

## Analytical Dependency between Organisational goals and actions: Modelling concept

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**Abstract.** It is a challenge for entrepreneur to utilise information from vast amount of data in order to achieve the organisational goal. Data mining and similar techniques may be used to make sense of information, though these techniques do not fully support entrepreneur to link information and actions to organisational goals. This paper attempts to develop a model to evaluate data within an organisation in ontology context. In this context, several elements are identified such as goal, sub-goal, action and task. These paper attempts to develop a relationship between these elements in order to support our goal modelling concept. An analysis based on such model can provide a metrics for conformance of an organisation to its goals.

**Keywords:** action, data, goal, sub-goal, task

### 1. Introduction

Goal is the higher achievable target set by an organization. It is an outcome that needs to be achieved based on the organization environment. Several inter-connected sub-goals must be achieved in order to achieve the main goal and these sub-goals require actions. Here, actions constitute of organization task. Each task is a set of activities to perform action. The relationship between action and sub-goal also provide extra alternative in order to achieve the main goal. This paper looks at the process of data provision and usage within the context of organization goal. The degree of such dependency is the entrepreneur's valuable information as shown below in Fig. 1. At the end of this paper, we will attempt to highlight the relationships between these concepts in order to improve the interpretation of data usage toward organizational goal.

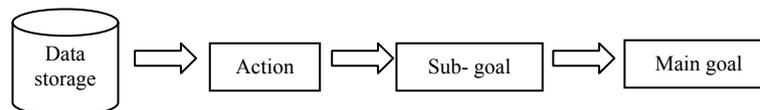


Fig 1: Goals relationship

Fig. 1 shows simple relationship between goal, sub-goal and action. In order to improve business process in term of decision making within organization, the quality of data must be guaranteed. Previous research examines the concept of quality metric for organizational data ([1],[2],[3],[4],[5]). For example Goal Question Metric (GQM) as discussed in [6] and [7] is used as a general methodology for process improvement. GQM is driven prior to analysis of goals. A question in GQM defines the goal that is relevant to measure. Such question is a source of data. A goal is defined as a focus issue. One need to identify the

metric required for certain goals by defining the questions linked to the goals [8]. On the other hand, actions and data within an organization environment is an important aspect toward achieving organization's goal.

### 1.1. Background.

Research on organization goal has been carried out since 1970s. For example, identification of variables toward supporting the organization has been studied since 1973 by England and Lee [9]. They emphasised the influence on perceived organization goal. Their study has been supported by Lusk and Oliver [10], who focused on the social goals involved towards organization goals. On the other hand, Hall and Hall [11] also identified several variables in order to support the relationship toward goals. In their study, they investigated the relationship between goals, performance, success, self-image, involvement and future goal.

Relationship developed in this paper attempt to look at the organization elements such goal, sub-goal, action and task in order to evaluate data toward goal. The relationship defined as following. In particular, every organization has a goal that specifies the target that the members of organization try to achieve. This organization goal consists of sub-goals to be achieved. However, action is required to achieve the sub-goal. This action consists of task(s). Task assumed as a number of activities that involve toward action. Such activity relies on data. The data should be analysed in order to identify the quality of data that can be use by organization entrepreneur. Here entrepreneur in organization is recognized as the uncertainty and tight resource constraint by individual initiative and effort [12]. This mean large organization need to develop an internal culture that allows their staff to be more initiative even though it tends to be more on experience initiative [13]. It is important for entrepreneur to develop an initiative in order for organization to achieve the goal. This is because the environment of organization is changing and every action must support this change. At the same time, the development of goal modelling must adapt with organization change and support the organization performance [14].

In order to support our discussion, we developed simple organization ontology on goal. The concept based on ontology has been studied previously in order to identify the concepts within the organization [15]. Fig. 2 shows the basic elements.

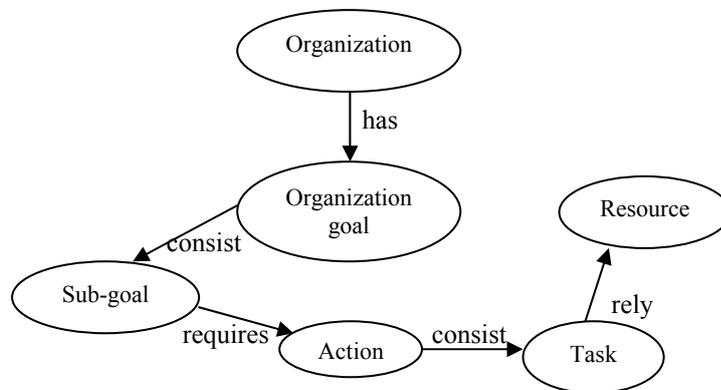


Fig 2: Elements of organization ontology.

### 1.2. Modelling Concept.

In order to achieve the goal, organization needs to look at the task concept toward action. Task is the set of activity that required to achieve the goal. In this paper, organization task is a task that organization performed within the context of organization environment. In this context, we define organization task as a process of using the existed data to support the organization goal within organization performance and organization environment. For example, 'Attending Staff Training' is organization task performed by the organization within organization environment toward organization performance. Here organization environment is 'Training on Sales Skill' and organization performance is 'Staff Skill'.

In order to deeply understand the concept, let use a simple scenario to assist the above discussion. The scenario discusses the action perform by La Trobe University Library toward La Trobe University mission or goal (see [www.latrobe.edu.au/library](http://www.latrobe.edu.au/library)). Here, university goal is to 'Transform the lives of students and communities through learning and knowledge'. The sub-goal of this goal is 'Create new and useful

knowledge'. Next, university require several actions to achieve this sub-goal. This scenario attempts to look at the library action that supports the university action, sub-goal and goal.

The first university action to support the sub-goal is *increase quantity and quality of research activity*. This university action is supported by several library actions such *establish research data management services, investigate the provision of a bibliometric citation reporting service, promote the new postgraduate study room in library Melbourne campus* and *extend and promote digital object management services*.

The next university action toward sub-goal is *develop knowledge exchange programs*. In order to achieve this university action, library has come out with several actions such *develop strategies for increasing the number of full text open access research output in the repository* in which this action is important to increase the impact and reputation of La Trobe University research and the other library action is *enhance the profile and maximise the use of library special collection*. This process is done through promotion, digitisation and collection acquisition.

The last university action toward university sub-goal is *produce more excellently trained research graduates*. Library has come out with several actions to assist this university action. The actions are *develop a research gateway on the Library website for academic staff and postgraduate students* and *provide targeted outreach services for academic staff and postgraduate students* that include to tailored research skills training.

The example gives the entire picture of goal, sub-goal and action within university and library environment. Here, the environment is assumed as knowledge creation toward research improvement in the university. Fig. 3 shows the entire relationship based on the ontology. In this concept, action consist task and task rely on data to perform. Let take one university and library action as example, where university action is *produce more excellently trained research graduates* and library action that involved is *develop a research gateway on the Library website for academic staff and postgraduate student*. The possible data that the library required toward task and action is *data on previous year research, data on research area* and *data on research publication*. This data help the library to develop a research gateway within the website. Here, user can rely on this data to perform their research.

In this paper, we attempt to develop a model based on the dependency relationship between goal, sub-goal and action in the context of organization. The purpose of this model is to look at the relationship of data usage in order to develop new knowledge toward decision making

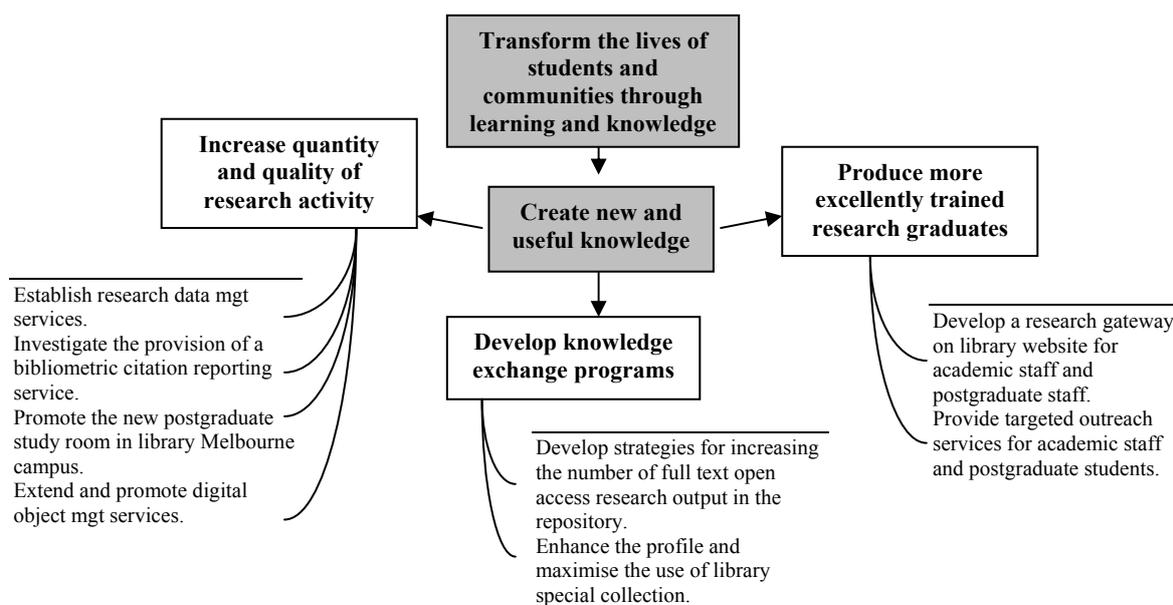


Fig 3: Ontology relationship between goal (university goal), sub-goal (university sub-goal) and action (university action and library action)

### 1.3. Organization Goal Modelling.

In one organization, goal is very important because it is an achievement target. It is an important aspect within the organization. Sub-goal is develop in order to support the main goal. This sub-goal becomes a guideline for organization toward the performance. However, this sub-goal requires an action. In order to achieve the sub-goal, organization needs to understand the type of data that exist to support the organization action. This is because action relies on data. The elements concept we identified here is between organization goal, sub-goal and action. In the rest of this paper, we denote that organization goal, sub-goal and action as  $Org_{goal}$ ,  $Sub_{goal}$  and  $A_{ction}$ . If we define  $Org_{goal}$ , then

$$Org_{goal} = Sub_{goal} + A_{ction}$$

where  $Org_{goal}$  is depend on  $Sub_{goal}$  and  $A_{ction}$ . In order to extend our model, we introduce another element in order to support our model. The elements are task and data and we denote task as  $T_{ask}$  and data as  $D$  in the rest of the paper.  $T_{ask}$  is important toward achieving the  $Org_{goal}$  in term of performing organization business daily activity. In this case, data ( $D$ ) is important for organization to run the  $T_{ask}$  in order to achieve the  $Org_{goal}$ .

### 1.4. Organization Sub-goal Modelling.

On the other hand, environment must be taken into consideration to perform  $T_{ask}$  and  $A_{ction}$  toward  $Sub_{goal}$ . The environment can affect the decision. Based on data, he/s can make a decision. For example, *create new and useful knowledge* is  $Sub_{goal}$  and possible  $A_{ction}$  is *develop knowledge exchange programs*. Then several possible  $T_{ask}$  that involve is *identify the exchange program available* and *compare the exchange program*.  $Sub_{goal}$  can be represent as

$$Sub_{goal} = \{A_{ction} (T_{ask}^1, T_{ask}^2, \dots, T_{ask}^n)\}$$

where  $Sub_{goal}$  requires  $A_{ction}$  and  $A_{ction}$  consist a number  $n$  of  $T_{ask}$ . The example can be written as

Create new and useful knowledge = {Develop knowledge exchange programs(identify the exchange program available, compare the exchange program)}.

### 1.5. Organization Action Modelling.

As discussed from the previous section, we understand that every  $A_{ction}$  consist  $T_{ask}$ .  $A_{ction}$  can be represent as

$$A_{ction} = (T_{ask}^1, T_{ask}^2, \dots, T_{ask}^n).$$

The example can be written as

Develop knowledge exchange programs = (identify the exchange program available, compare the exchange program)

### 1.6. Organization Task Modelling.

In order to achieve the  $Org_{goal}$  and  $Sub_{goal}$ ,  $T_{ask}$  need to be performed by organization.  $T_{ask}$  can be defines as a group of activity that is required in order to perform  $A_{ction}$  toward goal. In this paper, organization task is a  $T_{ask}$  that organization performed within the context of organization environment in order to achieve the  $Org_{goal}$ .  $T_{ask}$  rely on data ( $D$ ) in order to assist  $A_{ction}$  toward goal. This data ( $D$ ) is use as information for individual or organization to perform the  $T_{ask}$ . So data ( $D$ ) can be written as  $D = (D_1, D_2, \dots, D_n)$  where  $n$  is a number of data ( $D$ ). So  $T_{ask}$  is represent as

$$T_{ask} = (D_1, D_2, \dots, D_n).$$

Take one example from previous discussion, where  $T_{ask}$  may be represent as

Identify the exchange program available = (list of program, list of program focus).

The usage of data can assist the process of decision making. For example, university want to develop exchange program and  $T_{ask}$  that involve is to *identify the exchange program available*. This  $T_{ask}$  is important for university to develop a good knowledge exchange programs. This process involves the concept of environment where university want to create user research environment.

### 1.7. Organization Environment.

Organization environment assist the decision to perform  $T_{ask}$  and  $A_{ction}$ . This is because organization must consider the environment aspect. For example *organization organize training for their staff if staff can gain new skills or not and if training can improve the presentation skills or not*. The *mean* from the overall percentage of data (D) that involve toward  $T_{ask}$  and  $A_{ction}$  need to be analyse in order to consider the organization environment. Here, let denote organization environment as  $E$  and the rule to consider  $E$  is based on simple scale (0—7) as example: low (0-2), fair (3-5) and important (6-7). Here, we assume, if the  $E \leq 2$  then data (D) toward  $T_{ask}$  and  $A_{ction}$  are not important and if  $E \geq 3$  then data (D) toward  $T_{ask}$  and  $A_{ction}$  are important and need to be consider during decision making.

$$E = \text{Mean} (T_{ask} \text{ and } A_{ction})$$

As we discussed,  $T_{ask}$  rely on data (D) to support  $A_{ction}$  toward goal. This data (D) is important in order to look at *mean*. Here, in order to identify *mean*, *AVERAGE* percentage is identify as two characteristics need to take into consideration which are *Total* and *Number*. In this paper, we attempt to look at the *mean* number of data (D) that involve to supports  $T_{ask}$  and  $A_{ction}$ .

Take one scenario from Fig. 3, University Library want to enhance the profile and maximise the use of Library special collection then Library need to look at the data (D) based on their important. In this paper, we obtained data (D) from La Trobe University Library website (see <http://www.lib.latrobe.edu.au/about/surveys.php>). We developed a simple explanation as shown in Fig. 4 as example.

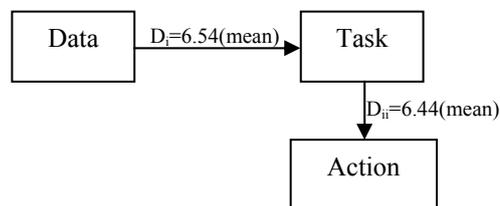


Fig 4: Data flow toward goal: An example

We assume data ( $D_i$  and  $D_{ii}$ ) is important as shown in Fig. 4,

1. Estimate data ( $D_i$ ) toward  $T_{ask}$ . Assuming if online resource meets student learning and research needs. This  $D_i$  is important to support the  $A_{ction}$ .
2.  $A_{ction}$  based on  $D_i$  is assumed important where possible  $D_{ii}$  to support this  $A_{ction}$  is important. Estimate data ( $D_{ii}$ ) toward  $A_{ction}$  where student still can access to Library resource even they are away from campus. This shows that Library  $A_{ction}$  is performed.
3. Based on these two data ( $D_i$  and  $D_{ii}$ ) we can assume that these data is important for Library to estimate  $A_{ction}$  and  $T_{ask}$ .

The example shows the concept of our discussion. This concept emphasis the important of data (D) and to identify the type of data (D) that can be consider important for Library.  $A_{ction}$  is perform based on the task involved which mean action depend on  $T_{ask}$ . Here, we conclude the process as

$$x \rightarrow A_{ction} | y \rightarrow T_{ask}$$

where

$x$  estimate  $A_{ction}$  (dependent), and  $y$  estimate  $T_{ask}$  (independent).

## 2. Summary

In this paper, we attempt to develop a model based on the relationship between organization goal ( $Org_{goal}$ ), sub-goal ( $Sub_{goal}$ ), action ( $A_{ction}$ ) and task ( $T_{ask}$ ). We developed the approach between these relationships in order to identify the relationship between data (D). As a result, we identified two main variables such as dependent variable and independent variable. The relationships between these variables are important in order to identify the value of data (D). We illustrate the example based on ontology relationship as shown in Fig. 2. In the future, we intend to extend this ontology as this is the basic structure of this modelling concept. This is important in order to make sure that data (D) toward  $T_{ask}$  and  $A_{ction}$  is used for future decision making.

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