Managing effective knowledge transfer: An integrative framework and some practice implications

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Managers in many organizations have indicated that in today's highly competitive environment, knowledge management will be the key to organizational success in this millennium. The field of managing knowledge continues to grow rapidly, with many books, journals and published research on the subject reflecting a diversity of perspectives (Prusak, 1997).

This paper focuses on how an organization can manage its intellectual capital effectively. It deals with a critical factor in knowledge management, the ability of the organization to transfer knowledge. Knowledge transfer is also a key dimension of a learning organization (Goh, 1998; Garvin, 1993). Learning occurs when knowledge in one part of an organization is transferred effectively to other parts and used to solve problems there or to provide new and creative insights.

The paper discusses why knowledge transfer remains a problem for many organizations, a conclusion based on evidence from an ongoing program of empirical research on the learning organization (Goh and Richards, 1997). It also explores some of the key factors discussed in the current literature that hinder and that facilitate knowledge transfer in an organization. It proposes an integrative conceptual framework that links these key factors and discusses some lessons learned about how these factors can encourage and improve knowledge transfer.

Knowledge management in organizations

Researchers in knowledge management contend that a firm's competitive advantage depends on its knowledge, that is:
what it knows – how it uses what it knows – and how fast it can know something new (Prusak, 1997).

A focus on the importance of knowledge and its role in helping an organization become competitive is not new. Nonaka (1994) and his colleagues have written about how knowledge-creating activities can result in innovation, the key to survival for most organizations operating in an environment of global competition for products and services. Although creating knowledge is an important activity, that knowledge has to be harnessed and leveraged to be useful. A growing area of research examines how to
create new knowledge in an organization, but also how to use that knowledge to improve the company’s competitive position – for example, achieving growth through alliances and joint ventures (Inkpen, 1998). Studies of international joint ventures provide useful information to understand how knowledge is transferred between partners.

However, those studies deal only with the transfer of knowledge from one organization to another (Mowery et al., 1996). What is lacking is a comprehensive understanding of effective knowledge transfer within an organization. That is, how does knowledge get transferred in an organization between groups or individuals? Why do some organizations do well at this intra-organizational knowledge transfer while others do poorly?

**Learning organizations and knowledge transfer**

The concept of the learning organization has been well articulated by Goh (1998), Garvin (1993) and Senge (1990, 1992), who describe it by certain attributes. One is the ability to transfer knowledge quickly and effectively from one part of the organization to others. If knowledge is just a repository of information in a database or in someone’s private knowledge domain, then the organization cannot use it to learn. For example, if mistakes or failures are documented but not made known to others, then knowledge of them is not being used to learn how to avoid them in the future.

Companies such as Hewlett-Packard and 3M are widely described as learning organizations that encourage employees to share and transfer knowledge. What is more, they reward those who do share knowledge that is used by another employee or team to improve a product or a work process. Clearly, Hewlett-Packard and 3M are unique organizations that have created the necessary conditions for effective organizational learning.

These companies show that effective knowledge transfer in an organization is possible. However, we need to identify and understand more clearly some of the key activities that make it possible. Earlier research on the learning organization identified some of these activities, and translated them into questions in a survey of organizations to assess the presence of five key attributes of a learning organization (Goh and Richards, 1997). One of these attributes is the ability to transfer knowledge.

In the past few years, approximately 1,500 employees in 12 organizations completed the survey. In every organization, the attribute that scored lowest was the ability to transfer knowledge. This is no surprise: the literature on organizational behavior is replete with studies of communication failures, conflicts, power and politics – studies that describe the boundaries and silos that groups and departments create in an organization. Executives surveyed frequently cite as a key problem the lack of ability to transfer knowledge within the organizations. All of this suggests that knowledge transfer is a continuing problem in organizations and that how it works needs to be better understood.

**Current perspectives on knowledge transfer**

O’Dell and Grayson (1999) suggest that transferring knowledge can yield enormous benefits to an organization. They cite examples such as Chevron, a firm that reduced its operating cost structures by more that $2 billion in the last seven years, in no small part through sharing best practices; its best practice team has saved $650 million in energy use alone. Similarly, Texas Instruments increased its annual fabrication capacity by $1.5 billion by comparing and transferring best practices among its 13 fabrication plants (O’Dell and Grayson, 1999, p. 11).

One way to encourage knowledge transfer is to focus on a selected value – for example, “increased customer satisfaction”. Employees then focus on capturing knowledge about the customer’s needs and preferences. With this knowledge, business solutions can be directed at increasing sales, improving service delivery, and resolving customer problems faster and more effectively. The results can then be captured as best practices and the knowledge transferred to other employees and even to the customer.

This transfer of knowledge needed to satisfy customers can be especially effective if front-line employees who deal with them have access to it. Although this sounds deceptively
simple, it is not easy to manage this type of knowledge transfer successfully. Organizational culture barriers may need to be overcome and appropriate support put in place, such as sophisticated information technology.

**Using technology to facilitate knowledge transfer**

Information technology is frequently mentioned as the solution to intra-organizational knowledge transfer. It can be a good, even a necessary, solution for an organization that is widely dispersed and still wants to encourage a learning environment of information sharing. A recent example is British Petroleum. In an interview with Steven Prokesch (1997), CEO John Browne told how the company used a virtual team network to overcome its size and distance between its different business units and allow for knowledge sharing. This network has allowed BP to flatten its organization and decentralize its operations. After a huge investment in technology to set up this network its employees throughout the world can now exchange critical knowledge across geographical locations and business units. Employees’ sharing best practices seems to be the central theme in knowledge transfer. Many organizations have found an effective tool for this in computer-aided systems (Goodman and Darr, 1996).

However, many others have reported that best practice networks often fail, or disappear over time. The reasons seem to reside more in people’s attitudes than in the constraints of technology. For example, purely political motives may explain a hesitancy to share success. Managers see critical information as a source of power, and are reluctant to share it. Moreover, often there are no visible rewards for sharing knowledge. Best practices networks can fall victim to organizational silos and the dominant culture of competitiveness between subunits and work teams in an organization, especially when resources are scarce.

The use of electronic or computer-aided systems as a strategy for transferring knowledge or sharing best practices can work, under the right conditions. However, it requires the management of some major elements like motivation and willingness to share information. These are probably the most difficult hurdles because at their heart are the core culture and values of the organization – trust, for example.

In the case of BP, leadership practices and behaviours of the key senior managers were a major factor in the success of knowledge sharing. Notwithstanding the advances of technology and information systems that facilitate knowledge transfer such as intranets and Lotus Notes, so-called “soft” factors such as leadership and culture clearly play an important role, and may hold the key to understanding the dynamics and management of effective knowledge transfer.

**Organizational culture**

An important factor frequently mentioned is the culture of the organization. It can be an enabler of knowledge transfer. However, culture is a broad concept that has many dimensions. It is argued here that one cultural dimension critical to knowledge transfer is co-operation and collaboration. In fact, recent research on co-operation in organizations may help increase our understanding of the dynamics of knowledge transfer. This body of research can therefore be considered highly relevant.

For example, knowledge transfer requires the willingness of a group or individual to work with others and share knowledge to their mutual benefit. This implies that knowledge transfer will not occur in an organization unless its employees and work groups display a high level of co-operative behaviours – that is, unless employees and groups have a natural tendency to share and collaborate with each other.

The existence of a strong co-operative and collaborative culture is an important prerequisite for knowledge transfer between individuals and groups. Without appropriate mechanisms to encourage co-operation, structured or technological interventions to facilitate knowledge transfer may not work. The study of co-operative relationships in organizations is relatively new. However, certain published studies have identified some of the major prerequisites of co-operative relationships (Smith et al., 1995).

A fundamental variable in co-operation between groups or individuals is level of trust. A high level of trust is therefore an essential
condition for a willingness to cooperate. Certain management practices can influence the level of trust in an organization. When decisions are made openly, information is widely available and accessible by employees. Fair treatment of employees and rewards that emphasize shared success and are given to all who contribute, are management practices that will increase the level of trust in an organization.

Conversely, unilateral decision-making, a secretive environment, and a lack of information will inhibit trust. Clearly, a climate of low trust will result in poor co-operation, which in turn will reduce the frequency of communication and the degree of willingness to share information. Under such conditions, structured processes for knowledge transfer such as information sharing, team meetings, and information technology networks to share best practices will be marginally successful at best.

Establishing a collaborative and co-operative climate in an organization will not alone improve knowledge transfer. There is also a need to foster a culture of problem seeking and problem solving. An experimenting and innovative culture encourages employees to look for problems as a way to improve the organization. Failures in experimentation should be expected and tolerated, and treated as learning lessons by employees and the organization (Goh, 1998).

An emphasis by some Japanese organizations on the creative process is a good illustration of a culture that rewards and encourages problem-solving practices (Basadur, 1992). Some of these organizations encourage employees to constantly look for problems and to view them as opportunities to improve customer service or product quality. In addition, they place a strong emphasis on solving the problems in a group environment. Teams are encouraged to share ideas and solutions to attack identified problems.

Leaders also play a role in this culture of problem seeking, problem solving and collaboration. They demonstrate procedural justice – employees are treated fairly by managers and not blamed for problems that arise. Employees who try new practices and experiments that fail are not punished. Leaders encourage this culture of experimentation and serve as role models of this desired behavior. They are not defensive about problems and can admit to mistakes, and they take a problem-solving approach to both.

A strong culture of experimentation together with high trust and a collaborative and co-operative climate will have a positive influence on knowledge transfer. Thus the culture can significantly increase the propensity of the organization’s members to share knowledge and information freely with each other.

Support structures to enhance knowledge transfer

Another important factor in knowledge transfer is an appropriate infrastructure to reinforce and support it. Breaking down hierarchies in the organization enables knowledge transfer (Nonaka, 1994). Organizations that maintain hierarchical levels and silos will not encourage it. Knowledge in such organizations frequently becomes “sticky,” that is, residing in one area or silo and not easily moved to other parts of the organization (Bartlett and Ghoshal, 1998).

A solution is to develop horizontal communication flows, which goes beyond using technology. One approach is to encourage cross-functional teams and teamwork in the organization. A company can design tasks that require cross-functional collaboration to succeed. This forces individuals and groups away from the silo mentality and to begin learning to communicate horizontally.

Another organizational support structure is a reward system. Bartlett and Ghoshal (1998) suggest that one way to encourage knowledge transfer is to base rewards to groups on more than solely financial success; rewarding only financial success tends to encourage competition and lack of sharing. Measurement and reward systems that favour a more balanced “scorecard” that take into account collaboration and the sharing of best practices can play a critical role in encouraging knowledge transfer. The key is to establish new processes that reward and encourage horizontal communication and the sharing of information in the organization (Davenport and Prusak, 1998).

Time is also a factor. Increased horizontal communication can take many forms and
may take time to accomplish. Appropriate structures and processes may be put in place but employees need an opportunity to use them. The organization needs to free up time for them to engage in such activities.

This suggests that the organization’s design, the structure of the reward system and the availability of time as a resource can give further impetus to effective knowledge transfer.

Knowledge recipients

Another important factor to consider is the basic process underlying knowledge transfer. Research has begun to examine knowledge transfer in terms of the characteristics of the knowledge recipient, the characteristics of the knowledge source and the context in which the transfer occurs. Knowledge may be freely available or accessible in the organization but the recipient of that knowledge has to be able to use it (Szulanski, 1996).

Sometimes, a recipient’s lack of motivation, absorptive capacity, and retentive capacity can result in poor transfer of knowledge. Training in creativity and experimentation can help overcome some of these constraints. In addition, the organization has to ensure that individuals and groups who need to interact and work together have similar knowledge capacities. In this way, knowledge can be transferred effectively from the source to the recipient.

The nature of the relationship between the knowledge recipients and the source of knowledge can sometimes be a barrier to effective knowledge transfer. If the relationship is distant or communication difficult, for example, then knowledge transfer is less likely to occur. Organizations therefore need to pay attention to the relationship between the knowledge giver and the receiver. They need to invest time and resources in training, for example, to ensure the building of close relationships with equivalent skills and knowledge capacities.

Types of knowledge

The last key factor to consider is the type of knowledge to be transferred. There seem to be many suggestions for facilitating knowledge transfer using various structured processes. The organization needs to understand why some of these suggestions may work and others may not and under what circumstances. The key to understanding whether a particular management support process can be effective lies in the type of knowledge to be transferred. Is the content of the knowledge tacit or explicit?

Most knowledge experts agree that there are two specific types of knowledge (Havens and Knapp, 1998). The challenge in knowledge management is to determine how each knowledge type can be codified and transferred in an organization. Clearly, tacit knowledge is personal; it is hard to formalize and communicate to others. It is also generally more complex, existing in the mental models and expertise gained over time and through personal insights. This suggests that tacit knowledge may be best transferred through more interpersonal means and using processes that are less structured. Some examples are mentoring, teamwork, chat rooms, personal intranets, and opportunities for face-to-face conversations such as group dialogue or personal reflections on experiences and lessons learned.

Explicit knowledge is what is written or recorded in manuals, patents, reports, documents, assessments, and databases and can be readily codified, articulated, and captured. This suggests that explicit knowledge can be transferred through more technology-driven, structured processes such as information systems, Lotus Notes, and similar mechanisms such as a shared best practice database (Hansen et al., 1999). Clearly, both structured, technology-driven approaches and less structured processes are needed for effective knowledge transfer. Organizations need to be aware that the type of knowledge may be a critical factor in deciding on the type of process needed to facilitate the knowledge transfer.

An integrative conceptual framework

The framework shown in Figure 1 integrates the key factors discussed in this paper that can lead to more effective knowledge transfer in organizations. There is a clear emphasis on the “soft” factors of knowledge transfer. Unfortunately, many organizations have focused more on the “hard” factors such as information technology and structured
organizational processes, to the exclusion of the important "soft" factors, that are obviously harder to develop and require a longer-term focus and effort.

I do not contend that these are the only factors that need to be considered when deciding on ways to manage the knowledge transfer process effectively. However, they are important elements that may influence whether effective knowledge transfer can be accomplished in an organization.

In summary, this paper has presented some key factors that an organization needs to consider in order to develop effective knowledge transfer. These factors are as follows:

- **Leadership.** Leaders will have to play an important role in establishing some of the key conditions required to facilitate knowledge transfer. They have a major influence on the organizational culture and the support conditions needed for knowledge sharing. Leaders will have to show a willingness to share information and knowledge freely and to seek it from others in the organization. They have to convey the attitude that knowledge to solve organizational problems and improve the organization's effectiveness can exist at any level of the organization and not exclusively in the upper levels of the hierarchy. Such an attitude creates an environment of trust, and influences attitudes throughout the organization about information sharing and collaboration.

As role models, through their visible actions, leaders can encourage a willingness in other employees to emulate them. They can convey the culture of the organization as one of collaboration and sharing of knowledge and information and increase the propensity of employees to participate.

- **Problem-solving/seeking behaviors.** A means of driving the information sharing and knowledge transfer is to encourage a problem-seeking and problem-solving culture. All employees should be encouraged to adopt an attitude of a continuous improvement and learning. This attitude should be focused on a value that is important to the organization, such as customer service, product quality, or cost effectiveness. Knowledge sharing can then be encouraged around each value.

- **Support structures.** This factor can be broken down into four areas – technology, training, and skill development, rewards and organizational design. Investment in the right technology is essential to support a change to a culture of openness and accessibility to information critical to problem solving. The case of British Petroleum described in this paper is a good example. Technology has to facilitate horizontal communication and make it seamless and easy for employees to share and access information and knowledge databases.

Employees have to be trained in using the new technology and maximizing its potential to increase communication and
information sharing. Even some basic training in problem solving and group interaction may be necessary. Sharing information to solve problems and to realize values such as improved customer service has to bring tangible rewards. This will reinforce both the culture and the behaviors needed for effective knowledge transfer.

Certain organizational design features need to be addressed. For example, is the organization designed in a way that encourages teamwork or cross-functional work teams as the norm? Can boundaries between work groups be crossed without hierarchical barriers or restrictions? The formalized structures in an organization can either help or hinder knowledge transfer.

- **Absorptive and retentive capacity.** When encouraging knowledge transfer, the organization has to ensure that both parties to the transfer process have the necessary knowledge base to learn, and to understand each other. The knowledge gained in the transfer needs to be institutionalized in the organization. Positive relationships and ease of communication have to be developed between parties to the knowledge transfer.

- **Types of knowledge.** Finally, the type of knowledge transferred needs to be considered, and matched to the process used to make the transfer. Organizations should also examine and assess the relative frequency with which their structured processes are used to facilitate knowledge transfer. They should ensure an appropriate balance in the use of these processes.

**Managerial implications**

Effective knowledge transfer is a complex process that requires a manager to consider issues on several levels. It also needs a balance of “soft” and “hard” factors to facilitate the process. What, then, are the implications for the managerial practice of this conceptual framework? The organizational characteristics and managerial practices needed to ensure effective knowledge transfer are as follows:

1. A high level of trust is needed between levels, individuals, and work groups in the organization. This is evidenced by widespread sharing of and ready access to information about the organization. The behaviors of leaders also need to be consistent with a philosophy of openness.

2. A strong and pervasive culture of co-operation and collaboration has to exist. It is developed through work practices that encourage and allow individuals and groups to work together on projects and problems. Teamwork is strongly emphasized and cross-functional work teams are formed regularly in the organization.

3. There must be a strong culture of continuous improvement and learning, linked to problem seeking and problem solving and focused on specific values such as product quality and customer service. Employees are encouraged to gather relevant information – on, for example, customer dissatisfaction, or defects in quality – and to use and share that information in problem solving and implementing innovative solutions and practices.

4. An organizational design is needed that encourages horizontal communication and has few hierarchical barriers to block communication flow. Information technology systems must be available that facilitate the flow of information and make it easily accessible.

5. The level of skills and competencies among employees needs to be relatively consistent. Employees are well trained and have both the knowledge and the skills needed to accomplish their work and realize the desired values. Competency is not defined solely by level or by a particular set of tasks.

6. There has to be a balanced approach to encouraging the sharing and transfer of knowledge through structured processes such as sharing best practices and through less structured processes like mentoring, personal intranets/Web sites, group dialogue and reflection sessions, for example, during post project reviews.

7. The reward system must not be focused purely on financial results or outcomes that are based on competition between groups in the organization. Rewards should be broadly based on other criteria such as successful knowledge sharing, co-operation, and teamwork.
These seven factors as can be seen as a qualitative assessment approach that any organization can use as a check for the kinds of organizational characteristics and managerial practices that can contribute to effective knowledge transfer.

**Conclusions**

Effective knowledge transfer is an important knowledge management activity for organizations. The contribution of this paper is to elaborate and integrate some of the key factors that can influence the effectiveness of the knowledge transfer process. Previous writing on this topic has dealt with this issue only in a fragmented way.

Developing a high level of trust is a prerequisite for developing a collaborative culture. Trust will increase the propensity of employees and teams to share relevant knowledge and information. Organizations also need to foster an innovative, problem-seeking, and problem-solving culture and provide the information technologies and organizational processes needed to facilitate knowledge transfer. Organizations need to be aware of the type of knowledge to be transferred and the need to recognize that certain characteristics of the knowledge source and the recipient can influence the success of the knowledge transfer.

This integrative framework also suggests that effective knowledge transfer can be achieved only with a complex multi-levered approach that does not ignore the important "soft" factors in this process. An emphasis solely on information technology or structured organizational processes to facilitate knowledge transfer will not succeed. This framework also provides some direction for future additional research on effective intra-firm knowledge transfer.

**References**


