Knowledge Transfer

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INTRODUCTION

The term *knowledge transfer* (KT) is often used in a generic sense to include any exchange of knowledge between or among individuals, teams, groups, or organizations, whether intended or unintended.

However, knowledge transfer, as it has been formally studied, reflects intended unidirectional exchange, as when an enterprise resource planning (ERP) systems consultant transfers implementation knowledge to a potential user of a system, or when a franchiser's training team transfers knowledge about how to operate a franchise to a franchisee's team. Such knowledge transfers are between a clearly defined source and a recipient, have a focus, and have a clearly identified objective.

Although this unidirectional, focused, objective-oriented view is widely held among those who have a professional or academic interest in the KT process, there are different schools of thought concerning exactly when transfer can be said to have taken place between a source and a recipient. Some adopt the view that knowledge must both be communicated and applied before it has been transferred; others take the view that if the recipient of knowledge has the capacity to apply it, transfer has occurred. Still, others assume that if it has been cognitively transferred (e.g., understood), it has been transferred. Each of these viewpoints appears to be useful in certain circumstances, so there is no universal agreement on which is best.

However, there is agreement that knowledge transfer is different from knowledge sharing, which may be an unfocused exchange among individuals or groups who have little intention to send or receive knowledge (see article titled "Knowledge Sharing" in this encyclopedia). Of course, knowledge sharing may also have a focus as when persons engage in a brainstorming group session in order to generate new ideas or enhance creativity.

Perhaps the best way to conceptualize knowledge transfer and knowledge sharing is that they are at two ends of a spectrum. The knowledge transfer end is formalized, with a clearly defined purpose, and is unidirectional. The knowledge-sharing end is multidirectional, informal, and has no clear objective and few rules. Between these extremes lies a wide range of possible combinations involving individuals, teams, groups, organizational units, and organizations. Different people may use different terminology to describe these possible situations, but the end points are well grounded in theory and in practice.

BACKGROUND

Knowledge that is transferred may be either tacit, explicit, or a combination of both (Nonaka, 1994). When a master craftsman works to develop the skill and knowledge of an apprentice, he is transferring tacit knowledge. When a physician highlights a finding in a medical research paper and sends it to an associate, she is transferring explicit knowledge. When an ERP consultant shows a potential system user how to use tools and tables to implement a system, he or she is transferring a combination of tacit and explicit knowledge.

Knowledge transfer is very important because without it, every problem-solving approach or operating skill would have to be reinvented each time that the knowledge is needed. Indeed, it may not be overstating the case to say that knowledge transfer is a fundamental process of civilization. Certainly, it is a focus of learning, which is critical to all advancement.

As treated here, knowledge transfer is the communication of knowledge from a source so that it is learned and applied by a recipient (Argote, 1999; Darr & Kurtzberg, 2000). The source and recipient may be individuals, groups, teams, organizational units, or entire organizations in any combination.

Knowledge is usually defined as a justified belief that increases an individual's capacity to take effective action (Alavi & Leidner, 2001). Explicit knowledge is transmittable in formal, systematic language. Tacit knowledge "dwells in a comprehensive cognizance of the human mind and body" (Nonaka, 1994).

One of the central tenets of KT relates to the ease of transfer across individuals, groups, and organizations. Codified knowledge may be transferred in the form of documents and manuals. When the codified knowledge is of the know-what (concerning the state of the world) variety, the passage of the materials may complete the transfer. However, when the codified knowledge is of the know-how (competence) variety, complementary discussion or practice involving both the source's and

recipient's tacit knowledge is often necessary to complete the transfer (Edmondson, Pisano, Bohmer, & Winslow, 2003).

When the knowledge to be transferred is tacit, the proximity of the source and recipient and their interpersonal interactions influence the likelihood of successful KT. Some tacit knowledge may be verbalized, explicated, codified, and communicated to others. This is an important mechanism of knowledge transfer, although many other processes are valid and useful as well. Some tacit knowledge may not be transferable, or at least will require demonstrations by the source and practice by the receiver.

Commercial knowledge, which may be either explicit or tacit, "... is not truth, but effective performance; not right, but 'what works' or even 'what works better'" (Demarest, 1997). Commercial knowledge is an important focus of practical knowledge transfer in organizations. It is exemplified by the implementation knowledge—sets of rules, tools, guidelines, and ways to effectively employ them—that is conveyed by a consultant who is aiding a client in implementing or customizing a complex information system in the client's organization. For instance, in this context, consultants may transfer knowledge about testing procedures to clients who learn and apply this knowledge as evidenced by the clients developing test scripts, conducting tests of individual modules, and running integration tests to ascertain whether data are correctly passed between modules.

ISSUES IN KNOWLEDGE TRANSFER

The best way to measure KT has not been uniquely determined. First, there are the conceptual issues, noted earlier, concerning when transfer shall be deemed to have taken place. Whichever definition is adopted, transfer is usually measured through surrogates. For instance, Szulanski (1996) measures "stickiness": the difficulty in transferring knowledge in an organization. A few studies (e.g., Ko, Kirsch, & King, 2005) have used direct measures for specific contexts, for instance, by observing a recipient's ability to perform tasks that are related to the objectives of the transfer. However, most studies have not used behavioral measures of successful KT.

A major issue in knowledge transfer has to do with the antecedents, or determinants, of effective KT. In other words, what factors most importantly influence successful knowledge transfer?

Argote (1999) depicts four categories of antecedents for knowledge transfer between organizations: characteristics of the relationships among organizations, characteristics of the knowledge transferred, characteristics of the organizations, and characteristics of the transfer process. After examining a number of such factors, Szulanski (1996) identified two categories of antecedent factors: knowledge barriers and motivational barriers to the transfer of best practices between sets of individuals in an organization. Ko et al. (2005) added communications factors because such factors have been found to be important in KT in information systems implementation processes (Hartwick & Barki, 2001).

Knowledge-Related Factors

An arduous relationship, causal ambiguity, shared understanding, knowledge observability, and absorptive capacity are widely believed to be important knowledge-related antecedent factors for successful KT. These factors are related to the source's and/or recipient's knowledge base or ability to acquire knowledge when it is needed, as well as to their knowledge relationship. An arduous relationship refers to the quality of the relationship between the source and recipient. Successful transfer usually requires many interactions for the knowledge to be successfully transferred. An arduous relationship, one that is emotionally laborious and distant, is likely to adversely influence knowledge transfer (Faraj & Sproull, 2000).

Causal ambiguity refers to "ambiguity about what the factors of production are and how they interact during production" (Szulanski, 1996, p. 30). Taken literally, this refers to the production of goods, but it may also apply to the production of knowledge. Although this interpretation is untested, it is not unreasonable to posit that if the source and recipient understand how knowledge has been produced and to what it relates, this relative absence of ambiguity might facilitate transfer.

Shared understanding represents the extent to which a source's and recipient's work values, norms, philosophies, problem-solving approaches, and prior work experience are similar. Studies suggest that having similar heuristics and similar shared experiences are important to knowledge transfer (Hansen, Nohria, & Tierney, 1999). Without shared understanding, there is a tendency for the source and recipient to disagree, which leads to poor outcomes. Shared understanding probably removes barriers to understanding and acceptance between the two parties and enhances their ability to work toward a common goal.

Knowledge observability leads to more effective transfer. Knowledge observability is "how easy it is to understand the activity by looking at and examining different aspects of the process or final product" (Zander, 1991, p. 47). The basic premise underlying this concept is that knowledge may be a sticky asset, making it difficult to transfer (Szulanski, 1996). Knowledge