Taxonomies of Knowledge Transfer Revisited: Towards A New Approach

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Abstract. Knowledge management is one of the essential areas of management. In the present world the organizations could recognize the importance of knowledge and its management. Researchers and theorists could find numerous ingredients of knowledge management process. Identification, forecasting, calculation, capturing, storing, maintaining, retrieving, transferring etc. are the crucial elements of knowledge management process. Among them knowledge transfer could achieve a huge concentration of the organizations and the researchers. This paper makes an endeavor to fill the gray areas of the taxonomies of knowledge transfer through an exploration of the existing literature. From the emerging to the termination points of knowledge, knowledge transfer may be divided into internal transfer, external transfer and terminal transfer. Future researchers may empirically investigate these newly revealed classifications of knowledge transfer.

Key Words: Knowledge, Knowledge Management, Knowledge Transfer

1 PREAMBLE

Articulation of Gettier's (1963) theory of knowledge overturn thousand years old definition on knowledge (Justified True Belief) formulated by philosopher Aristotle. Gettier (1963) argues that there should be an additional ingredient with 'justified true belief' to become knowledge (e.g. justified + true + belief + something = knowledge). With the similar voice, Nonaka & Takeuchi (1995) echo that wrong belief satisfying these three conditions cannot produce knowledge. They continue by arguing that knowledge is "a dynamic human process of justifying personal belief toward the 'truth' " (p. 58). It may be mentioned that there is no commonly accepted definition of knowledge (Hofer-Alfeis & Spek, 2002). It is also difficult to define knowledge (Gamble & Black, 2001) and the debates occupied the minds of the philosophers for many centuries (Hislop, 2005; Jashapara, 2004). Davenport and Prusak (1998) make an endeavour to define knowledge as:
"Fluid mix of framed experience, values, contextual information, expert inside and grounded intuition that provides an environment and frame work for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knowers. In organizations, it often becomes embedded not only in the documents or repositories but also organizational routines, processes, practices, and norms." (p. 5).
Management communities around the world recognise and value knowledge management (Scarbrough, *et al.*, 2005) which is moving into a new era (Takeuchi, 2001) along with its branches. Its popularity has increased significantly, especially since 1995, and it has become the elementary theme of both management philosophy and management tools (Edvardsson, 2006), with multi-dimensional and advanced approaches (Chae and Bloodgood, 2006). Knowledge management is comparatively young (Schütt, 2003), emerging (Jashapara, 2004; Prusak, 2001; Beckman, 1999) and is a popular segment in the dictionary of management (Nan, 2008). Organisations could realise the importance of managing knowledge nowadays. It deeply focuses and relies on a strong culture of cooperative, sharing and supportive, social community, with a view to achieving organisational strategic requirements (Debowski, 2006). Knowledge management ensures superior quality and excellent productivity (Fireston and McElroy, 2005). Several theorists and

researchers (Gamble and Blackwell, 2001; Zuckerman & Buell, 1998; Hasnain, 2012) have mentioned elements of the knowledge management process. For example, Gamble and Blackwell (2001) find identifying, organizing, transferring and using to be some of these elements. Zuckerman and Buell (1998) identify collection, storage, sharing, and linking as part of the process. Capture, storage, dissemination, and creation are identified as essential elements of the knowledge transfer process by Heavin and Neville (2006). Measuring and forecasting of knowledge is one the elements of knowledge transfer process (Hasnain, 2012). So different aspects of the knowledge management process have been proposed by the researchers (Holsapple and Jones, 2006; Jennex, 2006; Watson, 2003; Webb, 1998). All these elements are frequently concurrent, repetitive and sometimes not sequential (Beckman, 1999). Maximum researchers and theorist that creation, storage and transfer are the core elements of the knowledge management process.

Knowledge transfer is receiving wide attention (Argote *et al*., 2000) as it is essential for the survival and prosperity (Wathne *et al.,* 1996) of the organisations. However, these differ in their activities, depending upon their objectives and nature, and the changes and forces they encounter in the environment, which usually call for the use of different types of skills, ideas, present and past experiences residing inside and outside the firms. Learning and implementations of others' experiences for social and organisational benefit necessitate the relevance of the concept of knowledge transfer. Successful transfer between different organisations strengthens trust and ties. Such trust ensures future knowledge transfer from the recipients of the knowledge, Mu *et al. (*2008) claim. New knowledge may promote organisational learning and innovations in new methods and practices, which may also be absorbed into routines and culture (Darr and Kurtzberg, 2000). New knowledge helps to increase customer satisfaction (Goh, 2002). Furthermore, knowledge transfer minimises losses in productivity (Argote and Ingram, 2000) and improves organisational performance. Knowledge transfer helps to add force (Hall, 2001) and value (Hogberg and Edvinsson, 1998) to the existing knowledge of organisations. Knowledge transfer may occur between independent organisations (inter-organisational) or between the sub-units of a single organisation (intra-organisational) (Darr, Argote and Epple, 1995; Albino, Garavelli and Schiuma, 1999). Transfer of knowledge across and within firms also appears to be a root of strategy formulation and research (van Wijk, Jansen and Lyles, 2008). It may be noted that from a strategic point of view, firms do not share scarce and valuable knowledge with their competitors, while they are interested in sharing the same with non-competitive companies (Bell *et al.*, 2002). Actually, inter-organisational knowledge transfer decisions are made on the basis of anticipated costs and benefits (Appleyard, 1996).

Many authors (Albino, Garavelli and Schiuma, 1999; Appleyard, 1996; Argote, 1999; Argote, McEvily and Reagans, 2003; Argote and Ingram, 2000 ; Argote *et al*.,2000; Davenport and Prusak, 1998; Easterby-Smith, Lyles and Tsang, 2008; King, 2006; Szulanski, 2000; Hendriks, 1999; Lindsey, 2006; van Wijk, Jansen and Lyles 2008; Dawson, 2000) have defined knowledge transfer in different ways. Argote (1999), Argote, McEvily and Reagans (2003), Argote and Ingram (2000) and Argote *et al* (2000) find knowledge transfer as a process, where knowledge acquired in one organisation affects positively or negatively another one. Here the result and influence of transferred knowledge over the actors is described. Similarly, van Wijk, Jansen and Lyles (2008) define "knowledge transfer is a process where organisational actors-teams, units, or organisations – exchange, receive and influenced by the experience and knowledge of others" (p. 832). Exchange of experiences between the actors and impacts of the transferred knowledge over them is narrated. Knowledge transfer is a communication process with information processing activities, where actors can transfer knowledge by information flows using an appropriate media (Albino, Garavelli and Schiuma, 1999). Albino, Garavelli and Schiuma's (1999) concept of knowledge transfer has a similarity with the mathematical theory of communication of Shannon and Weaver (1949). It is a comprehensive definition which may be applied to number of contexts as it emerges the issue of actors and media in the knowledge flow. Easterby-Smith, Lyles and Tsang (2008) find knowledge transfer as a kind of learning from another organisation's experiences. The authors only highlight the inter-organisational knowledge transfer. Appleyard's (1996) definition of knowledge transfer is brief and precise. She continues by defining knowledge transfer as "the transfer of useful know-how

or information across company lines." (p. 138). Focusing on the relationship with the clients, Dawson (2000) defines, knowledge transfer as an art of making clients more knowledgeable with a view to developing client relationships. A relationship between, at least, two parties, one that is having knowledge and the other that collects knowledge may be called knowledge transfer (Hendriks, 1999). King (2006) comprehensively defines, "knowledge transfer is the focused, objective seeking communication of knowledge between individuals, groups, or organizations such that the recipient of knowledge (a) has a cognitive understanding,(b) has the ability to apply the knowledge, or(c) applies the knowledge."(p. 498). Here a wide spread definition mentioning maximum components, their roles and ties between them are enveloped sequentially by King (2006). Szulanski (2000) reveals "knowledge transfer is seen as a process in which an organisation creates and maintains a complex, causally ambiguous set of routines in a new setting" (p. 10). A holistic and wide-ranging view of knowledge transfer emphasising the important issues like 'absorption' and'actions' on the basis of transferred knowledge are taken into account by Davenport and Prusak (1998). They find Knowledge transfer as a combination of transmission (sending or presenting knowledge to a potential recipient) and absorption by that person and group i.e. *Transfer= Transmission +Absorption.*

This paper is structured in the following order: in the preamble section it describes the introductory issues of knowledge management. Previous literature on the taxonomies of knowledge transfer is reviewed in the literature review section. Newly introduced classifications of knowledge transfers are exhibited in '*new approach'* section.

2 A BRIEF LITERATURE REVIEW-TAXONOMY OF KNOWLEDGE TRANSFER

Dixon (2000) mentioned five types in her book 'Common Knowledge'. She classified knowledge transfer on the basis of certain criteria, such as who is going to receive the knowledge, the nature of the task, the type of knowledge to be transferred, and so on. Dixon (2000) developed five categories of transfer. These are, firstly serial transfer, in which a team or group could achieve knowledge from performing its tasks in one context, and the same team or group will repeat the task in a different context. Here the contributor and recipient are in the same team or group. This type of transfer helps the team or group to prevent the repetition of mistakes. Secondly there is near transfer, when the team or group gains knowledge by doing frequent and repeated tasks is replicated by other teams or groups performing the similar tasks in a similar context, but in a different location. Thirdly, far transfer, when a team or group gains tacit knowledge by doing non-routine tasks, which is transferred to other teams or groups doing similar tasks in another part of the organisation. Fourthly, there is strategic transfer which is the transfer of collective knowledge which is needed to perform some strategic task which takes place infrequently, but is essential for the organisation. It prevents the committing of long term mistakes and costly errors. For example, if an SBU-1(Strategic Business Unit) purchases expensive machinery for its operations, a SBU-2 in a different location may use the knowledge and experiences of SBU-1 while it is purchasing the same machinery after another year. Fifthly there is expert transfer where the team needs expert knowledge to perform a technical task. Here the team seeks expertise from others in the organisation in order to help them. This knowledge can be incorporated into the organisation's routines and SOPs (Standard Operating Procedures).

Inter-organisational knowledge transfer has been defined in various ways in the literature. Gupta and Govindarajan (2000) found it to be the flow of knowledge across organisational boundaries. It is diffusion of knowledge between like minded firms (Spencer, 2003) and may be defined as knowledge sharing among organisations (Hansen, 1999). Explicitly, inter-organisational knowledge transfer is a process by which one organisation learns from the experience and knowledge of another, for achieving a sustainable competitive advantage (Easterby-Smith *et al.*, 2008). Inter-organisational knowledge transfer is a strategic decision (Hamel, 1991). Firms usually calculate the risk and benefits of transferring knowledge beyond their boundaries (Appleyard, 1996). There are different types of inter-organisational knowledge transfer. However, there is no commonly accepted

classification of this. For instance, von Hippel (1987) could discover that employees in the US steel 'minimill' industry face technical difficulties in their work, they use their private and personal channels and contact their friends, working in other organisations, even those in rival firms, to solve their technical problems. Such transfer of knowledge is informal know-how trading, and when agreement to license or sell proprietary technical knowledge between the organisations takes place, it is formal know-how trading (von Hippel, 1987). Costs associated with formal know-how trading are higher than those of informal. Know-how trading is inter-organisational knowledge transfer. Formal know-how trading needs the approval of the both knowledge contributor and knowledge recipient organisations, while informal know-how trading does not need any approval (von Hippel, 1987).

Appleyard (1996) classifies inter-organisational knowledge transfer into *access to* and *use of* the shared knowledge. She argues that access to knowledge could occur through *public* channels, in patents, newsletters, popular press, trade journals, conference presentations, or through the *private* channels of e-mail, the telephone, face-to-face meetings, visiting other companies' plants, consortia, benchmarking, and so on. She continues by arguing, "even if access to knowledge is public, its use may be *restricted* by legal constructs such as patents or nondisclosure agreements" (p.138). Thus she divided inter-organisational knowledge transfer into 'public restricted', such as reviewing patents, reverse engineering, patented technology and so on, 'public unrestricted', for example, newsletters, popular press, trade journals, conferences, 'private restricted', like visiting other company, consortia, and benchmarking studies, and 'private unrestricted' such as email, telephone, or face-to-face meetings.

Marquardt (1996) classifies knowledge transfer as intentional and unintentional, identifying individual written communication such as memos, reports, letters, openness bulletin boards, training with internal consultants, formal courses, or on-the job training, as well as internal conferences and briefings. He also identified internal publications like video, print, audio and tours, especially for large, multidivisional organisations with multiple sites that are tailored for different audiences and needs. In addition there are job rotations/transfers and mentoring as intentional transfers of knowledge, while unintentional transfer includes job rotation, stories and myths, task forces and informal networks.

Nonaka and Takeuchi (1995)'s *SECI* model consists of Socialisation, Externalisation, Combination and Internalisation factors as the delivery places of value and knowledge creation and transfer, from one appearance to another in the organisations. Acknowledging the concept of the SECI model Sveiby (1996) finds nine types of knowledge transfer, "(i) between individuals, (ii) from individuals to external structure, (iii) from external structure to individuals, (iv) from individual competence into internal structure (v) from internal structure to individual competence (vi) within the external structure (vii) from external to internal structure (viii) from internal to external structure and (ix) within internal structure. These nine transfers exist in most organisations (p. 348).

For example, a social worker may share knowledge with their colleagues (between individuals), educate outsiders a group of villagers or any stakeholder (individual to external structure), they may learn from the villagers or other stakeholders (external structure to individuals, bank their knowledge and experiences in the database of the organisation(knowledge transfer from competence to internal structure) which is shared by all the members in the organisation(from internal structure to individual competence). The transferred knowledge is again shared and discussed in the community and by stakeholders, and community members gain that knowledge from each other (knowledge transfer within the external structure). The social worker also receives new ideas from the villagers, and incorporates those into the training programme (knowledge transfer from external to internal structure), they might also create a database with a view to educating the community members (knowledge transfer from internal to external structure) or refurbish the office with new software facilities, connecting other functional areas in the organisation(knowledge transfer within internal structure).

3 THE NEW APPROACH TO KNOWLEDGE TRANSFER

The basic concept of knowledge transfer may be compared with the well-known communication process model of Shannon and Weaver (1949), where two actors remain engaged in transferring a message, both of them are engaged in educating each other. There may be noise between communications, and one should understand the other's message, otherwise the entire communication process fails.
From the emerging to the termination points knowledge travels number of layers. So knowledge transfer may be divided into: (i) Internal transfer (ii) External transfer (iii) and Terminal transfer.

3.1 Internal knowledge transfer

Sperry (1945, 1952, 1961, 1964, and 1966) informs about the two hemispheres (two halves) of a human brain. These two parts of a brain are bridged by Corpus Callosum (thick cable of nerves). It is a communication media between these two parts. Each hemisphere of the brain controls different types of thinking. Sperry's studies continue by finding that right hemisphere is non-verbal and intuitive, while left hemisphere is verbal and analytical in nature. So brain functions operate on the basis of mutual cooperation between these two parts. Human actions are the output of these two hemispheres. Knowledge (both tacit and explicit) is the resultant outputs of the human brain. We do not see the transfer of waves between the hemispheres, which is intangible in nature. Metaphorically, this may be compared with a gun. When the gun is fired the trigger pin strikes the rear of the bullet-case containing chemical ingredients inside and a bullet at the front. A huge chemical reaction and pressure occurs which forces the bullet to leave the chamber and the barrel of the gun with a spinning motion and huge velocity. This internal activity occurs in the chamber and barrel of the weapon taking a fraction of a second, which is unseen like the activities of the hemispheres of human brain.

3.2 External knowledge transfer

Once the knowledge is processed inside the brain, it gets ready for deliberation. The mode of deliberation may be in the form of tacit or explicit (Nonaka and Takeuchi, 1995). When internal knowledge transfer ends, external knowledge transfer begins. This stage occupies till knowledge is received and captured by the knowledge recipient (e.g. the moment the bullet leaves the barrel of the weapon till it hits the target). The transmitted knowledge may encounter many barriers during this stage like a fired bullet. Air and gravitational forces constantly impose resistances on the velocity of it. Likewise, external environment has tremendous impact on the knowledge at this stage. An appropriate quality mechanism/channel may ensure an undisrupted knowledge transfer here.

3.3 Terminal transfer

When the transferred knowledge is absorbed, used and the objective of the transfer is achieved may be called terminal transfer (e.g. So terminal transfer= absorption +use). It may be compared with the activities of a fired bullet inside its target. Davenport and Prusak (2000) find, "The goal of knowledge transfer is to improve an organization's ability to do things, and therefore increase its value. Even transmission and absorption together have no useful value if the new knowledge does not lead to some change in behaviour, or the development of some new idea that leads to new behaviour" (p. 101). An example on the Non-Governmental Organisation (NGO) may be cited here. The transferred knowledge to the NGO- clients (beneficiaries) should be according to their absorptive capacity, and should have a positive impact on their socio-economic condition. If knowledge is not absorbed and used by the beneficiaries, the transfer has not occurred. The knowledge should be transferred in such a way that it is fully understood and used by the recipients, and also they should not face difficulties in the implementation process of the transferred knowledge. Thus with the use of the transferred

knowledge, terminal transfer ends. Once knowledge is absorbed and used by the recipient, the same knowledge may be stored and used later.

4 CONCLUSIONS AND FUTURE RESEARCH

Gettier's (1963) definition "Justified True Belief in a Context" is a modification to the Aristotle's definition of knowledge. Organisations could realise the importance of knowledge and its management now-a-days. Many authors and researchers emphasise on the importance of knowledge. Knowledge Management is a process of identifying, capturing, storing, disposing, retrieving and transferring knowledge between the actors. Knowledge transfer is one of the important elements of knowledge management process. Successful knowledge transfer is a flow of knowledge between the knowledge "have" and "have-nots". New knowledge and experiences may help in promoting the organisations' innovation and practices, while the new knowledge may help in developing the individuals' ideas, knowledge and overall cognitive functioning and developing. There are different taxonomies of knowledge transfer. For example, Dixon (2000) finds five types of knowledge transfers (e.g., serial transfer is based on the context, near transfer is based on the frequent and repeated tasks, far transfer is based on transferring non-routine tasks to the another part of the same organisation, Strategic transfer is the transfer of collective knowledge used for strategic tasks, expert transfer is based on transferring the expert knowledge). Appleyard (1996) divides the inter-organisational knowledge transfer into "*access to*" and "*use of shared*" knowledge while Marquardt (1996) classifies knowledge transfer into intentional and unintentional. von Hippel (1987) divides knowledge transfer as informal know-how trading and formal know-how trading between the organisations. Nonaka and Takeuchi (1995) introduce the SECI model and shows how knowledge is created and transferred. Sveiby (1996) exhibits nine types of knowledge transfers: between individuals, from individuals to external structure, from external structure to individuals, from individual competence into internal structure, from internal structure to individual competence, within the external structure, from external to internal structure, from internal to external structure and within the internal structure. This paper divides knowledge transfer into internal transfer (activities occur between the hemispheres of a human brain), external transfer (from the dispensing point of the human brain before the use of the knowledge) and terminal transfer (end point of knowledge transfer, where the transferred knowledge is used and integrated with the human brain and organisations' routines). Future researchers may empirically examine the concept of internal, external and terminal knowledge transfers.

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