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GUIDELINES FOR TACIT KNOWLEDGE ACQUISITION

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ABSTRACT

Knowledge is mainly divided into two parts explicit and tacit. There are several studies which talk about explicit knowledge, but actually few studies talk about tacit knowledge. Tacit knowledge is an important issue which needs more exploration so authors are recently focusing on. The nature of tacit knowledge makes acquiring and extracting tacit knowledge not an easy task since it is complicated in its nature. As a result this research talks about tacit knowledge. Also authors explain main characteristics of tacit knowledge. Authors think that this research is worth reading because it covers and analyzes most relevant research which talks about tacit knowledge. More over it develops guidelines for acquiring and extracting tacit knowledge. This developed Guideline can be used for almost large organizations with a little adaptation related to job nature of the organizations. Finally, applying our guideline will facilitate acquiring tacit knowledge without wasting a huge amount of cost or effort.

Keywords: *Knowledge, Knowledge Acquisition, Tacit Knowledge, Tacit Knowledge Guidelines, Tacit Knowledge Characteristics*

1- INTRODUCTION

Tacit knowledge has some features which make it different from other kinds of knowledge such as it is personal, not easy to articulate, contextualized, job specific, both known and unknown to the holder, detained within, can be transferred through conversation and narrative, and the ability to be formed into explicit knowledge [1, 2,].

Tacit knowledge can be defines as the knowledge that employees have but they have a difficulty in expressing or articulating it. Tacit knowledge is connected with terms such as skills, know-how, know-why, working knowledge, high level of expertise. These terms could be used to describe knowledge and the ability to perform work [1 ,2 , 3, 4].
Many researchers talk about tacit knowledge and they say that there are two issues connected with tacit knowledge. The first is whether tacit knowledge in an individual merits or something which could be shared by both individual and groups [5, 6, 7].
The second is whether tacit knowledge can be converted into explicit. As one of the main goals of making tacit knowledge explicit is to be shared throughout all employees inside organization no doubt that there is some degree of interconnected between these issues. [3, 8, 9].

Sternberg says that tacit knowledge is simply that knowledge that has not been converted yet into explicit. Stemberg [10] has shows some ways which can be used to measure tacit knowledge. Also they say that if there is a need to use tacit knowledge in knowledge management systems it should be converted into explicit [11,12,13].

Organization must focus on creating knowledge culture that encourages learning, creating, and sharing of knowledge instead of trying to extracting knowledge from employees [4].

No doubt that knowledge economy has a direct impact on organizations. Organizations are now facing many challenges because of external pressures and the nature of the workplace. Many companies reorganize themselves to manage human capital. This makes the improvement of a comprehensive, strategic and adoption of knowledge management (KM) a necessary step to improve human capital.

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There is much evidence that there is a big struggle among organizations and forms of rapid change in business environments. Therefore; organizations start thinking of developing and enhancing methods to develop their human capital. As a result having knowledge has become the main factor for success or fail in any organization.

Many organizations don't have a clear idea of how to improve human capital with local and global competitors. Thus organizations try to accomplish this by managing knowledge. Accordingly, KM has begun to be proactively introduced within the policy, strategy, and implementation processes of worldwide corporations, governments, and institutions [14].

One of the main important issues that large organizations focus on is retrieving knowledge from experts' minds and managing of intellectual capital. Managing intellectual capital includes both managing human and structural capital. But human capital can be considered the most important factor. According to [15], he considered that KM can give the means for organization to leverage information and expertise to get more improvement, output, novelty. Human capital refers to the knowledge set in human minds, skills, expertise, and intuitions of the individuals. The knowledge which the organization operational system contains called Structural Capital. The organization's relationships with its partners, network of customers and stakeholders is called Social Capital [16].

The advantages of KM is making organizations stay competitive, it also maximizes the use of their knowledge into products, services, and concentrates on employees as the main intellectual assets and providers of knowledge [16].

Nowadays; there are several tools and techniques like data mining which is useful for knowledge discovery [17]. Also, KM has become a very important subject in our business community. As a result KM supposed to leverage an organization intellectual asset in sustaining competitive advantage [18].

Beside that, Human capital is the most critical issues that most organizations emphasize on.

By human capital we mean that knowledge contained or posed by individuals. This knowledge can be classified into explicit and tacit. Nonaka [19] talks about two kinds of knowledge: explicit and tacit. Explicit knowledge can be verbalized into words and numbers and can be shared. Tacit knowledge is extremely personal and difficult to verbalize so it will be difficult to share with others. According to Markus [20] knowledge has two scopes; the explicit and tacit. Tacit knowledge resides in humans' minds, memory, and destined to remain there, explicit knowledge is the knowledge that has been captured, articulated, and ideally been documented, structured, and codified. Behina [21] talks about two types of knowledge; tacit and explicit. Explicit knowledge has a tangible dimension that makes it easy to be captured, presented, and communicated. While tacit knowledge is associated with personal perspectives and it is intangible, not easy to articulate.

According to Authors, Explicit knowledge has been getting more interest than tacit knowledge. In view of the fact that dealing with explicit knowledge is easier and more controllable than tacit knowledge. Managing and extracting tacit knowledge form organizations and human experts is not an easy task since this type of knowledge is not articulated [20,22].

Information and communication technologies (ICT) are considered as knowledge enabling tools for creating and developing the performance of KM practices. The highly speed of improvement and the easy of knowledge transfer are breaking down the time and distance barriers in knowledge distribution [23]. Information and communication technologies give channels for acquiring, transferring, exchanging, and reusing of knowledge faster and handier both internally and externally. Papoutsakis [24] says that Information technology (IT) could be become the powerful force behind the required business transformation. In order to take full advantage of the opportunities facilitated by IT, in particular when applied to KM, senior managers should manage IT to successfully combine it with the strategic objectives of their organizations. Therefore, Knowledge is the most primary asset for organizations today and KM has become one of the most moving research and growth fields to

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combine with the area of Information System (IS).

In this paper authors will focus on tacit knowledge and they will demonstrate guidelines for tacit knowledge acquiring, extracting, sharing, and exchanging.

The following sections are organized as follows: In section two, we review relevant literature; section three talks about tacit knowledge characteristics, Section four recommend our guidelines for tacit Knowledge acquisition; the last section presents our conclusion.

2- PREVIOUS STUDIES

2.1 - Knowledge Acquisition and Knowledge Acquisition Issues

Knowledge management has an important function inside any organization so that it developed quickly. Many researchers say that KM and intellectual capital have a great impact on organization success. Converting tacit knowledge into explicit knowledge required deep acquaintance of infrastructure elements [18,25]

Knowledge Acquisition (KA) is one of the main important issues in knowledge management. No doubt that KA plays an important task in building knowledge base systems (KBS). Acquisition refers to the process of getting the knowledge into the organization from external sources through using possible means [26]. Extracting human tacit knowledge is one of the main challenges that most organization faces because extracting this type of knowledge is expensive and needs highly qualified people to develop an applicable methodologies which could be used successfully [27].

Stanton [28] demonstrates that main chrematistics of tacit knowledge is the elementary belief that knowledge is personal in its nature. Also he says that tacit knowledge is difficult to extract from the experts' brains to an explicit form. Berger [29] demonstrates that tacit knowledge can be articulated by individuals with some efforts and assistance to help individuals clarify their knowledge.

Stollberg [30] talks about knowledge acquisition as an activity deals with searching and getting knowledge in knowledge based resources. The weight of knowledge acquisition process relies on an organization culture and objectives [31]. The first step in knowledge acquisition is to create a collaborative environment [32]. This step depends on a sequence of ordered steps such as identifying right people, right time, and place.

Knowledge engineers face a lot of problems during the process of building knowledge based system. One of the main problems is knowledge acquisition. When knowledge engineers start the process of knowledge acquisition they must first determine where the knowledge exists inside the organization. After that they have to acquire and capture this knowledge in an organized way. Retrieving knowledge from human minds is an expensive process. Selecting the most proper way and time in retrieving knowledge can reduce the overall costs.

Moreover; there are some main primary concepts which must be taken seriously while dealing with knowledge acquisition. First, knowledge resides in the heads of experts. Second, experts have large amounts of specific knowledge. Third, experts are not available all the time. These points has many reflects such as finding a proper way to extract knowledge from experts minds, some types of experts knowledge is specific and require specific methods to extract, and since experts are not available when they required organization must have basic knowledge in forms of documents or procedures to solve emergent issues.

To successfully apply knowledge acquisition organizations must have to create the following environments; first, organization must specify training courses inside the working hours to enable workers to get benefit from experts. This allows organization to create a second level of experts gradually. Also these training courses have to focus on essential knowledge.

Goh [33] defines KM as a systematic leveraging of data, information, skills, expertise, and various forms of assets and capital to improve organizational innovation, responsiveness, productivity and competence. Deng says [34] that knowledge selection is done by the knowledge management team to judge whether or not the acquired knowledge is important and useful.

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There are many researchers' talks about developed techniques to elicit knowledge from experts. One of the main methods is protocol-generation techniques which includes interviews, reporting and documentation. The second method is protocol analysis technique.
This acts as a bridge between the use of protocol-based techniques and knowledge modeling techniques. Finally Hierarchy-generation techniques, used to build taxonomies or other hierarchical structures. Fourthly, Matrix-based techniques use frames for representing the properties of concepts. Finally, Diagram-based techniques, the generation and use of concept maps, state transition networks, event diagrams and process maps [35, 36].

3- TACIT KNOWLEDGE CHARACTERISTICS

Capturing explicit is easier than capturing tacit knowledge since most explicit knowledge is quantified. The problem which almost all organization faces is capturing tacit knowledge. The complexity of capturing tacit knowledge in related to its nature.
Tacit knowledge is resided into human brains. Developing methodologies and tools that can deals with human brains is a complicated task. Most large and complicated organizations whose job nature based on high qualified peoples such as pharmaceuticals, chemicals, IT industry is highly depended on high qualified small teams, groups, and some times on individuals. These organizations faced a great problem when those experts are planning to leave. So developing methodologies and tools to capture those experts knowledge in critical [37].

Sunassee [37] describes tacit knowledge as a form of knowledge that is partially understood and used, not easy to articulate. He says that tacit knowledge is developed from direct experience and accomplishment. In his research he demonstrate that tacit knowledge shared through interactive conversation, storytelling and shared experience. Sunassee says that tacit knowledge is retained by people in their head. Tacit knowledge is the product of experts' mind, experience and skills. He says that tacit knowledge can be shared but in a less tangible form, also he says that tacit knowledge is more difficult to articulate.

Soltero [38] define tacit knowledge as a knowledge that a person can store inside his mind and extract from his personal experience during work so it has a personal quality. This knowledge is difficult to be formalized and communicated with others. Belbaly [39] demonstrates that tacit knowledge is a type of knowledge which can not be easily shared or codified.

The importance of tacit knowledge management that it improves employees' acceptance and inspiration when an organization developed official methodologies for tacit knowledge sharing [40]. Following clear methodologies created by employees to share their knowledge will encourage employees to share their knowledge with others because when employees share their knowledge with others this will be reflected on their experience since they will get some benefits and experience from others. Author's in figure 1 demonstrates some main characteristics of tacit knowledge.

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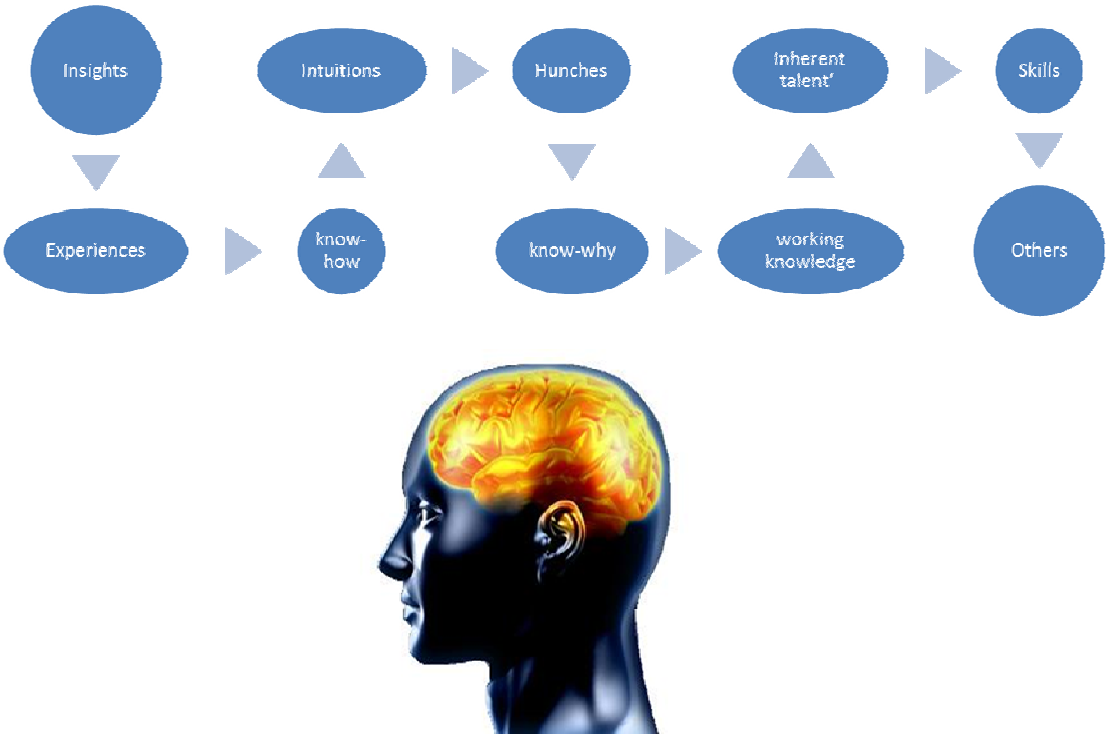

Figure 1: Main Characteristics Of Tacit Knowledge

Eliciting tacit knowledge needs high specific efforts since most experts find it difficult to explain what they do or to give reasons how and why they do. Also extracting a justification from experts about their decisions, methods, sequence of steps in doing a specific task is complicated in some situations. This is because of insights, institutions, hunches, inherent talents, skills, experience, know-who, know-why, and working experience which are embedded within experts mind. This will lead to the fact that explanation and justification of what experts know, say and do is often incomplete and has some defectives [28, 30, 41, 42, 43]. Furthermore; the process of extracting and eliciting expert's knowledge is often rationalize. This means that it depends on expert nature, expert knowledge, and other conditions. In other words if organizations have domain specific experts this means that following the same methodologies for extracting those experts knowledge will not necessary lead to equivalent results.

Moreover, any organization guarantees that all its qualified employees will stay inside the organization and will not leave will have a great advantage against its competitors. But this doesn't exist in real life. So organizations have to build and develop suitable methodologies which can be applied inside the organization to be ready for emergent issues. As a final point, any organization follows a strict policy which forces workers to work as a team, and then there will be always a staff of second level experts who work with the main experts, so knowledge will be transferred to several individuals.

4- PROPOSED GUIDELINE FOR TACIT KNOWLEDGE ACQUISITION

It is strongly believed that the tacit knowledge of the experts contributes significantly towards optimal decision making in large organizations. In this section, we present the detailed design of the tacit capturing system proposed in this research work. The strategy used here is simple but effective:

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1. The knowledge developer must be familiar with the project terminology and reviewing the related existing documents.
2. Identify the human experts work with a restricted problem domain
3. Identify how the problem is accurately modeled
4. Identify an interactive and iterative knowledge acquisition process to capture reliable tacit knowledge; which requires cognition skills. The iterative process allows feedback and modification of the captured knowledge that reduces risks of failures. The process consists many sub-processes:
   - 4.1 Procedure type: methodical approach to the solution.
   - 4.2 Storyteller: focuses on the content of the domain at the expense of the solution.
   - 4.3 Salesman: the style of expertise when the expert spends most of his time in explaining his solution.

   The knowledge developer uses semi-structure knowledge acquisition process; by asking predefined questions and give the human experts some freedom to answer the questions. The questions are multi-choice problem or ranking-scale questions; depending on the type of intelligent knowledge.
5. Identify the type of intelligent knowledge and experiences to capture.
   - 5.1 The human experts customize his knowledge presentation according to the level of the audience.
   - 5.2 Avoid irrelevant knowledge, and uses facts and figures.
   - 5.3 Look beyond the facts; the heuristics to clarify the fuzzy details and uncertain information.
   - 5.4 The expert reasoning process to construct the necessary rules. The human expert exhibits the detailed knowledge and the qualitative explanation
6. Categorize the knowledge into *Know-how*, *know-why*, and *know-what* forms of knowledge and resolve conflict captured knowledge.
7. Interpret or convert the expertise into applicable rules in coded program, by collaboration between knowledge developer and expert.
8. Expressing of knowledge representation into *structural terms* and interrelation to other concepts and into *functional terms* (i.e. its usage). Converting a text-based case into a conceptual-based format. The sentence is divided into phrases, the terms are identified within each phrase, normalizing the terms into standardized problem-domain vocabulary and determining semantic types for each term.
9. linking of semantically, contextually and functionally similar knowledge element
10. Knowledge evaluation: each junk of knowledge is evaluated and checked by another expert. The functionality of each expert is tested against the expertise of the others.

Figure 2 shows the Guidelines of tacit knowledge acquiring.

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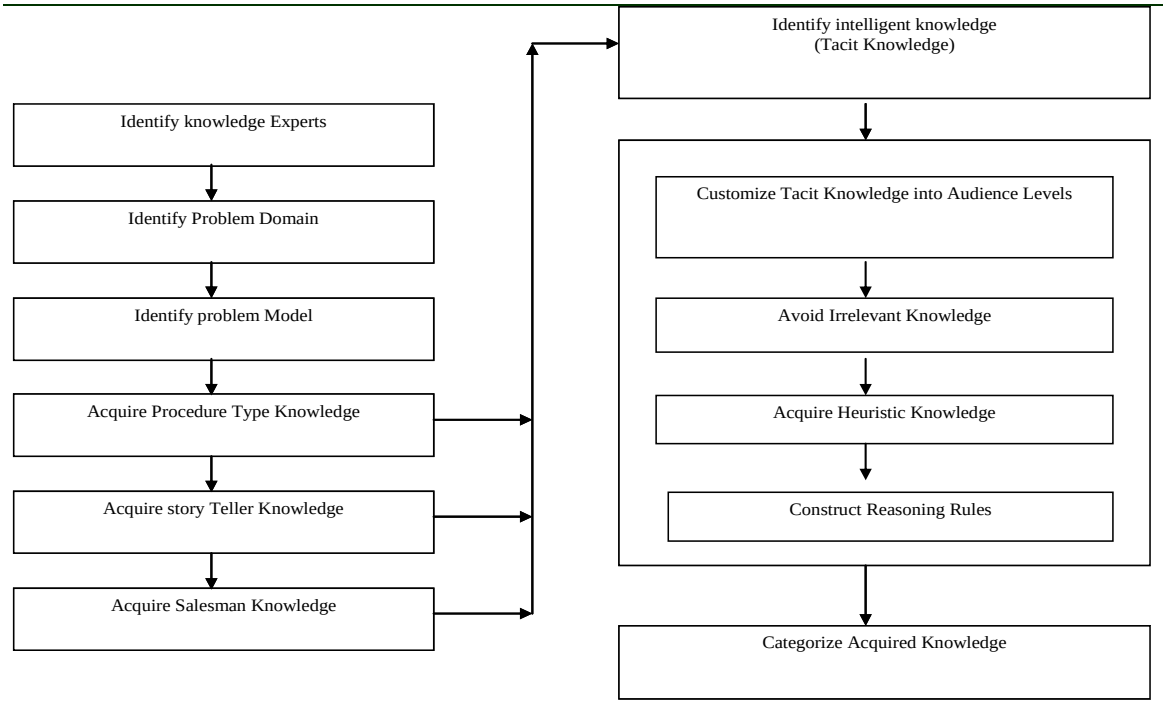

Figure 2 Guidelines For Tacit Knowledge Acquisition

5- CONCLUSION

No doubt that tacit knowledge acquisition is very complicated task. This research talks about main characteristics of tacit knowledge such as insights, institutions, hunches, inherent talents, skills, experience, know-who, know-why, and working experience which are embedded within experts mind. This nature of tacit knowledge which embedded in human brains makes it difficult to articulate. At the end of this research authors develop guidelines for acquiring tacit knowledge. These guidelines are important for organizations as they always try to acquire tacit knowledge from their employees before they are leaving.

The Guideline for acquiring tacit knowledge is also simple and could be used for most organizations. The Guideline shows that socialization is one of main features that help to acquire the tacit knowledge regardless the nature of the organization. Therefore, this Guideline shows that socialization is one of main feature that help acquiring tacit knowledge regardless the nature of the organization. Finally these guidelines are comprehensive, easy, not complicated to follow by any organization.

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