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The Importance of Knowledge Transfer in Decision Making

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ABSTRACT

This paper discusses the issues related to capturing and transferring knowledge in management consulting organization and proposes a framework to implement a knowledge transferring environment for intelligent working system. The proposed framework make contribution in the area of capturing tacit aspect of consultant's knowledge, and how they interpret information and produce unique work. At the same time it explores how the transfer of explicit knowledge plays a major role to understand the interpretation of individual expert. Within the organization various types of knowledge resides which play a major role in organizational learning and also how organization defines itself in the arena of business. The consultants' knowledge both explicit and tacit, is an intellectual asset to both the organization and the consultants themselves, and thus, makes the technology an important tool to use to find different ways to share this knowledge without jeopardizing individuals' right to their knowledge that organization or other consultants' access. Paper reviews literature that discussed researchers' work on identifying types of knowledge, and various techniques that capture knowledge to resolve the loss of intellectual capital.. An analytical approach is used to analyze the studies and to classify the hidden dimensions of knowledge transfer. It offers a conceptual framework based upon Nonaka's patterns for creating knowledge and identifies the pattern of knowledge creation and transfer. It applies interpretive organizational learning that is dependent upon the tacit aspect of the consultant knowledge and evaluates levels of professional intellects as operational measurements in knowledge producing organizations by using different techniques and technologies. In the end it postulates a strategic operational model to transfer knowledge especially the tacit knowledge to create a continuous organizational learning environment. It uses an example to understand the implementation of the operational model and to predict a productive resultant value.

INTRODUCTION

Knowledge transfer is defined as a process of transferring tacit and explicit knowledge to individuals and organizations through diverse means of practices, techniques and media to ensure the organizational learning (Argyris & Schon, 1996) and to leverage intellectual capital (Ulrich, 1998). Literature review depicts that knowledge transfer and management is gaining popularity as organizations are realizing the importance of intellectual capital and its relationship to their bottom line. Organizations are having hard time in finding knowledge, which resides in their companies. Regardless of present practices used by chief knowledge officers (Davenport & Prusak, 1998), organizations are unaware of importance of knowledge which resides in their structures and are unable to transfer it to the needed person on time to support their decision making systems.

The process of transferring knowledge effectively within the organization is a challenging goal for many executives. The need isn't new. Executives have long been frustrated by their inability to identify or transfer outstanding practices from one location or function to another (O'Dell & Grayson, 1998). Kuhn and Abecker (1997) summarized the most serious impediments like information is not readily available to highly paid employees, experts have only access to their own know-how; outsourcing leads to loss of intellectual know-how of manufacturing process; previous experiences are ignored and are resulting in costly errors; and insufficient information inflow affects the product quality and delays. The efforts of academia and practitioners to solve the problem of information flow and knowledge transfer are decades old and invite new ways to intervene the existing practices to resolve the loss of intellectual capital¹. An intelligence system is necessary (Sena & Shani, 1999) to bridge a gap between the intellectual capital and the decision-maker.

However, to compete astutely, intellectual capital reservoir alone is not sufficient to make a valuable contribution to the assets of the firm. Managing human intellect-and converting it into useful products and service-is fast becoming the critical executive skill of the age (Quinn, James, Philip, & Finkelstein, 1996). Davenport and Prusak (1998) state in their book "Working Knowledge" that organizations can transfer effectively by hiring intelligent people and letting them talk to each other. But the changes in the organization, economy and personal preferences force them to relocate or to take other challenging assignments and the after effects of losing employee can be devastating and can affect the organization's future success. For example, in the absence of the previous project expert, the challenge of finding decisions residence within the organization in time can disrupt the decision making process and jeopardize consultants' and clients' relationship. O'Dell and Grayson (1998) recognized this trend and wrote, that corporate support network was unable to keep up with knowledge management system and was shaken up due to the restructuring, downsizing and decentralization.

Moreover, hiring intelligent people alone do not solve the problem of transferring information unless they recognize the information flow between each other and find ways to capture and transfer to their colleagues for organizational learning. They admit that it is hard for organization to implement the second part of this strategy. Organizations hire bright people and burden them with work that leaves them no time to interact with other employees. Important information is flowing between employees, and organizations are not realizing the importance of that knowledge (Davenport, De Long, & Beers, 1998).

Sarvary (1999) wrote that a knowledge-based approach to business would be the connected economy. He added that such companies would use knowledge as their competitive asset and would create unexpected value by applying their knowledge more intelligently than their competitors. Next section filters the types of knowledge resides within the organization to understand the difference between the intelligent systems² and intelligence of individuals.

¹ In this paper the concept of intellectual capital refers to the knowledge of experts which they contain and obtain while they work within the organization and from their own experiences. Their know-how, though still a debatable issue, is considered by most of the organization as their own capital and thus, the need of capturing that knowledge for other new and old employees is considered a strategic process to decrease the cost and time available to make a decision or complete an assignment. And at the same time, increase the efficiency and profitability of organization.

² Intelligent system is an interactive system to deploy tacit and explicit knowledge to enhance learning structures.

TYPES OF KNOWLEDGE IN CONSULTING FIRMS

Types of knowledge identified by the authors, academics, researchers and practitioners are:

- Tacit knowledge
- Explicit knowledge

Tacit

Tacit knowledge is highly personal (Nonaka, 1991) knowledge of a consultant. It is unstructured, hard to formalize and, therefore, difficult to communicate to others. Tacit knowledge is also deeply embedded in action and in consultant's commitment to a specific context. It consists partly of technical know-how skills. Tacit knowledge has an important cognitive breadth. It consists of mental models, beliefs, and perspectives deeply ingrained, spontaneous and organizations take them for granted and therefore, cannot easily articulate them. For this reason, these implicit (mental) models overpoweringly shape the position of organization how it distinguishes the competition around it (Quinn et al., 1996).

The generation of tacit knowledge is a crucial part of organizational knowledge in consulting firms. With its roots in the experience of individual consultants, tacit knowledge is difficult to process and hard to transfer and thus, extracting knowledge becomes complex challenge for the intelligent systems. Through the use of computer based training, simulations, the use of expert systems, and other model-based software tools tacit knowledge can be extracted, transferred, and placed into an explicit context that is usable by the intelligent system (Sena & Shani, 1999).

Explicit

The other type of knowledge that resides in the consulting organization is explicit knowledge and if captured and recorded, can be codified. Nonaka (1991) argues that explicit knowledge is formal and systematic and thus, can be easily communicated and shared. Experts have recognized different form of explicit knowledge, patents are one form of codified knowledge, and other similar examples are reports, e-mails, personal web pages, and other consultant's written documents. Knowledge repositories are used to save the captured structured and unstructured knowledge. Expert systems and artificial intelligent systems can play a limited role in the codification of human knowledge (Davenport & Prusak, 1998) but are effective tools in facilitating organizational learning process.

CONCEPTUAL MODEL

Nonaka (1991) explains that the main job of decision makers in the knowledge-creating company is to orient this chaos towards purposeful knowledge creation. Decision-makers, mostly senior executives or experts understand the business processes and thus, may help in recognizing the pattern of knowledge creation to translate it into a conceptual framework that helps consultants' to separate their tacit and explicit experiences. Most of the pattern described by various experts identifies similar aspects. This paper considers four basic patterns identified by

Nonaka (1991) for creating knowledge in any organization. His findings are illustrated in table 1 and additional components pertaining to individuals are identified by the author to convert the explicit knowledge to learned-tacit once it's extracted by the individuals. The conversion from explicit to learned-tacit is based upon the practices and existence of the third dimension of knowledge that exists but is not yet translated by each individual on the same level and understanding of the experts. The added dimensions are separated on the basis of how the individual makes decision after using the same set of information and is identified as "Learned-Tacit".

Table 1: Pattern of knowledge creation and transfer.

	Tacit	to	Explicit	to	Learned Tacit
Tacit to Explicit to Learned Tacit	Other employee begin to internalize new explicit knowledge to develop their tacit knowledge (Internalization)		Develop new approach based on experience to handle (Combination)		Understanding of the tackling of new approach (Derivation)
	Share of knowledge through observation, imitation and practice (Socialization)		Collection of existing data and creating new report (Articulation)		Fuzzy (Authentication)
	Individual's Interpretation of socialization & absorption of knowledge (Individualization)		Change the mental model if the experience is intense enough (Decision)		Individual's knowledge produces different results (Individual Progression)

The patterns developed by Nonaka's are discussed in his article and are not included in this paper. Brief definition is incorporated in the table. Following discussion is on new patterns of formation and transfer and how they fit in Nonaka's model.

Learned-Tacit Patterns

Individualization addresses the internalize explicit knowledge by the individuals and the usage of knowledge that differ due to their own interpretation of socialization process or during the process of internalization and goes through the channel of interpretation and filtering that exist and develop based upon their learned-tacit knowledge they used to convert that set of information into tacit knowledge.

Decision consists of mental model that changes due to the experiences' intensity and is considered a deliberate effort of converting a learned-tacit knowledge into a explicit knowledge and replacing the existing mode of channels the model uses to change the paradigm or beliefs.

Derivation is a process of transferring the tacit to learned-tacit knowledge by understanding the tackling of new approach. The understanding of the tackling consists of steps which individuals

develop in their own mental processing approach and does include the memory of previous tackling approaches. This process again is different for each individual as their mental approaches differ.

Authentication is a fuzzy process as the explicit conversion to learned-tacit conversion itself is fuzzy process. The observed instances inheritance is sub level and the relationship to merge it with other existing knowledge is more interactive than inherited or object oriented.

Individual progression comes with the change in the paradigm. In this case, the paradigm consists of unique motives and political preferences to produce an innovative way of approaching a problem. The progression shows unique results and/or profitable results. The development of individual progression is more complex as the learning is dependent on dynamics of more than one factor that affects the individual's circumstances. It is genetically related, is unique, and is privately initiated so the interaction is more internal than external, and is natural than synthetic so the intelligent levels exist.

OPERATIONALIZING THE CONCEPTUAL MODEL

Importance of Conceptualizing

In an organization explicit knowledge at the level of the individual consultant may not necessarily provide a significant competitive edge due to the fact that other consultants can also benefit from that stagnant knowledge to contribute effectively towards the bottom line of the organization. Thus, nurturing experts' skills to produce unique knowledge may be more profitable than nurturing a large group of people that may involve more resources and may not always create unique results. Generating organizational knowledge requires converting individuals' tacit knowledge into explicit knowledge that is accessible to other organizational members (Sena & Shani, 1999) for consulting purposes and to understand the existence of learned-tacit knowledge.

Two consulting organizations do not have same capacity in codifying and articulating the knowledge the reason being the differences in consultant experience, technology used, nature of the projects, the organization's internal ideology, the structure and the size of the organization. Knowledge transmitted through consultants' networks is clearly context bound, less encode-able and not immediately transparent to outsiders. In contrast, document-based knowledge is much more discrete, explicit and readily transferable (Lam, 1997). The transfer of knowledge within the organization plays an important role in the organizational learning process. Intelligent systems can help organization to achieve both single³ and double loop learning⁴ but to attain that level it is important for the organizations to understand the interpretive organizational learning or learned-tacit knowledge.

³ Single loop learning (Argyris et al., 1996) changes the strategies of action or assumptions without changing the values of a theory of action.

⁴ Double loop learning (Argyris et al., 1996) changes the strategies of action or assumptions as well as the values of theory-in-use.

Understanding of Learned-Tacit knowledge

Hine and Goul (1998) stated that organizational learning occurs when the organization develops processes to share the opinions, assumptions and interpretations of the member's environment. Five operational requirements for a knowledge-based organizational learning support system identified by the Hine and Goul (1998) are as follows:

1. Interpreting the environment.
2. Individual interpretations.
3. Comparison of interpretations.
4. Synthesis of interpretations.
5. Development and maintenance of organizational memory.

These operational requirements are set to understand the complexity of environment, to learn from individual's assumptions and interpretations (learned-tacit), to address the commonalities and conflicts, synthesis, and to understand the organization's knows (Organizational memory). In interpretive organizational learning organizational memory⁵ becomes increasingly important to organizations as it is recognized that experiential knowledge is a key to competitiveness. The development of such memory needs collection of meaningful set of data. Dynamic environment, as consulting, in which organizations find themselves to capitalize on has necessitated that they develop an ability to respond flexibly to external changes (Morton, 1991). Two aspects of developing flexibility are the shift in focus from the individual-work to group-work, and the adoption of a communicative perspective. In this context, consultants are engaged in activities more closely related to the work of executives. Executive analyze, reflect and bring innovation to their work activity (Morton, 1991; Kuutti & Virkkunen, 1995). To effectively use the work system that involves technologies (Reimus, 1997; Bukowitz, 1999), it becomes crucial for consultants to determine the requirements to redesign these systems to facilitate organizational creation and to develop sharing of knowledge in the context of work and work redesign.

Recognizing the Levels of Professional Intellect

Intellect of consultants is knowledge they gain over the period of time through training, education and personal and professional experiences in the real world to increase the market value of their services. Ulrich (1998) states that intellect asset appreciates if it is led intelligently. The management needs to recognize that a true professional leads a discipline that needs to be updated constantly (Quinn et al., 1996). The four levels of professional intellect identified by Quinn et al. (1996) are cognitive knowledge (know-what), advanced skills (know-how), system understanding (know-why), and self motivated creativity (care-why) and are illustrated in Table 1. Commonsense (when-to-learn) is discussed in other literature and identified by other researchers as an "individual capability". In this paper it is identified as a part of intellectual capital as it is an ability to identify a move or a decision that influence the result of the occurrence. It consists of basic instinct (gut feelings) and intuition.

⁵ Organizational memory definition covers intelligent systems, databases, warehouses and legacy systems.

In addition to above-mentioned intelligence levels of a consultant, the professional intellects also understand the importance of working with the right people and taking advantage of all the right opportunities around them. They tend to build strong relationships with their allies and thus, always have a positive attitude towards new changes. The above-mentioned levels of intellects can be captured using different techniques and cultural changes in the consulting organization. Table 2 depicts the repositories of five levels of intellects within the organization.

Table 2: Five levels of professional intellects.

Levels of professional Intellect	Repositories
Cognitive knowledge (know-what)	Can resides in organization’s databases, systems or operating technologies
Self-motivated creativity (know-how)	Can resides in organization’s databases, systems or operating technologies
System understanding (know-why)	Can resides in organization’s databases, systems or operating technologies
Self-motivated creativity (care-why)	Culture
Common Sense	Expert systems & individual him-herself

Reimus (1997) stated that the different applications of technologies in various consulting firms can challenge how in future they differentiate expert-knowledge-driven vs. methodology-driven consulting. The statement is conflicting in this case as usually the methodology is derived from the practices used by the consultants’ knowledge.

OPERATIONAL MODEL

The operational stages of knowledge transfer are recognized based on Holsapple’s and Joshi’s (1999) four stages of knowledge transfer: initiation, implementation, ramp-up, and integration (see Figure 1). Table 3 discusses briefly the stages of knowledge transfer.

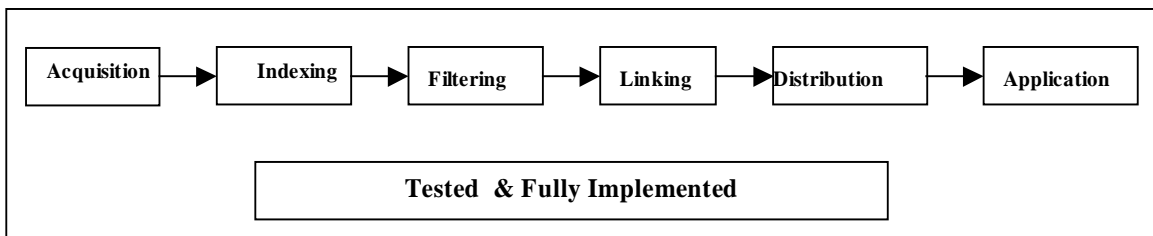
Table 3: Stages of Knowledge Transfer.

Stages	Description
1. Initiation stage	<ul style="list-style-type: none"> • Lead to decision to transfer: a need for knowledge is recognized • Search for satisfying that need • The feasibility to transfer that knowledge is explored.
2. Implementation stage	<ul style="list-style-type: none"> • The knowledge resources flow between the source and the recipient are established. • Social ties between the source and the recipient are established. • Transfer is customized to suit the needs of the recipient. • Care is taken to avoid problems encountered in the previous transfer

3. Ramp-up	<ul style="list-style-type: none"> • A recipient starts using received knowledge • The recipient attempts to identify and resolve unexpected problems.
4. Integration	<ul style="list-style-type: none"> • Transferred knowledge gradually becomes routinized and institutionalized

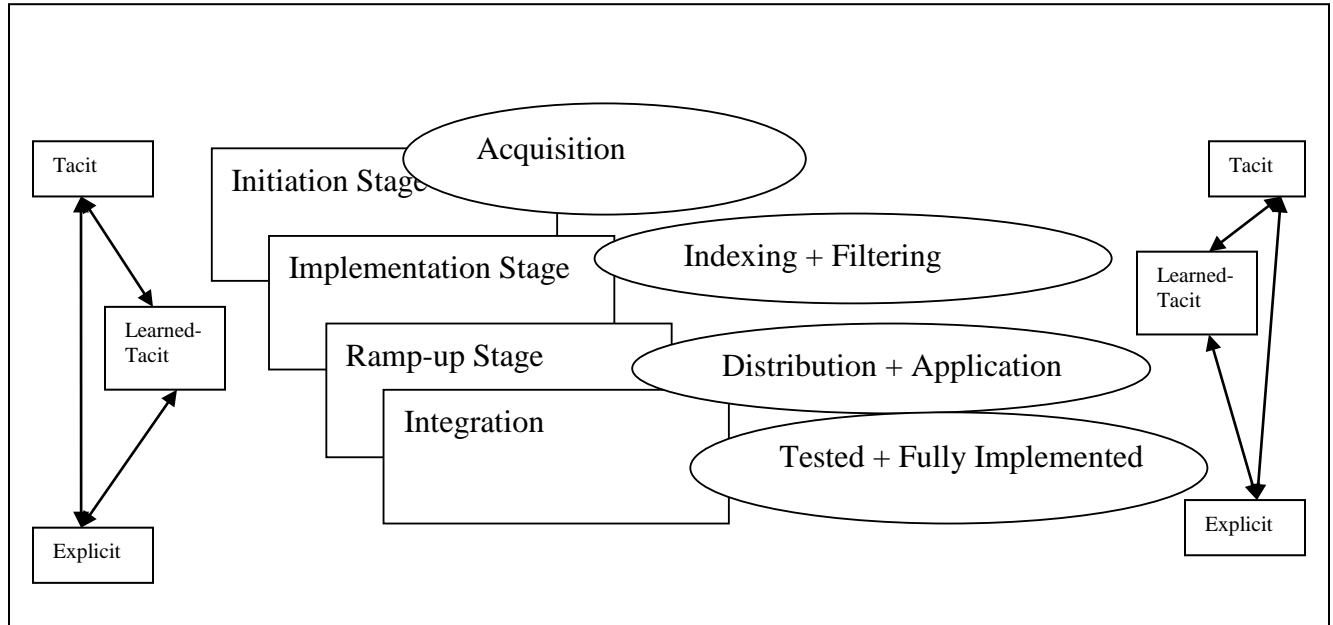
The stages are connected to provide an efficient system that transfers the knowledge from experts to the organization. The efficiency of the system can be measured against the decisions made by the consultants. The heuristic system consists of experts’ mental model through logical knowledge transfer stages (Figure 1).

Figure 1: Operational stages adapted from Holsapple and Joshi to transfer knowledge.



In knowledge acquisition’s research and applications, the transition from the informal expression of knowledge that is natural to people to the formal expression of knowledge that is required for computation is recognized as a major problem (Gaines & Shaw, 1999). The study done by Holsapple and Joshi (1999) revealed that the three important barriers to the knowledge transfer (in their case, the best practices) are lack of absorptive capacity of the recipient, causal ambiguity, and an arduous relationship between the source and the recipient.

Figure 2 addresses an integrated knowledge transfer model that combines tacit to explicit and to learned-tacit knowledge cycle provides a continuous learning process within the consulting organization by avoiding the barriers.

Figure 2: Knowledge transfer model.

Discussion of the operational model

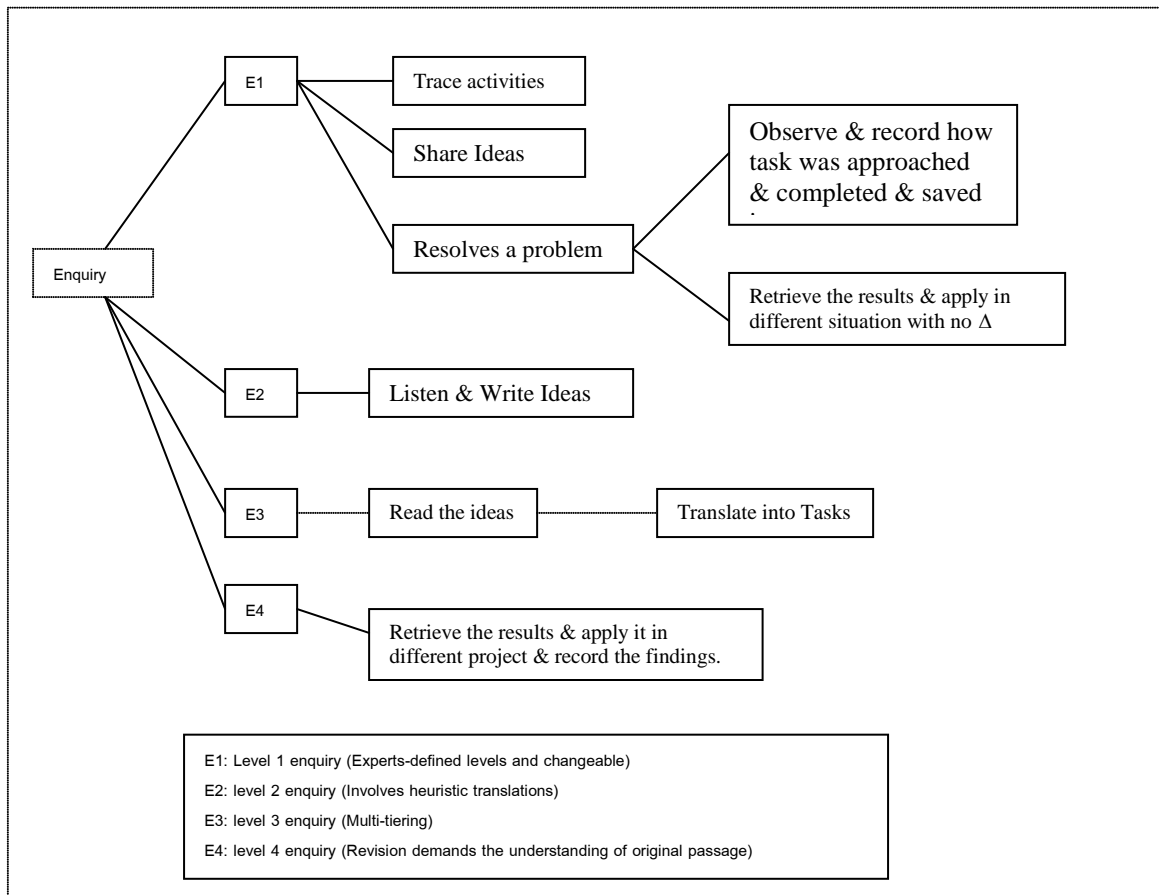
The captioned of conceptual framework and operational illustration above is designed to create an intelligent system. The tacit pattern to explicit pattern to learned-tacit pattern is a constant cycle around the operational system. Integration stage and acquisition run parallel to the knowledge creating pattern and are considered different learning stages of intelligent system which is used by the recipients and the sources. The conceptual pattern of knowledge creation can only be translated into operational model if the process of learning reaches to the double loop, where the entities are learning and continuously repeating the cycle and changing and improving. Argyris and Schön's (1996) double loop learning model is fixed and unchangeable. Whereas, this model continues to produce new dimension of knowledge to recreate the intellectual model described above and is always flexible and changeable. The change and flexibility is captured from the expert whose knowledge also improves and accelerates due to his or her personal reward and motive systems. It is important to emphasize that a need to capture the knowledge arises when the capital intellect was irreplaceable, in other words, the replaced expert was in fact irreplaceable. The model can only be implemented successfully if the players, in this case, consultants, are willing partners of this knowledge creation and capturing game and are fully aware of how the intelligent system will be developed.

Examples to understanding, capturing and transferring the knowledge

Modes of personal experiences, social contact, mapping, charts, notes, emails, gestures, professional capturing of visual interactions (documentaries), keywords, body languages, unintentional ways, stories, trainings, translations, speeches, workshops and numerous other interactions (formal and informal) among the organizational experts, organizational strategic

learning happens; organizations strategic learning⁶ is how theory of knowing about their workers knowledge and know about. Huber (1991) argued that in learning organizations individuals' learning is negative, that is, unlearning happens. It is true but strategic learning process in knowledge generation organizations such as, consulting organizations where the individuals and organizations' learn simultaneously such as this process develop a knowledge transfer environment to create "knowledge machine". The "knowledge machine" provides a solution to a problem after providing a genuine recognition pattern that scans them through the security gateway. The "knowledge machine" itself or can be an integrated part of intellectual reservoir (organizational memory). The process flows as follows (see Figure 3).

Figure 3: The process flow of the knowledge machine.



Thus, this model provides systematic ways to follow to implement an effective intelligence system that can be measured against the return on investment on decisions.

⁶ Strategic learning: Argyris and Schön (1996) is an absolute learning.

CONCLUSION

The paper makes a good contribution in defining a conceptual framework to develop strategies to convert tacit and explicit knowledge by understanding the interpretation of various work of experts and in recognizing the potential of knowledge transfer in knowledge intensive consulting firms. The literature review shows that the importance of learned-tacit is never recognized and discussed previously. The paper makes contribution in the capturing and implementation of learned-tacit knowledge. The process of capturing and transferring tacit and explicit knowledge is discussed on both individual and organizational level; conceptual and operational models are proposed to implement a strategic learning environment. The discussion of knowledge transfer framework and operational characteristics can very well be transferable and implemented once the problems are identified and understood on both levels. The examples are techniques of proposed models in-use to understand the steps and activities involved to capture and transfer various aspects to implement an intelligent decision making system.

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