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Knowledge Management

Knowledge Management Purposed Model

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***Abstract*— Nowadays, information is everywhere and there is a need to organize and manage data and information in order for better use and successful business. Organizations are looking toward deploying and getting benefit of the knowledge and process the management in which call knowledge management. Main propose of knowledge management is to identify the needed information and organize it in a way that can be flexible to manage and also in which we can extract and expand our knowledge or the organizational needs. In this paper, a research about the knowledge management is conducted, and definition of knowledge management is introduced. Also, a new model for knowledge management process is implemented with a full illustration and discussion of the model and its importance. In addition, an updated model is proposed and a comparison between the two models. Then, the advantage and difficulties in the knowledge management are briefly discussed with some examples.**

Keywords—component: knowledge; knowledge management; knowledge management model; information; data organization.

I. INTRODUCTION

Knowledge management is an important factor for strategy management [1-5]. In earlier models, this overview was built upon the resource-based theory which was described by Penrose[6]. This theory was studied and broaden by several researchers [1, 7-9].

As a starting point, we should understand what knowledge means. G. Huber and I. Nonaka defined knowledge as "justified belief that increases an entity's capacity for effective action. [10, 11]". P. Schubert, D. Lincke, and B. Schmid defined knowledge as the state of knowing in which is expanded through experience and learning [**12**]. Many researches expanded the definition to obtain an overview and framework for the knowledge management and the knowledge management process [9, 13-15].

The main propose of knowledge management is to identify the needed information and organize it in a way that can be flexible to manage and also in which we can extract and expand our knowledge or the organizational needs. That leads to great advantages that can be achieved using knowledge management. On the other hand, there are some difficulties which can be faced during the knowledge management process. Some difficulties refer to the nature of data itself, others can be because of the organizational need or may face a privacy issue. Reasonable knowledge management can lead to successful strategy in the organization [9, 13-21].

This paper covers the prospect of knowledge and knowledge management. A general overview of knowledge and knowledge management and a literature review research is conducted and discussed in the first section. Then, a discussion and definition of data, information and knowledge take place in the second section of the paper. Two new knowledge management models are proposed in the third section. After that, the advantages and disadvantages of knowledge management are discussed with some examples. The summary, future work and conclusion is added at the end of the paper.

II. KNOWLEDGE MANAGEMENT AND RESEARCH METHODS

Knowledge is believed to be either explicit or tacit [22-27]. The tacit knowledge believed to be knowledge related to the person's personality and own ability such as feelings, way of thinking, background or reactions, life and work expertise. Some of tacit knowledge is believed to be not transmitted and related to the personal mental abilities. Tacit knowledge is believed to be simple, and low cost effective while its drawback can appear in the risk of losing this knowledge if the person's who has it transferred or refused to share it. On the other hand, explicit knowledge is transferable knowledge which can be written. Usually explicit knowledge can be referred to technical, studied, and academic related knowledge. Explicit knowledge can be obtained by training, academic programs, manuals. Also, explicit knowledge can be easily stored and retrieved from databases. Explicit

knowledge has an advantage over tacit knowledge in term of it is easier to share and more likely to stay even if the current individuals who was working with it had left the organization since it's recorded or stored somewhere. On the other hand, explicit knowledge is more difficult to implement and time consuming. After understanding the difference between tacit and explicit knowledge, this discussion lead us into two important questions which are: "Can tacit knowledge be converted to explicit knowledge and can explicit knowledge be converted to tacit knowledge?" and "Are tacit and explicit knowledge transferred?" In the context of answering the previous question Nonaka divided the conversion into four patterns: from tacit to tacit, from tacit to explicit, from explicit to tacit, and from explicit to explicit [28]. So first, tacit to tacit knowledge appears when the knowledge is transferred by observation such as observing how a colleague is performing a task and do like him/her. While tacit to explicit transformation refers to using the tacit knowledge to develop or implement a product; it also can appears when writing manuals; Stewart described this process as to express the inexpressible [29] . On the other hand, explicit to tacit conversion is understanding the explicit knowledge and process it in a personalized way which can be used in different context; this conversion usually involved creativity. Finally, the explicit to explicit transformation refers to when combining more than one explicit knowledge and producing a new explicit knowledge.

From organizational point of view, knowledge management refers to be the process, information, and the knowledge which meant to benefit the organization. This information considered necessary to be recorded, transmitted, and able to be accessed and retrieved when needed [30, 31]. Organizational knowledge can be extracted from the organization's policies, goals, statistical reports, departmental reports, annual report, the organization work flow, and work description while other knowledge can be inside the employee's brain which can be referred to as tacit knowledge.

Researches shows that knowledge management can increase organizational success and can help in converting the routine processing into useful systematic approach [11, 32-34].

III. Organizing Information for a Better Knowledge Management Process

For more understanding of knowledge management, we should first consider what does knowledge mean and how it is different from data and information. As a first step, we must agree that data, information, and knowledge does not has the same meaning[35]. Data is defined as separate non meaningful facts, while information is a meaningful data. On the other hand, knowledge is meant to be an organized and relevant valid information which falls under a view point information [36-38].

Data is believed to be the seed of the knowledge management process. Data is organized to generate information which can be structured to produce knowledge. Having a deep observation and conceptual thinking of knowledge management can convert the knowledge to wisdom. This wisdom can discover new aspects that can improve the knowledge management and produce a great impact which can leads to organizational and customer service success [29, 39-42].

IV. Benefits of Knowledge Management

Knowledge management is an important processes that produce an effective outcome. Knowledge management can leads to useful usage of knowledge. It can help improving and minimizing the time required for accessing knowledge. It can also decrease the consumed time in finding out solutions for solving a particular issue.

Toyota's case was one of the successful cases which applied a knowledge management procedure in order to increase the sales and overall services. Since they believe in the knowledge management process, they used knowledge management to develop cleaver ideas in-order to motivate employees. In Toyota's case study, they were able to solve some issues related to knowledge sharing process[43].

V. Difficulties and challenges of the Knowledge Management

Knowledge management can be a difficult process in terms of identification, privacy, and organization the knowledge. Moreover, knowledge sharing and transferring are challenging issues.

Privacy is one of the most significant factors in the process of knowledge management. It is very essential to determine the degree of knowledge privacy and to identify the critical points. So, balancing between the information privacy while having a successful knowledge management base is an enormous challenge.

Knowledge sharing can be difficult component for several reasons. These reasons may refer to the difficulty of the sharing process or because the natural built of the human brain and thinking. There is a need to develop an effective sharing method in order to overcome difficulty of knowledge sharing. This can be obtained by providing a sharing medium or even implementing an efficient knowledge sharing system. An example of the efficient sharing medium can be having workshops, and expert annual meetings. In relation to the human nature part, people may refuse to share knowledge as they think that this knowledge may seem to them as a way of recognition or being unique and that they may be in risk in case they shared this knowledge. Some organizations worked toward overcoming those challenges. For example: Ernst & Young rewords employees who share knowledge and know assist their colleagues and added this to the employees

performance review [39]. Another way of encouraging employees to share knowledge was to address a one-fourth of the employee's salary increment to the point of direct knowledge sharing from an employee to his/ her colleagues [40] . Toyota's case study was one of the successful knowledge management and sharing case. Toyota was looking forward implementing a knowledge management system which can benefits its employees, and spare parts suppliers companies who they deal with in order to maximize the efficiency and reduce the troubleshooting time. But to achieve those goals they must find a way to overcome some problems in which related to knowledge sharing. The problems were the human nature of refusing sharing all knowledge which they have, free rider problems (free rider is referred to employee who enter the knowledge management system only when he/ she needs an information, and after obtaining it he/ she get out of the system but don't participate and don't provide or add any knowledge to the system), and improving knowledge sharing and make best use of it. Toyota worked toward overcoming knowledge sharing issue. Since Toyota has two different targets who are involved in the knowledge sharing process which are suppliers and their own employees, Toyota thought to grab each group attention in a way which encourages them. For suppliers, Toyota feed its own knowledge system with knowledge that seems having benefit for the suppliers. Thus, they encouraged suppliers to use this system and participate. To overcome the free rider issue with suppliers, Toyota required each supplier to agree their policies in order to access this knowledge base system which included financial penalties which are taken incase suppliers did this action. Beside this, Toyota used some motivation techniques in order to motivate members to participate. By this, Toyota improved the suppliers participation and transferring process over the network while preventing the network from free riders [43].

VI. Knowledge Management Model

After realizing the importance of knowledge management and having an overview about its challenges and difficulties we must come out with an efficient structure that can be treated as a solid base for developing a professional and efficient knowledge management model. We should have a organized structure in order to have a better knowledge management process. Since data is an important factor for knowledge management, we should find a model that deal with data in-order to produce knowledge and manage it. Fig. 1 shows the proposed model.

A. *Explanation of Model:*

The purpose of this model is to create and organize data in order to develop a professional and efficient management process. As it's known data is an important factor for knowledge management. So this model deals with data in-order to produce the knowledge and manage it. Here is a detailed description of each step in the purposed model.

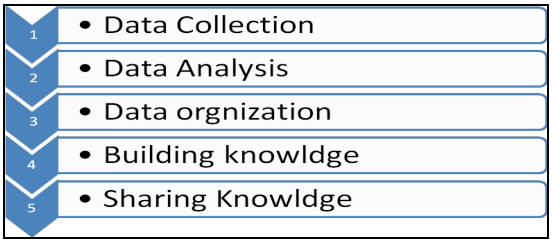

Fig. 1. Knowledge Management Sequential Model

1) Data Collection:

In this process, all data is collected. Different data collection methods can be used such as observation, interviews, collecting systematic data, and questioner. Also, in this stage we should consider the target employees that can be involved in the process of data collection. These individuals may be experts employees, managers, even regular staff but who have a solid base of knowledge. Since most of the knowledge is in people's mind, data collection may face some challenges. Thus, as a first point we should specify our source of data and consider the people who have the knowledge which we consider as an input data in this process. Then we should find a way to achieve the contribution of those individuals. Its might be essential to study the background of these individuals in order to come out with an effective way to interview and extract the needed data from them. Observation can help in this process and it could take place by observing decision making process and decision makers, observing target individuals, and observing the environment. Also, we should determine the method in which the output data of this stage is stored.

2) Data Analysis:

Relevant and important data should me identified in this process. We should have a clear vision for our knowledge management goal in order to have a successful data analysis. Each data which came from the previous state should be examined in order to consider the association, accuracy and relevance to our proposed knowledge management goal. At the end of this process, we should have only the needed data.

3) Data Organization:

Data that are produced from the previous steps are organized in groups depending on their relevant and structure. Using forms and diagrams such as data flow diagrams can help to organize data. There are some powerful computer programs and tools that can help in data organization. By the end of this process useful information are built.

4) Building and Managing knowledge:

After filtering and organizing the information, those information are ready to manipulates. Knowledge can be built upon those information. For a robust knowledge building process, storage medium, storing method, retrieval method, access method, and privacy privileges must be considered and take place. The difficult part will arise while

managing knowledge. Managing knowledge can be observed as dealing with this knowledge in an useful way. It can be also seen as how to cooperate and share this knowledge. As part of knowledge management, shared knowledge should be identified.

5) Sharing Knowledge:

Knowledge sharing in the most difficult process in the world of knowledge since important and critical information may be involved. For sharing knowledge, target audience should be specified and also what type of knowledge can be shared with them . Also, the sharing media should specified. Since knowledge sharing can produce new knowledge, there need to develop a strategy for dealing with new information produced from the sharing.

B. Importance of Model

The model gives a structure for building the knowledge as well as managing knowledge. This model can be expanded to involve and maintain knowledge management though out long duration. It can also be extended to be overviewed as a knowledge management life cycle.

VII. Future Work and Updated New Proposed Model

As shown in previous section, sharing knowledge can produce a production of new information from an outsource party. If those information are relevant, they should be added to the current knowledge. As part of knowledge management, this should be considered and taken care of. This drives us to an updated view of the knowledge management life cycle and should lead to some modification for the previous model. The modification appears in modifying the model to be a cycle rather than a sequential model as shown in Fig. 2. In the cycle, the new outsource information which appears from sharing the knowledge should be considered to be added to the current knowledge, but with examining it's relevant first. This requires information to process through the cycle in-order to be added to the existing knowledge.

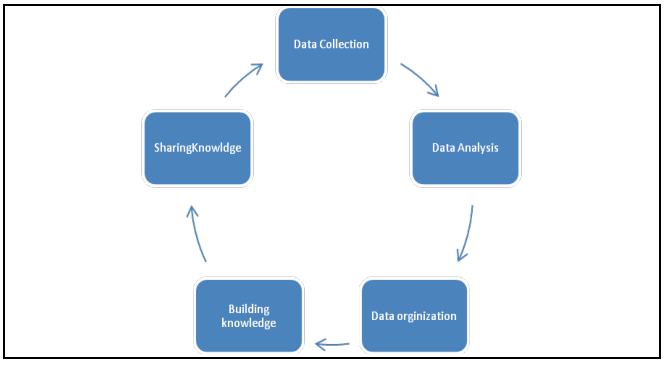

Fig. 2. Knowledge management life cycle

VIII. Conclusion

Knowledge management is a huge area of research. In this paper, a research in the knowledge management firm is conducted, the meaning of knowledge and knowledge management is discussed along with identifying the difference between tacit and explicit knowledge. Also, some advantages of knowledge management are stated. Besides that, this paper covered some of the main challenges in the area of knowledge management, and after a deep study of the firm a general knowledge management model is produced. To overcome the challenges of new produced knowledge from the process of knowledge sharing a proposed updated model took place by making a modification to the first model and convert it to be cycle model instead of a single top dawn model. This research gave me the opportunity to go depth in the knowledge management area. Its provided me with more understanding of this field which leaded me implement my proposed models. As a conclusion from this paper, we can have a better understanding of knowledge management. Also, useful ways are to overcome the knowledge sharing and to encourage employees to share knowledge. I believe that the sequential and cycle knowledge management model can help in implementing efficient knowledge management systems. Since knowledge management is a wide area, more researches are recommended and I'm looking forward evaluating and comparing the two models in depth as future work.

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