Design of Knowledge Management System to Support The Performance of DKI Jakarta Regional Planning Board

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Abstract

We are now living in the information era in which we value information capital as important as tangible capital. The right information on the right time is the basis of creating a valuable knowledge. Fueled with growing speed of information technology, it has made knowledge a valuable asset for an organization, in either private or public sector. The DKI Jakarta Regional Planning Board as an organization with the assignment to coordinate, monitor and evaluate the region planning, heavily on the knowledges of human resources that they have. Therefore, it needs to implement Knowledge Management to improve the quality of human resources that they have, through identification, creation, capture, sharing and apply of information and knowledge within an organization. This research focuses on the early design of a Knowledge Management system includes the development of human resource and information technology that can fulfill the requirements of the users. However, Knowledge Management is not just about the technology, the business process and the sharing culture of the organization is an important factor in a Knowledge Management system and the support and commitment of all parties are needed.

Keywords: Knowledge Management, Knowledge Gap, Human Resources Development and Enterprise Knowledge Portal.
1. Introduction

Today, the world has entered a new era, the information era which also called the knowledge based economy [1]. The organization that have the ability to control and apply information and knowledge to their product and services have the greater chance to succeed in this era, because information is the foundation of knowledge and knowledge is power. Knowledge is the main asset for an organization to gain a competitive advantage [2].

Every organization has an organization structure to support their activities and attain their preset goals. The organization structure has positions filled by employees assigned to that particular role. To ensure the fulfillment of that particular work, then that employee need to have the knowledge that they need to support their work. The boundaries that an organization can do at this time are basically supported by the knowledge that the organization has acquired. By identifying the difference between (1) knowledge that they need in order to attain their strategic organization goals and (2) the current organization’s knowledge, we would find what called as the knowledge gap. Knowledge gap shows the direction where a knowledge improvement should be done, to close that gap and increase employee productivity. Therefore, the organization needs to manage their knowledge assets and learning process, combined with technology and communication network to increase the value added. This management process is what we call Knowledge Management (KM).

In a knowledge-based organization, for instance a planning organization in which they have to evaluate and prioritize activity alternatives that will have the best result in attaining goals, knowledge is an important capital.

This research is conducted in a governmental organization, DKI Jakarta Regional Planning and Development Board (Bapeda DKI Jakarta). According to the Main Task and Function (Tupoksi) of Bapeda who helps building planning, research and development, also monitoring and evaluation of building planning execution in Jakarta, relies heavily on their human resource to make decisions, activity priority with their indicators and budget platform for each work units, where the results affect regional development of DKI Jakarta. With this reason, Bapeda DKI Jakarta needs to develop Knowledge Management system to improve the quality of human resources that they have, through identification, creation, capture, sharing and apply of information and knowledge within an organization.

The goals of this research are:

1. Obtain a knowledge-need map for Bapeda DKI Jakarta.
2. Obtain a knowledge gap identification to ascertain the knowledge need and current knowledge in Bapeda DKI Jakarta.
3. Obtain an early design for knowledge management system, which include recommendation for human resource development and the appropriate information technology for the user requirements to support the application of Knowledge Management in Bapeda DKI Jakarta.

2. Research Methodology

This research uses the framework written by Amrit Tiwana, the 10-step KM Roadmap [2]. The 10-step and their sequence are describe in figure 1.

However, in this research not every phase in this roadmap is used. The first step is to create a knowledge need map to identify the knowledge needed to execute the Tupoksi of each division and the acquired or unacquired knowledge reference for Bapeda DKI Jakarta. At the same time identifying the knowledge had by Bapeda Human Resource through employees’ CV (Curriculum Vitae). Follow by identifying the existing and used technology infrastructure.
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3. Result and Discussion

3.1. Knowledge-Need Map

Using the knowledge list which refers to the reference from Bappenas as a government planning central organization [3], the Bapeda Strategic Plan [4] and the general organization knowledge, then we can acquire the knowledge that the Kesejahteraan Masyarakat/Kesmas (Social Welfare) division, SPKLH (Infrastructure) division, Perekonomian (Economic) division, Tata Praja dan Aparatur/Tapratur (Governance) division, PP (Research and Development) division, PPI (Monitoring and Control) division, and Secretariat section need to support their main tasks and functions.

3.2. Knowledge Gap Identification

The method used in knowledge gap identification is by measuring the importance level of the knowledge needed against the level of available human resource capability of that knowledge. The importance level describes how important the knowledge is needed in each unit to execute their Tupoksi. The Importance level has four levels: 1 = does not need to know; 2 = nice to know, 3 = need to know, 4 = must know. The level of capability describes how well the capability of the human resource in a division for that needed knowledge, it also has four levels: 1 = no understanding of the concept/theory; 2 = understand the concept/theory and benefit; 3 = understand the concept/theory and benefit and what needs to be done; 4 = understand the concept/theory, benefit, what to be done, and how to do it. With this, the knowledge gap can be seen. This gap shows where to improve or the minimum level of improvement for the current condition to bridge this gap.

The knowledge gap quantification is acquired from the difference between the level of importance and capability. Positive value indicates that the capability level is lower than the importance level, and vice versa.

After acquiring the gap for each knowledge-needed, we decided which knowledge is obligatory and which are optional for each division. Obligatory knowledge is defined as the knowledge that need and must be had by every human resource to effectively and efficiently execute their Tupoksi. The criterion for obligatory knowledge is those that have importance level between 3 – 4 and or the highest knowledge gap value. Optional knowledge is defined as complimentary knowledge that can help the execution of
Tupoksi for each division. The criterion for optional knowledge are the knowledge that have the importance level less than 3 and those that are not included in highest knowledge gap value. The following is a list of obligatory knowledge for Bapeda DKI Jakarta.

Table 1.
Obligatory Knowledge for Bapeda DKI Jakarta

<table>
<thead>
<tr>
<th>Num.</th>
<th>Category</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General Planning Knowledge</td>
<td>1.1 Project Management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.2 Computer and information System</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.3 Planning Competency Standard</td>
</tr>
<tr>
<td>2</td>
<td>Specific Planning Knowledge</td>
<td>2.1 Organization and Governance Resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 Budgeting Basics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.3 Basic Concept and Planning Theory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 Data and Information Collecting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.5 Team Building</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.6 Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.7 Knowledge to synergize concepts in planning framework</td>
</tr>
</tbody>
</table>

3.3. Current Knowledge through Employees’ CV

To complete the knowledge gap quantification, we also analyzed the current human resource knowledge for each division through current employees’ CV (Curriculum Vitae), given that inside a CV we can see record of activities that shows someone’s knowledge, e.g.: educational background, work experience, training, projects and seminars/workshops.

From the CV’s that Bapeda DKI Jakarta have and the project and seminar/workshop data, the following was acquired, the Kesmas division has 50.47%, SPKLH has 51.52%, Perekonomian has 67.24%, Taptarut has 55.38%, PP has 48.39%, PPI has 50.79% and secretariat has 58.06% of their obligatory knowledge.

Because the majority of the CV analysis result supports the knowledge gap quantification, then a CV can be used as a reliable source of information to show a person’s work experience. Therefore, Bapeda DKI Jakarta, especially their Bagian Kepegawaian (bureau of Personnel) needs to have a mechanism to renew every employee’s CV for every period at least in yearly cycle.

3.4. Knowledge Reference

According to the knowledge need that every division has, we analyze the acquired and un-acquired data, information and knowledge assets by Bapeda DKI Jakarta and analyze the status of that asset, whether it’s documented electronically or non-electronically (hard-copy) or even undocumented (tacit knowledge) and the location that points to the data, information and knowledge assets location. The result is in Figure 2.

Figure 2.
The Percentage of Data, Information and Knowledge Assets

From the figure can be inferred that Bapeda DKI Jakarta still relies on data, information and knowledge sources in a hard-copy form. The users will have some difficulty in acquiring and using this form.

Ideally, these assets should be documented electronically and integrated in a system to make ease usage. With around 84% of assets and references is contained in Bapeda DKI Jakarta’s library, then by optimizing the function of the library e.g. by creating an integrated digital library with Bapeda’s intranet system, then each user can acquire and use the needed information easily and quickly. This digital library manages book indexes, publication, research, manuals, information and other documents as a reference source in
executing the Main Task and Function of Bapeda DKI Jakarta.

3.5. Knowledge Management Strategy

The Knowledge Management Strategy to be developed must be in accordance with the strategy of Bapeda DKI Jakarta in reaching the goals of the organization, this will ensure that the system will fulfill the core process and needs of the organization [5]. Analysis of the correct Knowledge Management Strategy to be applied in Bapeda DKI Jakarta is started with the evaluation of the two Knowledge Management Strategy, Codification and Personalization. The result for codification value is 34 (62.96%) and Personalization is 20 (37.04%).

With these result, the focused strategy to develop a KM system in Bapeda DKI Jakarta is codification, because employee relies more on explicit knowledge (document, manual, report, SOP, etc) rather than tacit knowledge (skill and experience) for their job. This strategy is appropriate for organization serving generic solution because it handles repetitive problems and decisions, like Bapeda DKI Jakarta. Thus, the IT structure used for managing knowledge management document and system must have the following criterion:
- A complete database
- Ease of use and search for documents
- Integrated with Bapeda DKI Jakarta’s intranet.

However, personalization involving a variety of tacit knowledge is also important, because on several cases, Bapeda DKI Jakarta needs opinion, thoughts, knowledge and experience from certain field experts.

3.6. Technology Infrastructure Map

The objective of identifying a technology infrastructure map is to understand the role of existing infrastructure, then to analyze and exploit it to develop a Knowledge Management system in Bapeda DKI Jakarta.

As of now Bapeda DKI Jakarta already have a Local Area Network (LAN) connecting division and subdivision, internally and to Bapekodya/Bapekab in each region. This LAN is used for Intranet and Internet.

From the network map described in figure 3, it can be seen that not every computer is in the network, furthermore not every employee have access to the computer, especially the Heads of subdivision, this happened because the computer is located centrally in the staff room. In other words the intranet of Bapeda DKI Jakarta is not yet integrated. The existence of the network is supposed to increase comfort-ability and efficiency of resource usage. The resource mentioned can be hardware (CPU, printer, memory), application software (e-mail, www) even data, information and knowledge. Because Bapeda DKI Jakarta already have a web-based intranet, then the Knowledge Management System should use the existing network but the function must be used an improved.

Hardware used by Bapeda DKI Jakarta is basically sufficient for Knowledge Management System development, which includes:
1. One Web server
2. One Database and Document server (internet)
3. Connection to KPTI for internet.
4. One Catalyst
5. Eight Hub to connect computers within a network.
6. 62 Desktop PC distributed to each division.

As for the software, some of the software can be used as components for the Knowledge Management system. It must be used optimally and there have to be systems added according to the organization’s need, for example:
1. An integrated intranet and Knowledge Management system.
2. Addition of document management system.
3. Addition of collaboration system for users, for example using functions on Microsoft Exchange / Netmeeting.
3.7. Early Design of KM System

4. Improvement on data, information and knowledge storage in a database system.

5. Using a project management application, e.g. Microsoft Project that can be used to monitor the progress of a project/activity, manage needed resources, analyze project activity and cost, create a comprehensive report on a project.

There is a plan for Bapeda DKI Jakarta to develop a Document Management system, which will make it possible for them to develop a Knowledge Management system. Document Management system can be a starting point for knowledge management in the organization. This can be done by not only managing the documents but also the ‘content’ of the aforementioned documents.

3.7. Early Design of KM System

The concept of knowledge management involves the management of human resources and information technology in order to achieve a better organization, therefore, for Bapeda DKI Jakarta; they can offer better services to the public as their contribution to regional development.

3.7.1. Human Resource Development

Human resource is the most important asset in the execution of tasks and functions assigned to Bapeda DKI Jakarta. Therefore, in the attempt to improve its quality and fill the existing knowledge gap, Bapeda DKI Jakarta needs to develop their human resource’s knowledge to ensure efficient and effective task execution. This improvement can be done through education and training according to the organization’s needs.

According to the knowledge that each division in Bapeda DKI Jakarta needs, we gave a recommendation in the form of suggestion of education and training (diklat) to Bapeda DKI Jakarta employees. This diklat is suggested especially for diklat held by Bappenas (National Development and Planning Board) as the government central planning institution. Aside from that, for materials that are not included in the curriculum of Bappenas’ functional planning position (JFP), we sought an external source from the name of diklat and the organization that held that particular diklat. Next is an example of needed diklat.

<table>
<thead>
<tr>
<th>Num.</th>
<th>Planner Knowledge</th>
<th>Bappenas Diklat</th>
<th>External Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project Management</td>
<td>Bappenas Project Course</td>
<td>Management Project Course (KMP)/ Provincial Education and Training Unit of DKI Jakarta</td>
</tr>
<tr>
<td>2</td>
<td>Computer and Informatio n System</td>
<td>Bappenas Diklat</td>
<td>Computer/Informatio n System Management diklat/ Provincial Education and Training Unit of DKI Jakarta</td>
</tr>
<tr>
<td>3</td>
<td>Growth, Distributio n, and Poverty</td>
<td>Growth, Distributio n, and Poverty diklat/ First Planner (Perencana Pertama)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Team Building</td>
<td>Team Building/Mitra-tri-atma Consultant</td>
<td></td>
</tr>
</tbody>
</table>

Bapeda DKI Jakarta’s Network Map

Figure 3.
3.7.2. Enterprise Knowledge Portal

Information and technology holds an important role as a support to implement the Knowledge Management process. By using web-based technology, knowledge portal is a new approach to provide access to a variety of information and also the capability to find, create, acquire and distribute valuable knowledges in an organization, thereby giving an important contribution in implementing an organization’s Knowledge Management strategy.

To understand how KM and knowledge portal can work together, then we created a map that shows how the knowledge management objectives/user requirements can be delivered as an enterprise knowledge portal using [6]. All of the features is a unity that forms an Enterprise Knowledge Portal, but some features are more important than others in fulfilling a user requirement. Therefore, we made a scale of 1 – 5 (1 = not critical; 2 = nice to have; 3 = important; 4 = must have; 5 = critical) to show how important each of the knowledge management portal features in fulfilling a certain user’s requirement.

![Enterprise Knowledge Portal Map](image)

**Figure 4.**
Enterprise Knowledge Portal Map

3.7.3. SECI Model Application

The organizational knowledge creation occurred because of the interaction (conversion) between tacit knowledge and explicit knowledge, through socialization, externalization, combination and internalization [7]. Next is some tools that can support KM process in Bapeda DKI Jakarta, which is the realization of Nonaka’s SECI model:

![SECI Model Applied in Bapeda DKI Jakarta](image)

**Figure 5.**
SECI Model Applied in Bapeda DKI Jakarta

3.7.4. Culture

To apply this Knowledge Management, not only we need qualified human resource (with proper experience, knowledge and skill) and consistent reliable technological infrastructure, we also need a knowledge sharing culture.

In order to build this knowledge culture in Bapeda DKI Jakarta’s human resource, then the strategies that can be used include:

1. Create a Bapeda DKI Jakarta knowledge culture, that emphasizes on finding and sharing knowledge to every employee in every level in the organization.
2. Build a mutual trust in Bapeda DKI Jakarta’s human resource, regardless the factors of position, cleverness, and performance.
3. A reward system due to sharing and applying knowledge activity. This will hopefully endorse the employee’s motivation in sharing knowledge.
4. Managed work rotation with employee career planning in every division, this will make distribution and improvement of knowledge activity possible.
5. Preparing the facility or media for knowledge sharing activity, so that the culture of creating and sharing knowledge will be able to grow by itself in Bapeda DKI Jakarta.

6. Leadership from top management in supporting this Knowledge Management implementation.

4. Conclusion

According to the goals of this research, then the conclusion that can be obtained are as follow:

1. Based on the knowledge map acquired, Bapeda DKI Jakarta can focus the need to provide education and training in order to improve the quality of human resource and filling the knowledge gap.

2. The design for Knowledge Management system in Bapeda DKI Jakarta focuses on Codification approach. Therefore, information technology is used to manage documents.

3. Bapeda DKI Jakarta needs to develop a web-based technology as a support for knowledge management process. Enterprise Knowledge Portal which is a development from Enterprise Information Portal, does not only provide access to information, but also have the capability to create, acquire, distribute and manage knowledge through the following functions: Enterprise Portal, Business Intelligence, Collaboration and Communities, Content Management and Learning.

4. Bapeda DKI Jakarta has to foster a knowledge-based culture development strategy and management support is needed to realize this.

5. The acquired knowledge gap value is not to show the quality of human resource used to evaluate employee, but to show the direction for Bapeda DKI Jakarta human resource development in providing their education and training. Therefore, it is suggested a complete and comprehensive research of why these knowledge gap occurs is needed for further development.

References


