Knowledge communication and translation- A knowledge transfer model

Article

KNOWLEDGE COMMUNICATION AND TRANSLATION – A KNOWLEDGE TRANSFER MODEL

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ABSTRACT

The main objective of this paper is to propose a process model for one of the primary strands of the area of knowledge management, i.e. knowledge transfer. A thorough review of literature revealed that the knowledge transfer mechanism is somewhat analogous to the theories of translation and communication. The process model developed in this paper, therefore, builds on and integrates the aforementioned two theories. Knowledge transfer, *per se*, is not a mere transfer of knowledge. It involves different stages of knowledge transformation. Besides, depending on the context of knowledge transfer, it can also be influenced by many other factors; some positive and some negative. The developed model of knowledge transfer attempts to encapsulate many of these issues in order to create a holistic model.

Keywords: Knowledge Management (KM), Knowledge Transfer (KT), Theory of Communication, Theory of Translation, Process model

1. INTRODUCTION

Today, more than ever, knowledge matters. New terms and processes relating to management of knowledge are emerging everyday. We have the concept of knowledge workers. There is also the idea of a knowledge-based economy and knowledge-based industries in the business environment. Knowledge is, nowadays, regarded as the most critical resource of these economies, mainly due to the fear of 'knowledge loss'. Because knowledge-based resources are usually difficult to imitate and socially complex, the knowledge-based view of organisations posits that these knowledge assets may produce long-term sustainable competitive advantage (Alavi and Leidner, 2001). In recent years, due to the increasing competitiveness, construction organisations in the UK and other parts of the world have also moved towards these knowledge-driven economies.

Many existing literature in the field of knowledge management has sought to look into different aspects of organisation and management of knowledge in different conditions and in different contexts (e.g. organisational, individual, etc.). These different aspects branch into different areas of knowledge management. It ranges from knowledge creation (Nonaka, 1994), knowledge capture (Kamara et al, 2003; Shapiro, 1999), knowledge sharing (Dyer and Nobeoka, 2000; Hansen, 2002), knowledge transfer (Argote and Ingram, 2000; Gilbert and Cordey-Hayes, 1996; Tsai, 2001) to knowledge application (Holzner and Marx, 1979) and even to organisational learning and innovation (Lam, 1998; Vakola and Rezgui, 2000).

The main focus of this paper is on one of these major strands of the area of knowledge management, i.e. *knowledge transfer*. As Abjanbekov and Padilla (2004) explicates, companies nowadays strive to establish and maintain competitive advantage, successful strategy, effective management and efficient use of resources. It is argued in this paper that knowledge transfer can serve as a powerful catalyst for achieving these goals. However, the mechanisms by which knowledge is transferred need to be further understood and developed. The paper grounds these mechanisms in the theories of translation and communication and proposes a theoretical model for the process of knowledge transfer.

The paper is divided into three main sections. Section 2 discusses the area of knowledge management in-general followed by a detailed review of knowledge transfer in section 3. Combining some of the significant theories and concepts, the final section of the paper proposes a model for the process of knowledge transfer.

2. KNOWLEDGE AND MANAGEMENT OF KNOWLEDGE

2.1 Tacit and Explicit nature of knowledge

'Knowledge' could not easily be defined. Indeed, philosophers such as Socrates and Plato have considered the question in some detail. Some authors, most notably in IT literature, address the question of defining knowledge by distinguishing among knowledge,

information, and data (Amidon, 2002; as cited in Albers and Brewer, 2003). The assumption seems to be that if knowledge is not something that is different from data or information, then there is nothing new or interesting about knowledge management (Fahey and Prusak, 1998).

A commonly held view with sundry minor variants is that data is raw numbers and facts, information is processed data, and knowledge is authenticated information (Dretske, 1981; Vance, 1997; Alavi and Leidner, 2001). Davenport and Prusak's (1998) definition of knowledge goes far beyond this. They explain knowledge as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information.

However, knowledge mainly originates from an individual's brain. It is information interpreted by the individual and applied to the purpose for which it is needed. Knowledge is different from expertise (Figure 1). Expertise is specialised, deep knowledge and understanding in a certain field, which is far above average. It is gained through experience, training and education and is built up from scratch over a long period of time by an individual and importantly remains with that person (Bender and Fish, 2000).

-- Take in Figure 1 --

Knowledge can be seen mainly in two ways, i.e. tacit and explicit. This classification of knowledge is based on the level of its complexity of knowledge continuum (Koulopoulos and Frappaolo, 1999). Tacit knowledge is 'non-verbalised, intuitive and unarticulated knowledge' (Polanyi, 1962). It is the knowledge that resides in human brain and cannot be easily captured or codified (Wong and Radcliffe, 2000; Nonaka and Takeuchi, 1991; McAdam and McCreedy, 1999). Tacit knowledge is difficult and sometimes impossible to capture and diffuse (Koulopoulos and Frappaolo, 1999; Pederson, 2003); nevertheless, compared to explicit knowledge, it adds more value to the organisation. Explicit knowledge, on the other hand, is the knowledge that can be articulated in formal language and easily be transmitted amongst individuals (Koulopoulos and Frappolo, 1999). Pederson (2003) explains this as the stuff of books. However, it is more than that. It is

mainly the information that is recorded in documents or on computer systems (Public Sector Benchmarking Service, 2003).

Thus, unlike tacit knowledge, explicit knowledge can be expressed and codified easily. As Alavi and Leidner (2001) claims, some researchers attempt to highlight that tacit knowledge is more valuable than explicit knowledge or vice versa. Whether tacit or explicit knowledge is the more valuable may indeed miss the point. The two are not dichotomous states of knowledge, but mutually dependent and reinforcing qualities of knowledge: tacit knowledge forms the background necessary for assigning the structure to develop and interpret explicit knowledge (Polyani, 1975). The inextricable linkage of tacit and explicit knowledge suggests that only individuals with a requisite level of shared knowledge can truly exchange knowledge. An understanding of these concepts of knowledge is important because theoretical developments in the knowledge management area are influenced by the distinction among the different types of knowledge (Alavi and Leidner, 2001).

2.2 Different perspectives of knowledge and its management

Knowledge may be viewed from several perspectives (1) a state of mind, (2) an object, (3) a process, (4) a condition of having access to information, or (5) a capability (Alavi and Leidner, 2001). According to Alavi and Leidner (2001), the perspective on knowledge as a state of mind focuses on enabling individuals to expand their personal knowledge and apply it to the organization's needs. Knowledge as an object perspective posits that knowledge can be viewed as a thing to be stored and manipulated. The process perspective of knowledge focuses on the applying of expertise.

The fourth view of knowledge is that of a condition of access to information. According to this view, organizational knowledge must be organized to facilitate access to and retrieval of content. This view may be thought of as an extension of the view of knowledge as an object, with a special emphasis on the accessibility of the knowledge objects. Finally, knowledge can be viewed as a capability with the potential for influencing future action. Watson (1999) builds upon the capability view by suggesting that knowledge is not so much a capability for specific action, but the capacity to use information; in addition, learning and experience result in an ability to interpret

information and to ascertain what information is necessary in decision making (Alavi and Leidner, 2001).

These different views of knowledge have led to different perceptions of knowledge management (Carlsson et al., 1996). According to Alavi and Leidner (2001), if knowledge is viewed as an object, or is equated with information access, then knowledge management should focus on building and managing knowledge stocks. If knowledge is a process, then the implied knowledge management focus is on knowledge flow and the processes of creation, sharing, and distribution of knowledge. As Alavi and Leidner further explicate, the major implication of these various conceptions of knowledge is that each perspective suggests a different strategy for managing the knowledge and a different perspective of the role of systems in support of knowledge management (Table I).

-- Take in Table I --

What is apparent from the above table is that, different perspectives of knowledge lead to different approaches and views of 'knowledge management'. For example, if knowledge is viewed as an object or 'state of mind', Knowledge Management (KM) can be seen as an activity, which is concerned with strategy and tactics to manage human-centred assets (Brooking, 1997). If knowledge is identified as a process, then KM is clearly the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities (Quintas et al, 1997). Furthermore, if knowledge is viewed as a 'capability', then KM is 'the strategy and process of identifying, capturing and leveraging knowledge' to enhance competitiveness (McCampbell et al, 1999). An overarching theory of knowledge management is yet to emerge, perhaps, because of these different views of knowledge. Or it may well be because the practices associated with managing knowledge have their roots in a variety of disciplines and domains.

Although the aforementioned theories or perspectives differ from one another in context, they appear to have two common characteristics. Firstly, as Davenport and Prusak (1998) claim, most of the knowledge management approaches have one of three aims:

- to make knowledge visible and show the role of knowledge in an organization, mainly through maps, yellow pages, and hypertext tools
- to develop a knowledge-intensive culture by encouraging and aggregating behaviours such as knowledge sharing (as opposed to hoarding) and proactively seeking and offering knowledge
- to build a knowledge infrastructure-not only a technical system, but a web of connections among people given space, time, tools, and encouragement to interact and collaborate.

Secondly, irrespective of the point, place or situation it occurs, what is significant in management of knowledge is that it encourages acquiring and creating new knowledge. This is a continual process where people or organisations can (re)create new knowledge by using the knowledge that is already created. It also promotes integration and empowers employees to constantly improve their work. Most of all, knowledge management improves decision-making, engenders learning, facilitates collaboration and networking and also encourages and promotes innovation.

3. KNOWLEDGE TRANSFER – A THEORETICAL PERSPECTIVE

3.1 An operational definition for knowledge transfer

Knowledge transfer is an area of knowledge management concerned with the movement of knowledge across the boundaries created by specialised knowledge domains (Carlile & Rebentisch, 2003). It is the conveyance of knowledge from one place, person or ownership to another. Successful knowledge transfer means that transfer results in the receiving unit accumulating or assimilating new knowledge. A thorough review of literature reveals that many authors and researchers have failed to provide a clear cut definition for knowledge transfer and, at times, it has been discussed together with the term ‘knowledge sharing’. However, a closer scrutiny would suggest that these two are different in some respects.

Knowledge sharing is a people-to-people process (Ryu et al., 2003). It is the process where individuals mutually exchange their knowledge (Truch et al., 2002); thus it is a

two-way process. It consists of both the supply of new knowledge and the demand for new knowledge. According to van den Hooff and de Ridder (2004), knowledge transfer involves either actively communicating to others what one knows, or actively consulting others in order to learn what they know. When organisations or employees within an organisation identify knowledge that is critical to them, they can use knowledge transfer mechanisms to acquire the knowledge. They can then constantly improve it and make it available in the most effective manner for others who need it. They also can exploit it creatively or innovatively to add value as a normal part of their work.

According to Nonaka and Takeuchi (1991) knowledge sharing is a critical stage in the process of knowledge transfer. Some see knowledge management and knowledge transfer as processes that undertake largely for the purpose of creating a knowledge sharing culture, fostering collaboration and communication, and so in turn enhancing organisational innovation (Liebowitz, 2002). Knowledge sharing in organisations mostly involves exchange of knowledge at the individual level; however, knowledge transfer in organisations goes beyond this. It includes transfer of knowledge at higher levels such as group, product line, department, or division (Argote and Ingram, 2000).

Knowledge transfer is not easy to understand or practice, especially due to the lack of a clear-cut definition or proven best practice for transfer of knowledge. Therefore, for the purpose of this paper, the following definition has been used to understand the concept and process of knowledge transfer in-general (adapted from Christensen, 2003):

"Knowledge transfer is about identifying (accessible) knowledge that already exists, acquiring it and subsequently applying this knowledge to develop new ideas or enhance the existing ideas to make a process/action faster, better or safer than they would have otherwise been. So, basically knowledge transfer is not only about exploiting accessible resources, i.e. knowledge, but also about how to acquire and absorb it well to make things more efficient and effective."

3.2 Knowledge transfer – an act of communication

Knowledge transfer is the conveyance of knowledge from one place, person or ownership to another. Successful knowledge transfer means that transfer results in successful creation and application of knowledge in organisations. The process of knowledge

transfer has been described by many researchers using models. Major and Cordey-Hayes (2000) look at several frameworks and models of knowledge transfer presented by different authors and draw parallels between them. Models reviewed are by Cooley (1987), Cohen and Levinthal (1990), Trott et al (1995), Slaughter (1995) and by Horton (1997). Major and Cordey-Hayes (2000) distinguish two streams of models:

- node models; these describe nodes and discrete steps that are each gone through in a knowledge transfer process
- process models: these describe knowledge transfer by separate processes that are each undertaken.

Most of these models, although contextually different, have strong similarities. Apart from these models, some researchers attempt to relate the process of knowledge transfer using different theories. Some of these are; translation theory (Holden and von Kortzfleisch, 2004; Jacobson et al, 2003; Abjanbekov and Padilla, 2004), agency theory (Arrow 1985; as cited in Boyce, 2001), intermediate modes and voice-exit and game theory (Boyce, 2001). Fundamentally, issues concerning knowledge, collaboration and learning lie at the heart of most of these theoretical approaches.

The aforementioned theories and models have stemmed from the basic idea of collaboration and communication between the source (or sender) and receiver; an idea that has originally been introduced by Shannon and Weaver's mathematical approach to communication and information (1949; as cited in Carlile, 2004). This has then been further developed by Deutsch (1952) in his theory of communication. The practical strength of the original approach of communication and information is its mathematical capacity to adequately define the relations between source and receiver and their differences and dependencies. From the perspective of social sciences, two main points can be taken from this to simply explain the process of knowledge transfer. First is that a knowledge transfer process has two main components, i.e. the source or sender that shares the knowledge, and the receiver who acquires the knowledge. Secondly, knowledge transfer, although looks simple, is complex due to various prerequisites, factors and contextual issues surrounding the process.

In business environments, KT does not only take place via oral communication. It can occur through many other means such as technological interventions, intermediaries, etc. Using this concept and the aforementioned approach of communication, a simple knowledge transfer model has been developed (refer to Figure 2). It merely shows the basic concepts of a knowledge transfer process.

-- Take in Figure 2 --

The ‘modes of knowledge transfer’ introduced in Figure 2, take into account both the modes of transferring knowledge and modes of receiving knowledge. These different modes of knowledge transfer can be explained using knowledge conversion model introduced by Nonaka and Takeuchi (1995) - refer to Figure 3.

-- Take in Figure 3 --

As shown in Figure 3, the modes of knowledge transfer can take four forms, i.e. Socialisation, Externalisation Combination and Internalisation. According to Nonaka and Takeuchi (1995), socialisation refers to an organisational process through which tacit knowledge held by some individuals is transferred in tacit form to others with whom they interact. Externalisation refers to the transformation of some tacit knowledge into explicit knowledge, via theories, concepts, models, analogies, metaphors and so on. Combination refers to the conversion of codified knowledge into new forms of codified knowledge. By combining different bodies of explicit knowledge, new categories of knowledge are obtained. Explicit-explicit conversion can be achieved through several channels of communication within the firm. Internalisation is a process of conversion of explicit knowledge into a tacit form. It basically reflects a type of learning process through which agents are taught and trained to perform specific tasks. Each mode of conversion constitutes one means of knowledge transfer and creation (Cohendet et al, 1999).

3.2 Knowledge transfer – an act of translation

The process of knowledge transfer is not, *per se*, a mere transfer of knowledge. As Seaton (2002) explicates, it requires an additional type of knowledge; 'the knowledge about how to transfer knowledge'. Seaton provides a simple example for this; instead of saying '*this is what I know*', the process of knowledge transfer goes one step further to say '*this is what my knowledge means for you*'. Thus, the purpose of knowledge transfer will be lost if knowledge is transferred from source to the receiver without contextualising the way it will be utilised by the latter. This process can be identified as knowledge transformation. Transformation denotes 'an organisation's capability to develop and refine the routines that facilitate combining existing knowledge and the newly acquired and assimilated knowledge' (Zahra and George, 2002). Transformation of knowledge is accomplished by simply adding or deleting knowledge. However, this can even involves interpreting the same knowledge in a different manner. This is identified as 'translation' or 'interpretation'. As Cranefield and Yoong (2005) explains, 'as knowledge becomes more highly specialised, it develops its own terminologies…which typically reside with specialists…but (this), by definition, restricts the accessibility of the knowledge to the novice'. This is where 'theory of translation' becomes vital.

According to some researchers, translation is a highly applicable analogy for exploring the nature of knowledge transfer (Holden and von Kortzfleisch, 2004). Translation theory, which has hitherto been largely ignored by the knowledge management community, can be of further value as it throws light on the knowledge transfer process from at least four advantageous perspectives (Holden and von Kortzfleisch, 2004):

- Translation as a networking activity: Translation is more than linguistic transcoding from one language to another. In the highly relevant words of Vermeer (1992; as cited in Holden and von Kortzfleisch, 2004), 'It has become common sense to integrate translation into a wider network of social relations'. This point applies to knowledge transfer because knowledge is not just transferred by means of transcoding from head to head, but also into the networks of knowledge receivers.
- Process and end-product quality: Translation theory is primarily concerned with two principal characteristics of translation, i.e. the quality of the final product and the

actual translation process itself. This offers direct insights into aspects of knowledge transfer.

- Levels of accuracy: This can also be related to the knowledge transfer process. Whether someone is concerned with a translation or an act of corporate knowledge transfer, the vital challenge lies in being able to convey sufficient information so that receivers can make sense of it.
- Constraints on the production of good translations: The fourth perspective is an analogy which complements that ever growing area of the knowledge management literature which is concerned with constraints (or barriers) on smooth transfer of knowledge.

4. A PROCESS MODEL FOR KNOWLEDGE TRANSFER

As identified above, both the theory of communication and the theory of translation appear to be two different yet complementary theories for the area of knowledge transfer. The former explains the behavioural side of knowledge transfer, i.e. act of collaboration between the source and the receiver; whilst the latter sheds some lights on how to efficiently transform knowledge into a usable form. Based on these two theories, this section of this paper attempts to develop a process model for knowledge transfer.

3.2 'Knowledge transfer ≅ knowledge communication & translation'

Many organisations often do not know the ways of harnessing knowledge. Also, they may not know what they know and may also have weak systems to recognise where the 'right' knowledge is. Even if they did recognise the 'right' knowledge, they may not know the most appropriate way(s) of retrieving it.

Based on the aforementioned discussions (refer to section 3.2), an apposite model for knowledge transfer has been developed as shown in Figure 4. It explains the process of knowledge transfer in-detail.

-- Take in Figure 4 --

The model shown above is mainly built upon two elements, i.e. source and receiver. This has been extracted from the simple communication theory introduced by Deustch (1952). Besides, the knowledge conversion model introduced by Nonaka and Takeuchi (1995) has also been used in this process model to describe different modes of knowledge transfer. These modes can be informal or formal, personal or impersonal (Holtham and Courtney, 1998). 'Socialisation' is a great example for informal modes where individuals or teams have unscheduled meetings, friendly discussions, etc. However, such mechanisms may involve certain amounts of knowledge waste due to an absence of a formal recording of knowledge. Formal transfer mechanisms appear to be more effective than informal mechanisms; although, according to Alavi and Leidner (2001), it may inhibit creativity and innovation. Personnel transfer is a formal, personal mechanism of knowledge transfer. Such transfers, common in Japan, immerse team members in the routines of other members, thereby allowing access to the partner's stock of tacit knowledge (Fahey and Prusak, 1998).

Knowing that knowledge exists and identifying where it exists is not sufficient for initiating knowledge transfer. It presupposes a great level of participation from the source and the receiver and also requires a strong association or relationship between them. A knowledge transfer process can often go wrong if the parties involved are unwilling to share knowledge due to issues of confidentiality, cultural difficulties and also due to fear of losing competitive edge. Even if the parties involved are willing to make an effort to share knowledge, according to Cranefield and Yoong (2005), the parties may be still be unable to transfer knowledge smoothly because of the inherent difficulties of the task(s). It is argued that knowledge transfer will be successful only if an organisation has not only the ability to acquire knowledge but also the ability to absorb it and then assimilate and apply ideas, knowledge devices and artefacts effectively. Thus, the following four factors have been introduced in the process model (refer to Figure 4) as some prerequisites of the knowledge transfer process:

- where the required knowledge is (i.e. identifying the most suitable source)
- willingness to share knowledge: the sources should be happy to share their knowledge

- willingness to acquire knowledge: the receiver should be willing to acquire the knowledge
- absorptive capacity of the receiver

As shown in Figure 4, one of the first steps of a process of knowledge transfer is to identify the appropriate or valuable knowledge. This is named as 'knowledge awareness'. The next step then is to acquire the knowledge, provided that both receiver and source have the willingness and the ability to do it. This is so-called as knowledge acquisition. It refers to 'an organisation's capability to identify and acquire externally generated knowledge that is critical to its operations' (Zahra and George, 2002). Zahra and George introduce three main attributes that can influence the process of knowledge acquisition, i.e. intensity, speed, and direction. The intensity and speed of an organisation's efforts to identify and gather knowledge can determine the quality of a knowledge acquisition process. The greater the effort, the more quickly the organisation will build its knowledge-base. However, sometimes, there are limits to an organisation's ability to achieve this speed. The direction of accumulating knowledge can also influence the paths that the organisation follows in obtaining external knowledge. These activities vary in their richness and complexity.

Successful acquisition of knowledge, however, does not conclude the process of knowledge transfer. The acquired knowledge requires some sort of a conversion of knowledge in order to make it 'useful' for the receiver where they can produce new knowledge or improve existing knowledge, skills or capabilities (refer to Figure 4). This again is a complicated process as it involves ensuring that the knowledge receiver have a knowledge-base heterogeneous enough to be able to take in new knowledge while still making sure existing knowledge is well leveraged and developed (Kalling, 2007). In the process model introduced, the process of converting knowledge into 'useful' knowledge at the receiver's end mainly involves two steps; first is 'knowledge transformation' (refer to Figure 4). Transformation of knowledge can be accomplished by simply adding or deleting knowledge or by means of 'translation' (refer to section 3.2).

The second step of knowledge conversion involves relating the transformed knowledge to internal needs of the organisation. Trott et al (1995) name this step as 'knowledge association' (refer to Figure 4). Knowledge association recognises the potential benefit of

the knowledge by associating it with internal organisational needs and capabilities. Only then it becomes knowledge that is usable for the receiver. This 'useful' knowledge can then be applied to the organisation, i.e. knowledge application (refer to Figure 4). According to many researchers (Alalvi and Lediner, 2001; Cohen and Levinthal, 1990; Trott et al, 1995; Ortiz-Laverde et al, 2003), 'knowledge application' is the most significant stage during a knowledge transfer process. It is the phase in which the acquired knowledge is brought to bear on the problem at hand. Every other step in the knowledge transfer process such as awareness, acquisition, transformation and association, does not lead to improved performance, nor do they create value. Value is created only when knowledge that is transferred from its previous site is successfully applied where it is needed (Alavi and Leidner, 2001). Therefore, an important aspect of knowledge transfer is enhancing the knowledge application process. This can be achieved through rich communication and collaboration (theory of communication).

Many can regard 'knowledge transfer' as a one-way-process where the receiver usually takes the bulk or all of the benefits. However, a success of knowledge transfer process should always take into account benefits gained at both ends (i.e. source and receiver). Thus, externalising knowledge is significant, herein, to transfer the experiences or new knowledge created by the receiver to the source (and other organisations involved). This can occur in the way of a feedback loop. The process of externalising knowledge adds value to both parties. It can evidently lead to enhanced collaboration and relations.

Even though the above steps completes the knowledge transfer cycle, the theory of translation raises the need to include three other elements into the process model introduced in this paper (refer to Figure 4). The first element is the networks (or networking). For knowledge transfer mechanisms to be effective, close, tight interactions between individuals, teams and organisations is critical in organisations. Networks facilitate this tight collaboration between and across entities, i.e. between individuals, individuals to teams, between teams, across teams, teams to organisation, between organisations, etc. Such tight collaborations subsequently allow organisations to generate and coordinate acquired knowledge more efficiently.

Secondly, the translation theory highlights the need to recognise barriers or constraints of the transfer mechanism. However, apart from these constraints (i.e. *negative factors*) that

inhibit the knowledge transfer process, there can also be some *positive factors* that could promote the process of knowledge transfer. A key to understanding the success and failure of a knowledge transfer process depends on the identification of such factors that could make an impact on the process and their level of influence on it. Individuals and organizations share several dimensions of contexts, e.g. culture, capabilities, skills, management styles, politics, technology, etc.; and each of these dimensions can influence the knowledge transfer process either positively or negatively. In the developed model, these influential factors are broadly categorised into two elements, i.e. intrinsic influences and extrinsic influences (refer to Figure 4).

The translation theory also highlights the need to identify the level of accuracy and quality of the end product. Unless organisations attempt to assess the accuracy and quality of the knowledge acquired, they will not be in a position to identify the success and effectiveness of the knowledge transfer process. This will not only result in failing to recognise the impact it made on the organisations and its practices, but will also result in repeating similar mistakes in future knowledge transfer practices. Therefore, the element of 'performance measurement' has been introduced into the model (refer to Figure 4) to complete the model of knowledge transfer process.

5. DISCUSSIONS AND CONCLUSIONS

The idea of this paper was to introduce a model specifically developed for the process of knowledge transfer. According to the model developed, theoretically, knowledge transfer involves six main steps. However, in reality, the number of steps taken in a knowledge transfer process can be less if the source and the receiver are similar either contextually, technically, or structurally.

The knowledge transfer model has been developed primarily using the theory of communication and theory of translation. A combination of the said theories appears to be offering much insights to the process of knowledge transfer mainly due to the following two obvious reasons:

- the process of knowledge transfer is an act of communication: as described in the previous sections of the paper, knowledge transfer involves either actively

communicating to others what one knows, or actively consulting others in order to learn what they know.

- the process of knowledge transfer is an act of translation: during the knowledge transfer process the transferred knowledge from one end could easily change its form, shape or appearance at the receiving end. Therefore, there is a need to interpret this transformed knowledge in a meaningful way, if it is to be utilised effectively by the receiver.

The developed model of knowledge transfer highlights the need to address number of questions prior to the implementation of a transfer mechanism:

- Who needs the knowledge (receiver)?
- What units (in the supply chain) are involved in the knowledge transfer process?
- What is the most appropriate 'source' to acquire the required knowledge (awareness)?
- What is/are the type(s) of knowledge to be transferred?
- How should it be transferred (modes of knowledge transfer)?
- What are the factors that will influence on the process of knowledge transfer and what is their level of impact?
- What can we do to enhance the factors that positively influence on the process of knowledge transfer and what can we do to avoid/lessen the impact of the factors that negatively influence on the process of knowledge transfer?
- What mechanisms should be used by the receiver to ultimately utilise the knowledge?
- Did the knowledge transfer process successfully achieve its goals (performance measurement)?

Knowledge leads to organisational value when it is used to effectively make decisions, solve problems, and produce effective performance. Thus, successful application of knowledge during a knowledge transfer process usually results in one or more of the following (adapted from Meixell et al, 2002):

- reduced errors (e.g., by not repeating mistakes)
- improved quality (e.g., by using best of breed practices)
- speeding up decision making (e.g., by getting better cross-functional coordination)
- lower costs (by quickly identifying expertise) or provide value for money

- speeding up training (e.g., by attending to common mistakes and learning from best practices)
- learning and innovation

Of course, it cannot stop from the point where the knowledge is successfully utilised. Knowledge transfer should then become a reiterative process where organisations re-use the knowledge to produce new knowledge in order to gain new competencies and thereby to gain the competitive edge

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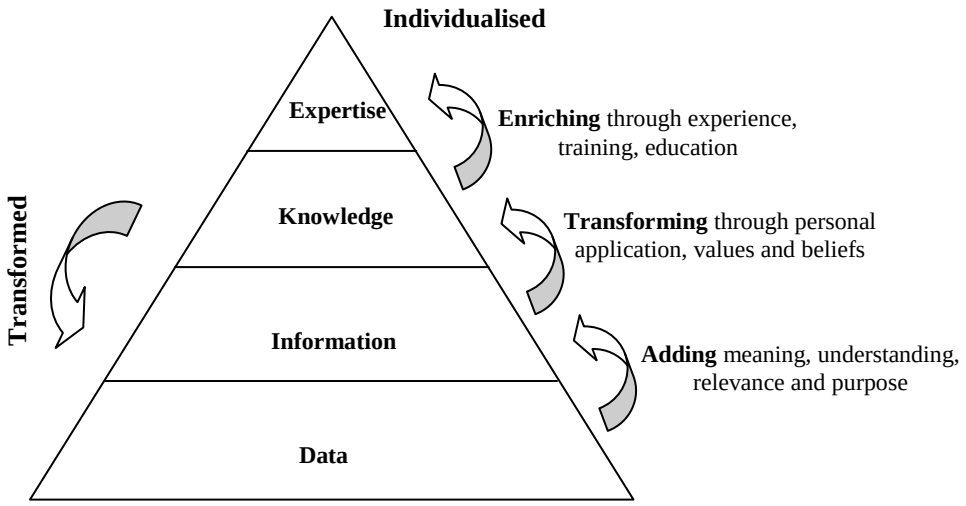

Figure 1: Knowledge hierarchy (Source: Bender and Fish, 2000)

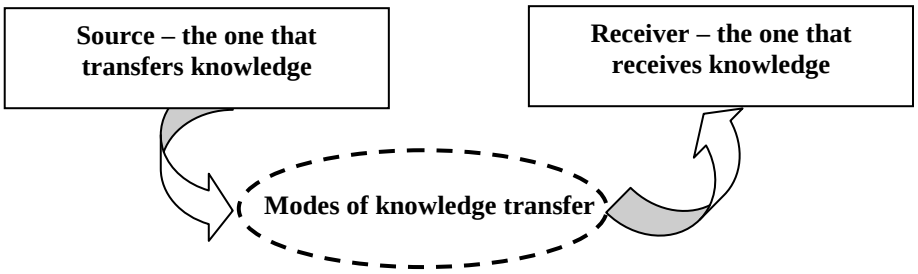

Figure 2: Knowledge transfer - 'an act of communication'

Explicit to tacit **(Internalisation)** e.g. learn from a report	**Tacit to explicit** **(externalisation)** e.g. dialogue within team, answer questions
Tacit to tacit **(Socialisation)** e.g. team meetings and discussions	**Explicit to explicit** **(Combination)** e.g. e-mail a report

Figure 3: Modes of knowledge transfer (source: Nonaka and Takeuchi, 1995)

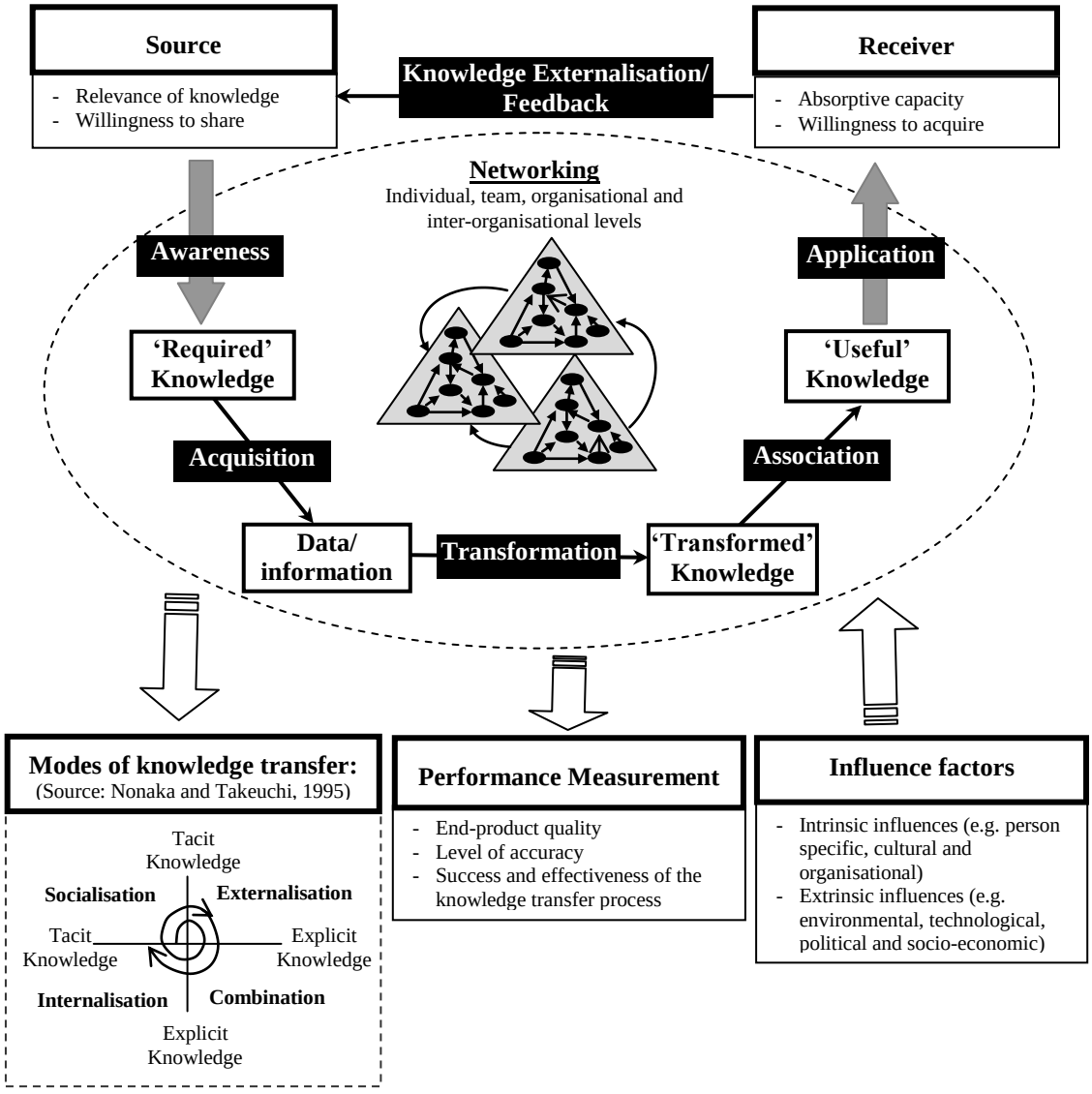

Figure 4: Knowledge transfer – A Process Model