

Research Article

Managing Tacit Knowledge in MNCS and the Role of ICT: Review Paper

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Abstract: Of late, global economy has forced the organizations, to essentially manage tacit knowledge. On the other hand, a large number of organizations are incapable of coping with the process of tacit knowledge management, as a result of the inexpressible, ambiguous and complex characteristics. This review paper has examined the multi-dimensional viewpoints of tacit knowledge, types of tacit knowledge and the typical mechanisms used to manage it, from the past and existing studies. Simultaneously, this study has found that, classifying knowledge in terms of transferability and applicability has provided much improved direction to deal with tacit knowledge. Furthermore, this study has also highlighted the current perspectives on transferability and applicability of tacit knowledge and the associated influential factors. Moreover, the role of ICT in managing tacit knowledge has been examined and discussed. Ultimately, this study has proposed future research directions in terms of managing tacit knowledge.

Keywords: Applicability, ICT, managing tacit knowledge, tacit knowledge, transferability

INTRODUCTION

In recent years, managers and academics have recognized knowledge as a key source of competitive advantage (Grant, 1996; Zander and Kogut, 1995; Nonaka, 1994; Park *et al.*, 2013); furthermore, many organizations have started focusing on Knowledge Management (KM), in order to be competitive in the business world. According to Drucker (1992), knowledge has been acknowledged as a major source of organizations. Coping with knowledge creation, transfer and exploitation will be significantly crucial for the survival and success of corporations (Nonaka and Hedlund, 1991).

According to Gevorgyan and Ivanovski (2009) the most productive organizations are those, which have acknowledged knowledge as the main or the only resource for lasting competitive advantage. One of the reasons of implementing KM is to facilitate the knowledge owned by one individual, to be accessed and used by other individuals, to better perform their tasks. It is a general belief that, Multinational Companies (MNCs) own the most broadly dispersed and diversified knowledge. Due to a lot of reasons such as, geographical, socio-political, demographic, cultural and product-line spread of MNC subsidiaries, employees in these MNC as knowledge carriers, are spread across different perspectives. Hence, KM has to be given a specific attention in the case of MNCs (Gevorgyan and Ivanovski, 2009).

KNOWLEDGE CLASSIFICATION

Based on its multifaceted nature, knowledge can be categorized in many ways: Some scholars have seen organization as an entity, which consists of lots of tangible and intangible knowledge (Grant, 1996). The classification of tangible and intangible knowledge follows the definitions of Polanyi in terms of tacit and explicit knowledge. Besides this dichotomy, scholars also proposed other ways to identify the knowledge within an organization. Perhaps, the most widely accepted knowledge taxonomy among researchers and practitioners is the differentiation of explicit knowledge and tacit knowledge, which was first introduced by Polanyi (1967) and popularized by Nonaka and Takeuchi (1995) and accepted by many researchers (Seubert *et al.*, 2001; Chen and Zhang, 2010; Gourlay, 2002; Wilson, 2002; Prusak, 2001; Teece and Nonaka, 2001; Juhana, 2005; Haldin-Herrgard, 2003; Awad and Ghaziri, 2004; Duguid, 2005; Lifeng, 2009; Collins, 2010; Guan-Lin *et al.*, 2011).

It is noteworthy that, the Western management school has acknowledged, organization as a machine for information processing. This view is deeply rooted in the traditions of Western management, from Frederick Taylor to Herbert Simon. On the other hand, Japanese firms have a very different understanding of knowledge. They acknowledge that, the knowledge expressed in words and numbers, represents only the tip of the iceberg. They view knowledge as being

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Table 1: Comparison between tacit and explicit knowledge, adapted from Beijun and Jian (2010)

Characteristics	Tacit knowledge	Explicit knowledge
Property	Personal, context specific, latent structure	Compiled, expressed
Modality	Non structural, difficult to record, code, or expressed in certain language	Structural, verbal or written expressed in certain language or letter
Process of exploitive	Fumble in practice, experiment in mistake	Expound tacit knowledge, apprehend and decipher information
Occur spot	In person's brain and soul	In file, database, webpage, email, book, table, chart, etc.
Process of transform	Transform tacit knowledge into explicit knowledge by trope or analogy	Transform explicit knowledge into tacit knowledge by understand, assimilate and imbibe
Technology sustain	Difficult to management, share or sustain with information technology	Be able to sustain with information technology
Channel of transfer	ICT, multimedia	Electronic

primarily, tacit, which is something not easily visible and expressible. Tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others (Choo, 2003).

Explicit vs tacit knowledge: Based on the literature review in knowledge field, the researcher has found a lot of definitions of explicit knowledge, but at the same time, those definitions conveyed similar meaning: The information that is shareable via formal, Systematic language, for example, in operating manuals (Simmie, 2003). On the same vein, Kikoski and Kikoski (2004) have described explicit knowledge as what can be embodied in a code or a language and can be verbalized and communicated, processed, transmitted and stored relatively easily. In the same vein, explicit knowledge means information in its nature (Al-Hawamdeh, 2002; Wilson, 2002).

In contrast, tacit knowledge relates to the knowledge residing in the heads of individual that is not organized. A person becomes aware of his or her tacit knowledge, while facing a situation or problem. Organizations can create records, better known as indexes or expert locators to label and find people with mission-critical knowledge and experience (Leonard and Kiron, 2002). Tacit knowledge is personal and hard to formalise. It is rooted in action, procedures, commitment, values and emotions (Nonaka and Takeuchi, 1995). Tacit knowledge is the less familiar, unconventional form of knowledge. It is the knowledge, of which we are not conscious. Tacit knowledge is not codified, it is not communicated in a language, it is acquired by sharing experiences, by observation and imitation (Gourlay, 2002). According to Chen and Zhang (2010) tacit knowledge can only be sensed, observed and experienced. It is a product of people's interaction with each other and the people's interaction with the environment around them.

Polanyi (1967) has referred tacit knowledge as something that we do unconsciously and most of the time we are not aware of its existence such as, how to ride bicycle. Such knowledge is difficult to write or codified and difficult to transfer. It is not only difficult to articulate, Polanyi has also stated that, tacit knowledge is closely related to the concept of skills and is gained through practical experience in various contexts. According to the knowledge-based literature, the following factors are associated with tacit knowledge: non codifiable, non teachable and complex

(Coppedge, 2011). Table 1 shows the complexity of tacit knowledge, in acquiring, transferring and storing, compared with explicit knowledge.

Nonaka and Takeuchi (1995) expanded on Polanyi's theory of tacit knowledge to include cognitive and technical dimensions, the technical dimension developed over years of experience, inspiration derived from body experience, its highly subjective and personal insight and intuition. The cognitive dimension consist of beliefs, perceptions, values, mental models and emotions, this dimension of tacit knowledge shapes the way we perceive the world around us.

Types of tacit knowledge: Haldin-Herrgard (2003) has stated that, a number of works have been published form 1958 to 2002 related to tacit knowledge including: books and articles in terms of knowledge, particularly tacit knowledge, resulted in the usage of 149 distinct embodiments of tacit knowledge. Some of these embodiments were used in distinct meanings, by different authors, the most generally used embodiment of tacit knowledge is as follows:

Intuition: It expressed as directly knowing or learning without conscious reasoning or making choices, without formal analysis and it is characterized by: non-analytical behavior, kind of automatic knowledge, or flashes of inspiration or insight (Brockmann and Anthony, 1998; Augier and Vendelø, 1999).

Skills: As defined in business dictionary, skill is the learned capacity to carry out pre-defined results, often with minimum time, energy, or both. In other words, it refers to the abilities that one possesses. Some other terms such as ability, crafts and practical knowledge are closely related and often used in the same meaning (Process, 2013).

Insight: As defined in business dictionary, insight is the understanding of a specific causes and effect in a specific context and usually manifests itself suddenly, but also as "glimpses" into knowledge. Insight can be used with several related meanings of insight such as, understanding how to solve a difficult problem (Process, 2013).

Know-how: It is often expressed as the ability to put what one knows into work, which is significantly the product of experience (Brown and Duguid, 1998).

Know-how is mostly used with specifications as practical and collective know-how.

Beliefs: It used as a set of understandings that reflect our perspective of the world. Beliefs are also expressed as opinions (Giunipero *et al.*, 1999). Sometimes even as attitudes and judgments (Brown and Duguid, 1998; Leonard and Sensiper, 1998). Belief is the psychological state, in which an individual holds a proposition or premise to be true (Schwitzgebel, 2010).

Mental models: A mental model is an explanation of someone's thought process about how something works in the real world. It is a representation of the surrounding world, the relationships between its various parts and a person's intuitive perception about his or her own acts and their consequences. Mental models can help to shape behavior and set an approach, to solve problems (Giunipero *et al.*, 1999). Other terms like, cognitive schemas; mental maps and schemas are used as same meaning.

Practical intelligence: It expressed as a person's ability to apply components of intelligence to everyday life (Somech and Bogler, 1999). Another definition states that is the ability that individuals use to find the best fit between themselves and the demands of the environment.

Behaviors: Individual's behavior is defined as the response of the person to various stimuli or inputs, whether internal or external, conscious or unconscious, visible or hidden and voluntary or involuntary. Human behavior can be, common, unusual, acceptable, or unacceptable. It includes the style they act, based on different factors such as, genetics, social norms, core faith and attitude and reflects individual's beliefs and thoughts. Behavior is impacted by certain attributes everyone has. Theory of reasoned action, proposed by the American scholars Ajzen and Fishbein in 1975, is used to analyze and predict individual behavior, which stems from social psychology.

Most of the other types of tacit knowledge listed by other researchers, exist under those types mentioned-above.

MECHANISMS FOR MANAGING TACIT KNOWLEDGE IN THE PAST RESEARCHES

The main challenge in organizational research is, whether it is possible to manage tacit knowledge, in order to facilitate the creation of new tacit knowledge and to externalize that tacit knowledge in a way that will be transferable to other individuals and how MNC can manage this (Irick, 2007). MNCs are unique knowledge creating organizations, because of their structural position, spread in wide institutional contexts and their ability to transfer knowledge across international borders. The sharing and transferring of knowledge across organizational and international

borders is originally difficult. The problem is even greater in the case of tacit knowledge, which is difficult to articulate and communicate across wide geographical and social spaces, as highlighted by several researchers (Lam, 2011).

In general, there are two approaches for MNCs to share tacit knowledge. One is by interacting vis-à-vis by movement of expert employee through company subsidiaries, or by creating 'Ba', which defined as a shared space for emerging relationships. This space can be physical (an office, dispersed business space), virtual (e-mail, teleconference), mental (shared experiences, ideas, ideals), or any combination of them (Nonaka and Konno, 2005). Tacit knowledge of MNCs is created mainly in the creating of 'Ba' in their subsidiary. Knowledge from local market is the source of creating knowledge in MNCs'. The reason lies in the characteristic of tacit knowledge itself. It is difficult to express and has to be learned mainly in a face-to-face way, but clerks from different subsidiaries of the MNC have little chance meeting each other, because of the high transportation cost.

In this section the researcher has explored the frequently used mechanisms by past researches, to transfer and apply tacit knowledge in organizations, generally and in MNCs, particularly.

Community of Practice (CoP): According to McDermott (1999a), community of practice has been defined as a group that shares knowledge, insight, experience, learns together and creates common practices about an area of common interest. In addition, CoP is considered as one of the common approaches and has been used to manage the creation and sharing of tacit knowledge. CoP has been identified as the best site, where the transformation and conversion can occur. CoP is not goal driven or deadline driven, like tasks and projects (Davenport and Hall, 2002).

One of the first attempts in the past researches using CoP mechanism to manage tacit knowledge was "The Utopia of Communities: An Ethnographic Account of the Rise and Fall of Business Communities". This research used a case study within a Dutch consultancy firm (CNox). Furthermore, Irick (2007) has stated that, if a firm can manage itself effectively, the CoP can be a rich environment that can produce tangible knowledge. This case study shows the significance of CoP on managing tacit knowledge.

Observations of tacit knowledge: Juhana (2005) has stated that, in the Japanese perspective, a company is a living organism and can have a collective sense of identity and fundamental purpose. There are various types of behaviors that can be observed from individuals or groups within an organization. Some of these behaviors are converted from internal behaviors to external behaviors. Top management should be aware of these behaviors for managing tacit knowledge within an organization. More specifically, these behaviors can point out potential strengths or

weaknesses in the knowledge environment within an organization.

The social cognitive theory recognizes observation as a fruitful form of learning. It states that, much of the learning happens by observing others (Bandura and Mclelland, 1977). By observing the procedures of an expert, as one explains how one executes a critical task. The observer earns insights into expert's practices and builds his/her personal knowledge base. Bandura and Mclelland (1977) has emphasized the importance of reinforcement, as a strategy to build expertise. According to them, reinforcement happens when an observer, after observing the experiences of an expert, modifies his own behavior, to gain the wanted results.

Apprenticeship: Apprenticeship is a system of training a new generation of practitioners of a structured competency, based set of skills. Apprenticeship system is the place, where the novice gains tacit knowledge from the hands on experience passed on by the apprentice master (Clarke, 2010). The beginner, after widely practicing the skill for a specific period of time acquires almost the same level of competence as the expert (Collis and Winnips, 2002).

Ribeiro (2012) has proposed a framework to manage tacit knowledge, by mixing employees in different levels of experiences, to guarantee tacit knowledge transfer between expert employees and novices.

Mentoring: Mentoring is a personal developmental relationship, in which a more experienced, or more knowledgeable person helps to guide a less experienced or less knowledgeable person (Aubrey and Cohen, 1995). However, true mentoring is more than just answering occasional questions or providing ad hoc help. It is about an ongoing relationship of learning, dialog and challenge.

Metaphors: Metaphors are the ways of transferring meaning from a familiar field, to an unfamiliar field (Tsoukas, 1991). In the absence of formal language, metaphors help individuals to conclude about unfamiliar things, on the basis of other familiar things (Srivastva and Barrett, 1988). By generating new meaning, metaphors help to articulate tacit knowledge, which is not expressible due to the lack of appropriate words. According to Munby (1986) metaphors are interesting as a way of eliciting tacit skills.

Analogies: Analogies come from Greek word, which means a cognitive process of transferring meaning or knowledge from a particular subject (the analogue or source), to another particular subject (the target). Analogies, as stated by Chennamaneni and Teng (2011b), synthesize diverse perception and images into a common expression. Analogies are used to compare knowledge or messages to determine their similarities and differences.

Storytelling: Storytelling is an effective approach to capture tacit knowledge (Mahmood *et al.*, 2009; Post, 2002; Roth, 2003). It is the process of narrating tales to explain a point and to effectively transfer knowledge about organizational managerial systems, norms, values and culture. In storytelling, individuals structure their experiences in narrative and stories, in order to demonstrate how knowledge is applied. Storytelling is powerful tacit knowledge transformation tool, since it uncovers tacit skills, by adding meaning and context to the ideas and facts (Swap *et al.*, 2001). Furthermore, Mahmood *et al.* (2009) has stated that, storytelling bridges tacit and explicit forms of knowledge. In addition, he claims that, storytelling could be oral, written, filmed, or illustrated; it has a very specific structure and a chronology.

Expert interviews: In general, interview is a conversation between two or more people, here questions are asked by the interviewer to elicit knowledge from the interviewee. Expert interviews are a way of transforming tacit knowledge into explicit. In an expert interview, an apprentice interviews the expert in specific domain regarding his/her expertise. The interview could range from unstructured to structured (Chennamaneni and Teng, 2011b). However structured interviews provide a clear picture of the specific part of the knowledge. While, unstructured interviews provide a rough map of the domain expert's area and semi-structured interviews provide a broad picture of the whole domain.

Best practices: According to Chennamaneni and Teng (2011b) best practices are techniques of execution tasks that lead to excellent results. This has been established and perfected over a period of time. Sharing of best practices often results in generating innovative ideas for improving the effectiveness of organizational processes. In the same context, Bogan and English (1994) have stated that, best practice is a method or technique that has always shown results superior to those achieved with other methods and hence used as a benchmark.

Lessons learned: Lessons learned involves, identification, analysis and capturing of processes that fits well and the processes that needs improvement. Results gained are shared with other team members, so they can learn from others experiences (Chennamaneni and Teng, 2011a). According to Stewart (2003), lessons learned were originally visualized as guidelines, points, or checklists of what went right or wrong, in a special event. A framework developed by Milton (2010) illustrated the lessons learned process include 3 phases:

- Learn before
- Learn during
- Learn after

Despite the importance and advantages of the lessons learned, Dressler (2007) argues that, many

barriers are faced by organizations when applying this mechanism, for instance: too few or too many lessons, too complicated or too difficult to apply; and finally untimely lesson capture.

Learning by doing: Learning by doing is a concept within economic theory. It refers to the capability of workers to improve their productivity, by regularly repeating the same type of action. The increased productivity is achieved through practice, self-perfection and minor innovations. According to (Willmott and Snowden, 1997) tacit knowledge is learnt by doing.

Concept (cognitive) maps: Concepts maps are very important techniques for representing individual's or several individual's mental models, in graphical format, to facilitate the elaboration and exploration of his/her own belief and value system in relation to particular issues (Carbonara and Scozzi, 2006; Eden *et al.*, 2007). A knowledge map has a network of nodes and links. Nodes represent concepts, while links represent the relations between concepts. Concept maps help individuals to visualize complicated phenomenon and uncover their tacit skills.

Casual map: Causal mapping is a relevant technique for managing tacit knowledge, while it allows focusing on action and can be particularly useful for eliciting factors that are context dependent and ordering and analyzing something that is fuzzy (Huff, 1990; Jenkins, 1995).

Weick and Bougon (1986) have stated that, tacit knowledge is partly stored in the minds of managers in the form of causal maps. One of the main advantages of using such a technique is that, maps place concepts in relation to one another and they impose structure on mysterious situations. Ambrosini and Bowman (2002) have believed that, the causal mapping system should be effective in manifesting tacit skills, because the process is about continuously asking the respondents to reflect on their behavior, on what they do.

Brainstorming: The term 'brainstorming' was popularized by Alex Faickney Osborn (1953). Alex claimed that, brainstorming is more effective than individuals working alone, in generating ideas; brainstorming is process of generating creative ideas and solutions, through intensive and group discussion (Brassard and Ritter, 1994). It is a kind of socialization sessions to transfer tacit knowledge. Analysis,

discussion, or criticism of the displayed ideas is allowed, only when the brainstorming session is over and evaluation session begins.

Chennamaneni and Teng (2011b) have listed other uncommon mechanisms used to manage tacit knowledge in Organizations, like: Repertory Grid, Fishbone Diagram, Prototype, Protocol Analysis, Case-Based Reasoning (CBR) systems and Neural Networks.

TRANSFERABILITY AND APPLICABILITY OF TACIT KNOWLEDGE

Understanding the types of tacit knowledge and what people are experienced about, are not adequate to control tacit knowledge. Rather than this, there are other methods of classifying knowledge, with regards to transferability and applicability, which produce much better assistance for handling tacit knowledge (Lin, 2006; Novins and Armstrong, 1998). Novins and Armstrong (1998) have proposed a framework and classified knowledge based on transferability and applicability.

Knowledge transferability indicates how challenging or simple it is to exchange knowledge, how much the knowledge is reliant on the perspective and how much meaning that would be dropped, if some or the whole context was eliminated (Novins and Armstrong, 1998). The applicability of knowledge is about how extensively the knowledge can be applied in organizations. Table 2 shows that, for the knowledge, which is both, easy to transfer and extensively applicable, the appropriate approach is to broadly disperse it in the organization. For the knowledge, which is widely applicable, but also difficult to transfer, a richer medium is required to transfer the knowledge. For the knowledge, which is easy to transfer, but not very extensively applicable, is best handled by storing it in an accessible place, like a searchable database. For the knowledge, which is neither easy to transfer nor broadly applicable and as the advantage of managing this category of knowledge is low, it is needless to manage this kind of knowledge.

Transferability of tacit knowledge: When exploring KM literature, several terms, which are conceptually similar to knowledge transfer, have been used. For example, researchers often used knowledge sharing and transfer, interchangeably (Hsu, 2012; Jonsson, 2008). On the other hand, Sveiby (2007) has used two different knowledge perspectives and concluded knowledge as an object (K-O view), which is defined by the choice of

Table 2: Transferability vs. applicability matrix, adapted from (1998)

In term of transferability	In term of applicability	
	Local	Global
Highly	Quick access knowledge: a piece of knowledge may be easily transferable but not very broadly applicable.	Broad-based knowledge: both easily transferable and broadly applicable.
Lowly	One-off knowledge: knowledge is neither easy to transfer nor broadly applicable.	Complex knowledge: a piece of knowledge is broadly applicable but not easily transferable.

variables of statistical analysis and Knowledge as a Subjective Contextual Construction (K-SCC view), which is something that is constructed in a social context and which cannot be separated from the context or the individual.

While, Jacobson (2008) stated that, knowledge sharing referred to an exchange of knowledge between two individuals: one who communicates knowledge and one who absorbs it. Knowledge transfer focuses on the transformation of individual knowledge to group or organizational knowledge, which becomes built into processes, products and services.

Current perspectives on tacit knowledge transfer: In general, this present study has investigated the past researches to know perspectives on knowledge transfer in companies and has found that, researchers argue that, tacit knowledge can be transferred thorough:

Via movement of people: Knowledge transfer among subsidiaries, particularly when knowledge is tacit, requires personal (face to face) interaction to improve a MNC's performance and effective knowledge transfer (Foos *et al.*, 2006; Gupta and Govindarajan, 2000). The successful of knowledge transfer and boundary crossing subsidiaries depend on many factors such as, willingness and ability of the knowledge senders and recipient interaction for development of new knowledge. The movement of individual is widely recognized as a mechanism for distributing tacit knowledge and skills. This perspective emphasizes on social interaction, cultural and individual behavior factors. According to Boonyarith (2012) transferring knowledge through people movement can be the best and effective means and it allows the adaptation of knowledge to better fit with the subsidiary's conditions and business needs.

Via a process of communication: According to Ye and Huirong (2010) the idea of knowledge transfer was first proposed by Teece and Nonaka (2001), who believes that, technology transfer can help companies with the accumulation of valuable knowledge and is conducive to technical diffusion, thereby, narrowing the technology gap between different regions and reduce barriers from the geographical dimension. This perspective emphasizes on the communication model proposed by Shannon and Warren (1949). This model consists of 3 elements: sender, channel and receiver and widely accepted in communication (Fiske, 1990).

Based on communication model, Minbaeva (2007) has determined over 90 determinants, affect knowledge transfer process. The determinants are classified into four groups: characteristics of knowledge, characteristics of knowledge senders (disseminative capacity), characteristics of knowledge receivers

(absorptive capacity) and characteristics of the relationships between senders and receivers. In addition, researchers have discussed channel as an element of communication model, they argue that, information\knowledge transfer channels can be classified as formal and informal, personal and impersonal (Holtham and Courtney, 1998).

From past researches we have found that, knowledge transfer between subsidiaries is influenced by factors, such as:

- Nature and Characteristics of Knowledge (Szulanski, 2000; Haldin-Herrgard, 2003; Minbaeva, 2007; Yang, 2009; Chen and Zhang, 2010; Chennamaneni and Teng, 2011b)
- Characteristics of Knowledge Senders (Chen and Zhang, 2010; Minbaeva and Michailova, 2004; Riege, 2005, 2007)
- Characteristics of Knowledge Receivers (Gupta and Govindarajan, 2000; Minbaeva, 2007; Szulanski, 2000; Cohen and Levinthal, 1990)
- Characteristics of the Relations between Knowledge Senders and Receivers (Minbaeva, 2007; Riege, 2007; Szulanski, 2000; Foos *et al.*, 2006)
- Transfer channel (Dawson, 2000; Daft *et al.*, 1987; Chennamaneni and Teng, 2011a)
- Role of managers (Davenport and Hall, 2002; Irick, 2007; Nonaka and Konno, 2005)

Knowledge transfer barrier in MNC: The fact that, workers in MNC are dispersed across subsidiaries operating in different geographical, socio-political, demographic, cultural and product-line contexts, hence they may face additional challenges for their involvement in KM (Davenport and Prusak, 2000; O'Sullivan, 2008). From past studies, researcher has found that: Cultural barrier (Forsgren *et al.*, 2005; Szulanski, 2000; Lin, 2006), individual Barrier (Riege, 2005; Thompson, 2008; Jacobson, 2008) and ICT barriers (Chua and Lam, 2005), are the most important barriers in transferring tacit knowledge in MNCS.

Highly and lowly transferability of tacit knowledge: From previous researches, this study has discovered that, tacit knowledge could be extremely transferable, when knowledge is characterized by:

- Low level of tacitness and indecisiveness, convenience, uniqueness
- When the receiver has high absorptive capacity
- When the sender has high disseminative capacity
- When objectives and vision of organization are shared through members,
- When the communication channels are appropriate to task

- When likeness of culture is high
- When individuals have a adequate level of determination to transfer knowledge
- When the manager encourage and assist the develop mentandex change of tacit knowledge and vice versa

APPLICABILITY OF TACIT KNOWLEDGE

In this section, the researcher has investigated the applicability of tacit knowledge and the factors affect it.

One of the less encountered topics and one of the biggest puzzles of organization management in the past researches is, examining how tacit knowledge may be better made use (Venkitachalam and Busch, 2012; Pfeffer and Sutton, 1999).

Ambrosini and Bowman (2002) have stated that, many have researchers claimed that, tacit skills occupy a central role in the development of competitive advantage and they have stressed that, despite the attention that has been dedicated to the issue, there is little empirical research to support these theoretical developments. One of the main reasons for very few empirical researches on tacit skills is that, it is problematic. They have argued that, social sciences are suitable for studying intangible phenomena, which they believe to be applicable to tacit skills. In the same vein, according to Guan-Lin *et al.* (2011) it is significant to note that, knowledge itself cannot create important value, without utilization.

Application of knowledge begins when the recipient starts using knowledge to solve issue or to give existent issue new dimension (human, social) and deep meaning. During this time, the recipient is mainly concerned with identifying and resolving issues that might obstruct the most effective use of the received knowledge. With continuous practice, this knowledge becomes routinized for the recipient, as the actions based on it have more predictable outcomes (Szulanski, 2000). In addition, Choo (2003) has stated that, creation and utilization of knowledge takes place most effectively in groups and teams, which share common purpose and beliefs. Thus, Davenport and Prusak (2000) identified the importance of communities of practice and Nonaka and Konno (2005) have introduced the idea of “ba” or shared contexts for creating and sharing knowledge.

Locally vs. globally applicable: Based on classifying tacit knowledge in terms of applicability as discussed earlier, (Novins and Armstrong, 1998; Lin, 2006) have stated that, the applicability of knowledge is about how broadly the knowledge can be implemented. Specific knowledge applies only to a restricted set of conditions. It can be called local or detailed knowledge and is dependent on a given physical or geographic situation. While, on the other hand, general knowledge or global knowledge is global in nature, which is applied widely across the business and across process, industry,

technical and cultural bounds applicable across the organization. The nature of general knowledge makes it more valuable to transfer to other locations. Since general knowledge is applicable over a wide range of the organizations, it is also useful to more people. Knowledge generally originates from different sources and therefore, associated with different degrees of ease of transfer.

At the same time, many barriers exist, therefore, turning the management of knowledge into a very challenging task. Based on socio-technical theory, barriers for applying KM can be considered to be everything related to human, organizational and technological issues that obstruct the implementation of knowledge in organization (Trist, 1981).

THE ROLE OF THE ICT IN MANAGING TACIT KNOWLEDGE

The role that ICT plays in the tacit knowledge transfer process includes many perspectives. As early as 1980s, the focus had been on IT as a core for knowledge creation. One such example are expert systems, however, these too have had criticisms from a KM point of view, these systems focused too much on developing ‘thinking machines’, through using Artificial Intelligence (AI) techniques, rather than designing these ‘machines’ to increase ‘human thinking’ (Goh, 2005). Moreover, Hansen (1999) has stated that, ICT can have a negative effect in exchanging tacit knowledge process; when employees may email, rather than conducting a face-to-face meeting with a colleague. On the other hand, some studies have argued that, ICT can have a positive impact, by decreasing distance, increasing the speed of transfer and providing a means of conformity, specially in MNCs (Goh, 2005; Roth, 2003; Daft *et al.*, 1987; Albino *et al.*, 2004). At the same time, it is widely agreed that, machines process information, whilst knowledge must be processed by humans (Venkitachalam and Busch, 2012; Albino *et al.*, 2004).

In addition, Johannessen *et al.* (2001) have stated that, when enterprises unilaterally invest in IT, the focus will easily be on the part of the knowledge base that can be formalized as information. The tacit knowledge can then easily be de-emphasized. They have argued that, the mismanagement of IT is found in the lack of understanding of tacit knowledge and the relationship between tacit knowledge and IT. In the same vein, McDermott (1999b) has stated that, while the knowledge revolution is upon us, but the heart of this revolution is not electronic links, while the knowledge revolution is inspired by IT, it takes human system to realize it. This is not because people are resistant to use IT, but because knowledge involves thinking with information. To leverage knowledge we have to enhance both, thinking and information.

After discussing the part of ICT in knowledge management, the researcher is convinced that,

Table 3: Gaps in the past studies

Author/year	Gap
Lin (2006) and Novins and Armstrong (1998)	Classifying knowledge in terms of transferability and applicability yield much clearer guidance for managing tacit knowledge.
Irick (2007)	The main challenge in organizational research has been whether it is possible to manage tacit knowledge specially MNCs. In order to create new tacit knowledge and to transfer it to other individuals.
Asakawa and Lehrer (2003)	MNCs has faced problems in transferring and applying tacit knowledge because they operate in multiple environments, variations in both their people and practices that reflect local requirements, laws and cultures.
Arntzen-Bechina and Nkosi-Ndlela (2009) and Gevorgyan and Ivanovski (2009)	The role that ICT plays in the tacit knowledge transfer process includes many perspectives and still arguable.
Lifeng (2009)	Organizations need to take a holistic approach in managing tacit knowledge in their setups.
Ye and Huirong (2010)	Unfortunately the majority of these researchers studied those aspects of KM from the behavioural and managerial perspective and seldom from the perspective of information technology.
Lam (2011)	The problem is even greater in the case of tacit knowledge which is difficult to articulate and communicate across wide geographical and social spaces as highlighted by several researchers.
Johannessen <i>et al.</i> (2011)	Mismanagement of IT is found in the lack of understanding of tacit knowledge and the relationship between tacit knowledge and IT.
Chennamaneni and Teng (2011)	The proposed framework needs to enhance it is validity through an assessment by a panel of experts as well as by lab experiments in future.
Boonyarith (2012)	No literature reflects the transfer process of professionals working for short periods of time on certain international projects as a personnel movement mechanism.
Venkitachalam and Busch (2012) and Pfeffer and Sutton (1999)	One of the less encountered topic and more desirable in the past researches is examining how tacit knowledge may be better made use. One of the biggest puzzles of organization management is disconnecting between knowledge and action.
Venkitachalam and Busch (2012)	One of the most interesting unexplored research issues with regard to tacit knowledge creation and particularly transferal is the impact ICT has in the organization.

information technology can just play as enabler factor to acquire, save and exchange information, or in other words explicit knowledge, whilst the most significant type of knowledge (tacit knowledge) could be captured, stored and transmitted by using exclusive type of technology, based on media-richness theory. According to Chennamaneni and Teng (2011b) media richness theory claims that, task efficiency can be enhanced by corresponding media characteristics to the task requirements. A communication channel is a medium, through which people communicate and share knowledge. Some of the typical communication channels include, facet of ace interaction, video conferencing, telephone, Web 2.0 technologies, e-mail and so on.

Based on media richness theory, each of these channels has its own benefits and drawbacks and therefore, might be more ideal than others for different situations. Therefore, ICT can play a substantial role in processing, storing and retrieving data, information, explicit knowledge and in some cases tacit knowledge. Consequently, advanced computer storage technology and retrieval techniques (e.g., databases, query language) are capable to enhance the storage and further simplify and maximize retrieval prospects for knowledge workers.

CONCLUSION

In this study, we had discussed the importance of knowledge, particularly tacit knowledge for the sustainability and achievements of organizations. This study had examined the present literature on managing tacit knowledge in MNCs. We had outlined the concept, types of tacit knowledge and how tacit knowledge is

managed in organizations through a lot of mechanisms such as, Community of Practice, Observations, Apprenticeship, Mentoring, Metaphors, Analogies, Storytelling, Expert Interviews, Best Practices, Lessons Learned, Learning By Doing, Concept Maps, Casual Map and Brainstorming. In reviewing the literature, the study had indicated several factors, which influenced the transferability and applicability of tacit knowledge. In addition, this study has uncovered a number of gaps and proposed future research direction to be filled by researchers in the domain of tacit knowledge. In line with this direction, the authors had also suggested the need for future studies, to examine the possible foundations to tacit knowledge. In addition, this study had also analyzed the role of ICT in managing tacit knowledge in organizations.

GAPS IN LITERATURE REVIEW AND RECOMMENDATIONS

After examining literature review in tacit knowledge, particularly managing tacit knowledge, this study has found several gaps in the past researches and has presented in order to make these gaps available for researchers for future studies (Table 3).

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