Architecture • Management Data Warehouse & Business Intelligence • Quality Management • Metadata Management • Security Management • Operational management and data governance • Master Data Management & references • Document & Content Management • Communication and Reporting Program	groups of implementation data governance
Monitoring/ evaluation	Measurement of: • Data Quality • The value of data and IT services • Risk Probability • Adherence to Policies efficiency Governance • contribute to the revenue • cost savings	group of control and evaluation of the performance data governance.

source: researcher analysis

The effective governance model of the data as shown in Figure 10

Table 4: Grouping Process based POAC approach

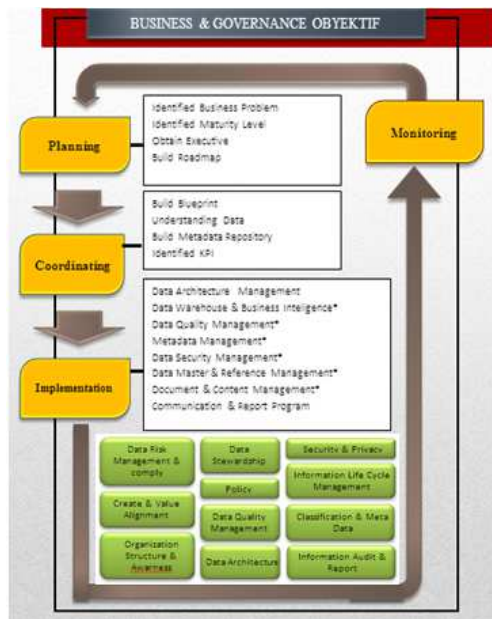| POAC	Data Governance Process	Description
Planning	• Determine Business Problem • Conduct Maturity Assessment (CMM)	group planning data governance, ranging from

Figure 10 : Data Governance Effective Model

5.   CONCLUTION

Besided of Information Technology governance, data governance also have a significant role in aligning the company's business. Data governance is a model that can be used to solve a variety of business issues related to data and information.

In general, the data governance model has the structure of a complex process because it is based ideal IT investment. By using SSM approach, the company is easier to understand, adopt and implement data governance according to their needs and by selecting a data management processes according owned IT investments.

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