UC Santa Barbara

UC Santa Barbara Previously Published Works

Title

The Practice Gap: Barriers to the Diffusion of Best Practices

Permalink

https://escholarship.org/uc/item/2kj2j551

Authors

Simard, Caroline
Rice, Ronald E

Publication Date

2007

Peer reviewed

eScholarship.org Powered by the California Digital Library
University of California

Simard, C. & Rice, R. E. (2007). The practice gap: Barriers to the diffusion of best practices. In C. R. McIenery & R. E. Day (Eds.) *Rethinking knowledge management: From knowledge management to knowledge processes* (pp. 87-124). Dordrecht, The Netherlands: Springer-Verlag.

ABSTRACT

Based on a review of selected literature, this chapter identifies and explains three categories of potential barriers to the intra-organizational transfer of best practices. The first category is the organizational context, including institutional and organizational environment, absorptive capacity, competency traps, identity, culture, and size. The second category is related to the diffusion process itself: stages of diffusion, attributes of the innovation, the recipient, and the knowledge to be transferred, and the state of relationship between the source of knowledge and the receiving unit. The third category includes management-related barriers, such as the level of managerial commitment and the appropriateness of training and reward systems. Common strategies for facilitating best practice transfer are reviewed and research propositions are derived.

1. INTRODUCTION

Knowledge is a key source of competitive advantage; firms must be able to identify and capture knowledge inside and outside their boundaries to be successful (Kogut & Zander, 1992; Winter, 1987). One such source of competitive advantage are best practices. Best practices are defined as "those practices that have been shown to produce superior results; selected by a systematic process; and judged as exemplary, good, or successfully demonstrated" (American Productivity and Quality Center, 1999).

The transfer of best practices has been identified as one of the most important managerial issues of the late 1990s (Earl & Scott, 1999; Szulanski, 1996). The proliferation of information and communication technologies has fueled organizational interest in the possibilities of knowledge management (Chumer, Hull, & Prichard, 2000). Knowledge management has become somewhat of a "buzzword", and the recent appearance of new knowledge-related management positions such as the "CKO" (Chief Knowledge Officer) (Earl & Scott, 1999) illustrates organizations' growing concern over being able to identify and transfer knowledge. More than half of European best-practice organizations surveyed by the American Productivity and Quality Center reported that their strategic goals include knowledge management (Competitive Intelligence Magazine, 1999). Best practices benchmarking and transfer is an important aspect of organizational improvement and knowledge management (O'Dell & Grayson, 1998).

However, while "It seems sensible to expect that, once uncovered, the example set by an inhouse center of excellence will be readily emulated by other units of the organization" (Szulanski, 1995), best practice transfer is often unsuccessful. Organizations often fail to "know what they know" (Huber, 1991; O'Dell & Grayson, 1998) or fail to translate knowledge into action (Pfeffer & Sutton, 2000). The implementation of best practices in general within an organization is typically slow and painful, marked by resistance, incomplete implementation, and failure (Pfeffer & Sutton, 2000). Hiam (1993) points out, for example, that while continuous improvement methods are integral to TQM, "a majority of TQM practitioners are not using these methods, [even though] firms using them achieve better results than firms that do not" (Hiam, 1993, p.5). A survey of over 1600 managers in major US companies reported that while nearly a

third of the companies had formal knowledge management programs, only half of them seem to have any real impact or activity (Management Review, 1999). Zuckerman and Buell (1998) conclude that actually transferring best practices (in the form of knowledge management) may simply require more training and ability than most managers have. Yet, little research has been done on the issue of best practice dissemination and implementation in organizations.

This chapter reviews and builds on selected literature from multiple fields to offer a more comprehensive account of the possible barriers to the transfer and implementation of best practices. It is intended both as a guide for the management practitioner who needs to identify such potential barriers in organizations, as well as a basis for exploring future research possibilities in bridging organizational knowledge gaps. We formulate research propositions based on each barrier that can lead to empirical research on the transfer of best practices.

The first step in identifying potential barriers to best practice transfer is to look at the specific organization in which the transfer is taking place. We identify contextual factors that can act as barriers to the identification, diffusion, and implementation of best practices: institutional factors, organizational environment, control vs. learning orientation, absorptive capacity, success, organizational identity, culture, and size. Once contextual barriers have been identified, one can focus on barriers related to the diffusion process itself: stages and network roles, attributes of the innovation, recipient and source, and their relationship, and characteristics of the knowledge to be transferred. Successful best practice transfer, however, goes beyond the diffusion process and implies the full integration of the practice into the recipient unit's activities. The third part focuses on management-related barriers to the retaining and integration of the practice: managerial commitment to the best practice, the appropriateness of the reward system, and training. Figure One summarizes the organizing framework for these factors, the levels at which they tend to occur, and the general extent of best practice diffusion. The chapter ends with a brief review of proposed strategies for the internal diffusion of organizational knowledge, and a list of propositions for future research.

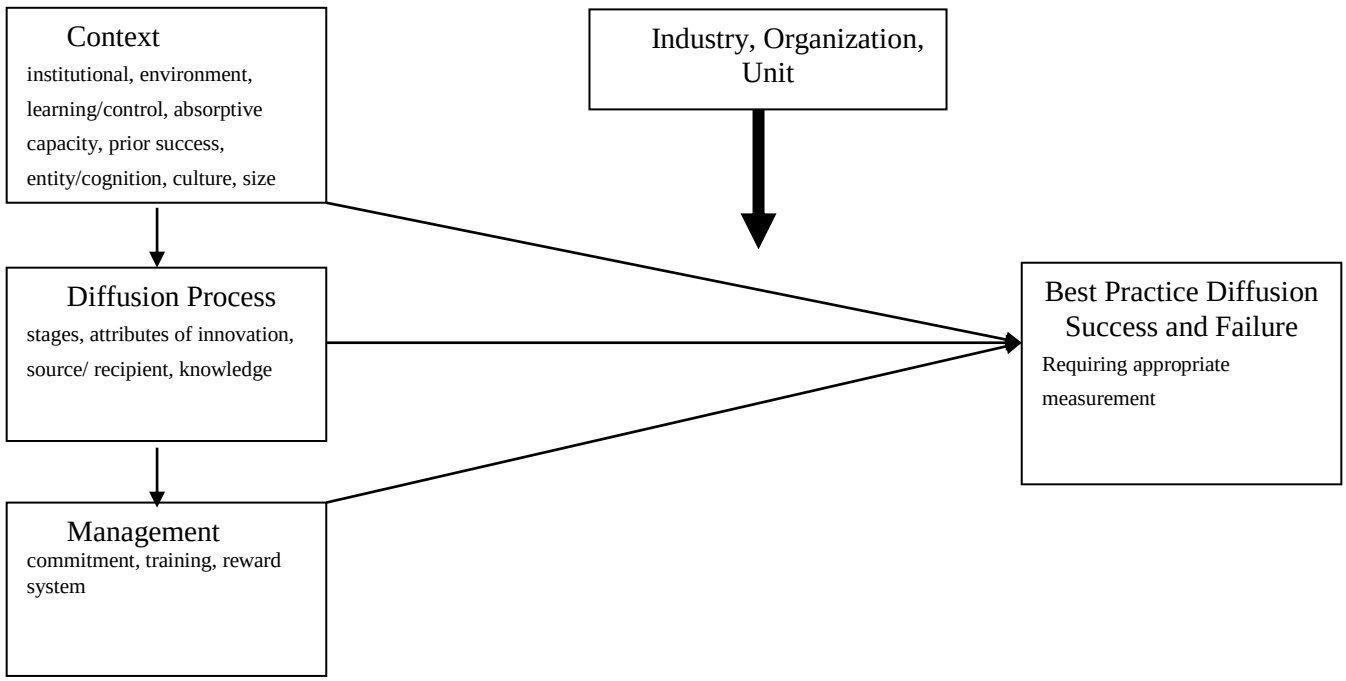


Figure1. Organizing Framework -- Summary Model of Sources of Barriers and Facilitators to Diffusion of Best Practices, Moderated by Level of Occurrence.

2. CONTEXTUAL FACTORS: CHARACTERISTICS OF THE ORGANIZATION

Actors seeking to transfer and implement a best practice must consider various characteristics of the organization that can act as barriers or enablers of transfer: institutional context, environment, control vs. learning orientation, absorptive capacity, competency traps, identity, culture, and size.

2.1 Institutional Factors -- Industry, Organization, and Unit Levels

We propose that there are three levels of institutional factors that can act as a barrier to the internal transfer of best practices: the industry level, the organizational level, and the unit level. At the industry level, institutional theory stipulates that isomorphism occurs between organizations of the same industries (DiMaggio & Powell, 1983). Legitimacy becomes a driving factor in innovation diffusion (O'Neill, Pouder, & Ruchholtz, 1998) across organizations. Therefore, even if an organizational unit has developed a best practice and is ready to diffuse it across the organization, other units might reject the practice if the industry has not recognized it as “best”. Conversely, historical, regulatory, and economic factors may, by chance, provide an early benefit to one practice that generates increasing returns and benefits from positive externalities, so that other practices become "locked out" (Arthur, 1989) even if they are in many ways superior.

Institutional factors also exist at the organizational level. Certain practices become institutionalized by the organization to the point of becoming a symbol of organizational culture, acquiring a “rule” status and becoming extremely resistant to change (Oliver, 1992). If a new practice developed within the organization threatens to remove a highly institutionalized practice, its diffusion is likely to be arduous. In this case, the old practice must be deinstitutionalized before a new one can be implemented (Oliver, 1992). Favorable conditions for changing a highly institutionalized practice in favor of a new one include political pressures (questioning the legitimacy of the old practice by a growing number of organizational members, performance crisis, decreased dependence on institutional constituents), functional pressures (technical re-evaluation of the usefulness of the practice, loss of rewards for the practice, conflict between performance criteria and the practice, dissonant information from the environment), and social pressures (loss of cultural consensus, changes in industry/regulatory environment that discourage the use of the practice, geographical dispersion in the institutional environment) (Oliver, 1992). However, the institutionalization of a new best practice can in turn be a barrier to the transfer and implementation of newer, more appropriate ones (Winter, 1994), as discussed below in the section on "Prior Success".

The third level of institutional factors takes place within the organizational unit. Specific units have their own degree of institutionalization of certain practices, which can act as a barrier to the successful implementation of a practice coming from another unit. Groups tend to minimize sources of conflict and foster homogeneous thinking, rejecting “threatening information” that is contained in an innovation such as a best practice (Van de Ven, 1986). Units can be geographically dispersed from the rest of the organization and be subject to different environmental institutional forces. Units also have their own professional cultures that can be shaped by their professional affiliations. Kostova (1996) found that the success of best practice diffusion is higher when the institutional environment of the recipient unit is supportive of the practice. Furthermore, the institutional distance between parent company and the receiving unit is negatively associated with diffusion. Kostova’s measure of institutional distance was based on differences of national cultures between the parent company and the foreign receiving unit. However, one could expand this research to the effects of institutional distance on best practice transfer between units of different professional cultures, for example, between the sales department and engineering. Indeed, numerous firms are attempting to make various units as similar as possible to reap the benefits associated with internal best practice transfer (Argote, 1999). Decentralization can reduce the amount of transferable practices across units: “differences across groups are likely to be accentuated by providing groups autonomy in deciding how to accomplish their work and by encouraging them to develop their own culture and task-performance strategies" (Argote, 1999, p.178). However, making units too similar could ultimately hinder the creation of new, unique knowledge. Decentralization is also necessary to maintain organizational flexibility in a turbulent environment. Firms thus have to achieve a delicate balance between standardization and local adaptation when transferring best practices (Argote, 1999).

2.2 Environment

2.2.1 Uncertainty

Attributes of the organizational environment can influence best practice diffusion. The level of environmental uncertainty faced by the organization influences its propensity to innovate: organizations operating in a highly certain environment do not see the benefits in changing what

already works. Organizations operating in highly uncertain environments, however, have to discard practices and adopt new ones rapidly to meet environmental changes (O'Neill et al., 1998) and are more prone to innovation. Therefore, once a best practice is identified in an organization operating under conditions of high environmental uncertainty, it is more likely to be diffused quickly to other organizational units. In this case, the capacity to identify, recognize, and use new knowledge is directly tied to organizational survival, providing a compelling reason to adopt a best practice. In the extreme case of crisis (overwhelming uncertainty), however, organizations tend to revert to the most fundamental principles and responses, close down informal communication channels, and centralize authority (Staw, Sandelands, & Dutton, 1981). Thus, there is likely a U-shaped relation between uncertainty and innovativeness. Cause-and-effect relationships are more difficult to establish in uncertain environments (Sitkin, Sutcliffe, & Schroeder, 1994). This ambiguity can lead the organization to transfer ineffective practices and fail to identify and transfer the "best" ones, or fail to tie best practice to improved performance.

2.2.2 Control versus Learning Orientation and Environment

Sitkin, Sutcliffe, and Schroeder (1994) proposed a contingency approach to the implementation of TQM which can be applied to best practices. Their discussion distinguishes total quality control (TQC), or conformance to requirements, which is best under low environmental uncertainty, from total quality learning (TQL), emphasizing adaptability, best under high environmental uncertainty. TQC enables the organization to focus on existing processes, improve them and bring them under the highest control possible (Soin, 1992). However, under conditions of high uncertainty, these processes are constantly changing and the organization must keep up with the changing environment through the gathering of new knowledge. Therefore, TQL practices are used to increase organizational knowledge "by learning from ongoing experimentation" (Khurana, 1999, p. 91). Similarly, March (1991) considered the exploitation/exploration trade-off. Exploitation (improvement) of existing processes is relevant in low environmental uncertainty; exploration is best suited to high environmental uncertainty because changes in the environment make established processes no longer appropriate.

Therefore, best practice transfer and implementation must follow the contingency of environmental uncertainty. Best practices geared towards the control of existing processes make sense in low environmental uncertainty, but would most likely fail to be effectively implemented in an organization operating under conditions of high environmental uncertainty. Similarly, best practices focusing on innovation and risk-taking will be more easily implemented in conditions of high environmental uncertainty. However, organizational environments will never be completely stable or completely uncertain, which is why organizations must be able to implement the right amount of best practices focused on control and on learning. This delicate balancing act between exploration and exploitation is what Cole (1999) calls "the Learning Paradox": organizations learn from experience and existing processes, yet established routines inhibit exploration of new ones.

2.3 Absorptive Capacity

Knowledge creation in organizations is cumulative and path dependent (Alange, Jacobson, & Jarnehammar, 1998): organizations build upon previous knowledge to acquire new knowledge. The state of an organization's knowledge is a good predictor of its ability to recognize and use new knowledge within the organization. This is a function of absorptive capacity, which is a firm's ability to recognize and use new information resulting in higher

competitiveness (Cohen & Levinthal, 1990), and is largely dependent on the firm's previous knowledge (Alange et al., 1998; Cohen & Levinthal, 1990; Fiol, 1996). A firm's absorptive capacity can be translated as an "enthusiasm for knowledge" and "drive to stay ahead in knowledge" (Leonard, 1995). Organizations with a high absorptive capacity typically encourage risk-taking, fostering experimentation and, ultimately, learning from a new practice or strategy (O'Neill et al., 1998). In the case of the internal transfer of best practices, therefore, one has to consider the absorptive capacity of the organization as a whole, but also of work units that are the possible recipients and users of the new knowledge (Szulanski, 1996).

However, this very same absorptive capacity can create a barrier to the implementation of new practices. The path-dependent nature of technological change has been documented by several researchers (Arthur, 1989; Rosenberg, 1994). Socio-historical contexts favor the selection of specific technologies over others. Future decisions of technology selection are based on past decisions and their implications, resulting in a path-dependent process of selection and adoption. The path-dependency of the innovation process can cause organizations or units to become locked in a specific path of innovation and become unable to integrate knowledge or practices that differ from that path (Alange et al., 1998). Absorptive capacity must therefore be able to break from previous paths of innovation.

2.4 Prior Success

Organizational diffusion and adoption of best practices can be conceptualized as forms of organizational learning (Huber, 1991). Although the concept is not easily defined (Garvin, 1993), organizational learning is an extended process through which organizations learn, grow, change, adapt, and improve in order to remain viable. Paradoxically, one of the obstacles to diffusion of best practices is successful learning, especially the prevalence of routines and organizational memory, which evolve from past experiences (Levitt & March, 1995) and are embedded in unrecorded procedures and individual cognitions (Walsh & Ungson, 1991). Best practices from other organizations or units must become part of these routines and memories, or are easily ignored, rejected, or re-interpreted.

According to Sitkin (Sitkin, Sutcliffe, & Browning, 1996), one liability of success is that highly successful firms foster complacency and homogeneity, and an over-reliance on existing best practices, thus hindering the creation and implementation of new knowledge. This dilemma is called the "competency trap" (Cole, 1999), or "core rigidities" (Leonard, 1998), as high competency at existing processes acts as a barrier to change. People are naturally reluctant to trade successful practices for new ones (Leonard, 1998; Van de Ven, 1986). Successful organizations also act as change barriers by enforcing homogeneity through standardized hiring and retention practices. Leonard (1998) gives the example of the American automobile industry, which had been so successful with its existing practices that it failed to recognize the threat of Japanese automakers. However, once the American auto industry had successfully emulated the Japanese and closed the production gap, the Japanese fell in their own "competency trap". Instead of reinventing themselves, they reinforced their reliance on previously successful practices, hence further losing their competitive edge. Similar dynamics take place within the firm between various units: successful units will have a difficult time trading their previously successful practices for new ones.

Sitkin et al. propose an alternative to the complacency trap associated with prior success: strategic failure. Strategic failure advocates the use of organizational learning through experimentation, as small failures challenge the status quo by acting as a powerful, easily

interpreted signal for the necessity of change. However, if prior success can be a barrier to change, it is also necessary for successful change. Organizational members need to associate success with the new best practice, as an increased sense of success leads to increased experimentation and openness to change (March, Sproull, & Tamuz, 1991). Successful organizations integrate new components by building on previous ones, because learning occurs through connecting the new with the old (Cole, 1999) as part of the path-dependency of organizational change (Alange et al., 1998).

Another, more subtle, obstacle is the nature of learning that may take place: first-order (single-loop) or second-order (double-loop) learning (Argyris & Schon, 1978; Weick, 1969). Single-loop learning is corrective and largely reactive, as it aims to bring conditions back within acceptable bounds, but not question the bounds or any processes whereby the learning took place. Double-loop learning is preventative and proactive, as it involves assessing and redesigning the very processes whereby learning take place. Encouraging double-loop learning will thus become a key managerial concern in best practice transfer (DeLong & Fahey, 2000). It may involve an ongoing process of learning and experimentation, rather than isolated reactions to perceived problems. Organizations or individuals focused on single-loop learning may evaluate a potential "best practice" as being oriented specifically to a perceived problem, and may not be able to re-orient the fundamental nature of its learning. Johnson and Rice (1987), for example, showed that organizational units that focused narrowly on single-loop efficiency criteria tended to suppress innovative conceptualizations and uses of word processing technology and practices.

2.5 Organizational Identity and Human Cognition

The problem of human cognition in interpreting change is another important contextual barrier to the implementation of new organizational practices (Van de Ven, 1986). A unit's own experiences are easily interpreted by the members of the unit, while experiences of another unit might be more difficult to interpret (Argote, 1999). Personal construct theory (Reger, Gustafson, Demarie, & Mullane, 1994) states that human beings organize data in a finite set of bipolar constructs, which are used to guide action. Organizational members might be unable to interpret change if it goes beyond their set of constructs. Allen and Brady (1997, p. 319) agree, claiming that "…programs fail if they depart radically from past conditions within an organization because employees cannot cognitively understand or support such radical changes". Acceptance of change occurs when constructs are incorporated into an individual's schema. The key is to incorporate rather than challenge fundamental identity schemas by making change gradual.

Reger et al. (1994) also discuss how organizational identity may be an internal barrier to change. Organizational identity is defined as the sets of beliefs held by employees about the organization. Organizational identity is created through shared interpretations (March, Sproull, & Tamuz 1991). Change is sought when the organizational identity no longer matches an ideal organizational identity (Reger et al., 1994; Van de Ven, 1986). If the ideal identity is too close to the existing identity, change will be seen as unnecessary. If the ideal identity seems impossible to attain, change will be seen as useless. Best practices may represent fundamental challenges to organizational members' basic assumptions about the identity of their organization. Contradictory information is rejected as irrelevant, and the transfer of a best practice will fail if that practice can be interpreted as conflicting with the organizational identity. This is most problematic in organizations with strong and clear identities, which have "deeply ingrained and tacit assumptions" (Reger et al., 1994, p. 569) which foster cognitive inertia against changing

existing schemas for sense-making and interpreting action and may prevent full understanding of new changes. Therefore, mid-range changes will be the most likely to be accepted.

For more major changes, it may be necessary to create new organizational identities that can be incorporated into and associated with members' current schemas. Reger et al. (1994, p. 574) suggest two strategies: developing a future, ideal organizational identity; using benchmarking and customer interaction to provide comparison organizations and instances of unattained organizational identity. Both approaches attempt to increase motivation toward changing cognitive schemas based on gaps between perceptions and images of organizational identity. A key goal in implementing organizational best practices is to create a shared interpretation of the practice that is consistent with the organization's identity.

2.6 Organizational Culture

Organizational identity is influenced by the organizational culture. Any attempt to diffuse a best practice must consider organizational culture as a possible barrier. The organization's culture establishes acceptable behavior and is very difficult to change. Organizational cultures and subcultures determine what is perceived as knowledge, and perceptions about what knowledge should be transferred and managed. For example, in an organization where billing the maximum work hours to clients is an important part of the culture, experimentation with new knowledge will be seen as detrimental and wasteful because the time devoted to that experimentation cannot be billed (without a change in organizational culture, practices, and rewards) (DeLong & Fahey, 2000). Similarly, a culture that values individual performance over knowledge sharing or that promotes the "Not Invented Here" syndrome can hinder the identification and transfer of best practices (O'Dell & Grayson, 1998). Becker (1993) and Westbrook (1993) argue that organizational-level cultural changes are required to foster diffusion and implementation of the TQM philosophy.

Unit subculture can also be a major barrier or facilitator of best practice transfer. The manager must again identify which unit subculture best fits the practice to be transferred, or how the unit subculture should be modified in order to increase adoption probability (DeLong & Fahey, 2000). Chang and Wiebe (1996) in particular, find, from their study of quality award-winning organizations in Missouri, that organizational culture -- both its orientation as well as its consistency across units -- affects the extent of philosophical acceptance of TQM, and thus its diffusion and success. Note then that it is not just the culture of the adopting organization that is relevant, but also the extent of shared cultures within and across units or organizations, and interconnectedness among the actors, that influences diffusion.

The first question for the manager to answer is what the organizational culture is in terms of practices, norms, and values (DeLong & Fahey, 2000). McNabb and Sepic (1995) propose a multidimensional framework to assess organizational and unit culture. The interaction of culture, climate, and people is translated into processes, procedures, and policies that legitimize and direct the organization's work. Two measures of the integration of culture, climate, and policies toward change are employee performance and job satisfaction. Therefore, an important aspect of best practice transfer is to monitor employee performance and job satisfaction in the receiving unit. In turn, job satisfaction can lead to increased organizational readiness for change. The level of trust in the organizational and sub-unit cultures is related to ease of knowledge sharing: low trust cultures tend to resist knowledge coming from other organizations or units, and will hinder the best practice transfer (DeLong & Fahey, 2000). Consistent with Reger et al.'s discussion of mid-range changes, McNabb and Sepic argue that major change increases anxiety, lowering job

satisfaction and performance. A key goal is therefore to implement changes so to keep anxiety at a minimum; another would be to adapt and expand the domains of satisfaction and performance to include best practice transfer.

Various sources agree that organizations that are successful at knowledge transfer tend to have a high-trust, risk-taking, knowledge sharing, change-embracing culture (DeLong & Fahey, 2000; Leonard, 1998; O'Dell & Grayson, 1998; Pfeffer & Sutton, 1999). However, an often forgotten cultural trait that may be crucial to knowledge transfer is the organization's ability to deal with paradox. Indeed, organizational learning entails the contrary forces of using prior knowledge effectively while being ready to discard it in favor of new knowledge (Lewis, 2000). An inability to deal with organizational paradoxes often results in increased anxiety and resistance to change (Lewis, 2000). As explained by Lewis, the best managerial strategy for innovation is transcendence (Watzlawick et al., 1974), or fostering paradoxical thinking in employees in order to move from single-loop learning to double-loop learning.

2.7 Organizational Size

Organizational structures can inhibit or facilitate change. Power structures and predefined roles can be a barrier to best practice implementation. Large organizational structures have the advantage of containing a greater pool of knowledge and more resources to devote to the implementation of best practices. Large companies, being more complex, rely more on tacit routines to store knowledge (Winter, 1994). By relying more on knowledge represented in processes rather than individuals, the large organization is therefore less likely to see a best practice abandoned after implementation because of employee turnover (Winter, 1994). However, their size can act as a barrier to change. Because large firms rely heavily on routinized processes, they often fail to react quickly to environmental changes and respond too slowly to implement an innovative practice successfully (Dougherty, 1996). Their stability tends to "buffer the need to change" (Winter, 1994). Complex bureaucracies also tend to reinforce pre-defined roles (Dougherty, 1996; Johnson & Rice, 1987), which prevents organizational members from experimenting with a new practice and the associated role boundaries. Davenport and Prusak (1998) argue that the maximum organizational size for optimal knowledge management is around two to three hundred members.

2.8 An Industry Example of Contextual Barriers and Facilitators: The Case of ABB

Martin and Beaumont (1998) published a case study of best practice transfer in the multinational firm Asea Brown Boveri, from the headquarters to one of the subsidiary units. ABB was seeking to implement a time-based management practice called "7-ups". The first stage of the transfer attempt was difficult due to institutional distance between the parent company and the receiving unit. Employees of the unit perceived the practice as being irrelevant to local conditions. Local managers saw the new practice as being unfair for their specific plant. Thus both units had specific, and different schemas that did not match the proposed change. Based on Martin and Beaumont's discussion, there also seemed to be a mismatch between the environments that the parent and local companies were operating in. The subsidiary unit produced power transformers, operating in a stable and homogeneous environment. However, the company also operated in process automation businesses, which was a heterogeneous and uncertain industry. Hence, the company was trying to transfer a learning-oriented practice to a control-oriented unit, leading to increased difficulty of transfer. Furthermore, the authors point out that local managers saw the new practice as "an embarrassment or threat to their position and self-concept", pointing to the difficulty of reconciling the culture of the parent company and the

unit. However, as local managers began to see substantial gains in certain areas of the company resulting from the implementation of the practice, they started to be more receptive to the transfer, and once local managers became champions of the practice, the transfer successfully took place.

3. DIFFUSION PROCESS FACTORS

3.1 Stages of the Diffusion Process: From Identification to Continued Use

An important step in the transfer of a best practice is identifying what constitutes a "best" practice in the organization. Indeed, the biggest problem faced by organizations is a state of unawareness of the best practices available in the organization (Szulanski, 1995). Identifying what is "best" is a difficult task: "not only is 'best' a moving target […], but 'best' is also situation-specific" (O'Dell & Grayson, 1998, p.12). O'Dell and Grayson suggest labeling "best" as "those practices that have produced outstanding results in another situation and that could be adapted for our situation" (p.13).Once a best practice has been successfully identified, the organization needs to facilitate its diffusion throughout the organization. Rogers (1983) suggests two main stages to the diffusion process of innovations. The first stage is marked by the adoption of the practice by a few innovators, who may be organizational cosmopolites. These employees have access to multiple resources inside and outside the organization and are not closely integrated in local peer networks. Therefore, cosmopolites, or boundary spanners, through their multiple contacts within and outside the organization, have an important role in identifying best practices that could be useful for a specific unit. Further, they may have more diverse schemas, and awareness of a greater variety of practices, than most organizational members. In the second stage, early adopters are employees who are highly respected by their peers and act as opinion leaders for the innovation. If early adopters are convinced to use the innovation, the adoption rate usually spreads through the rest of the organization or unit. Widespread dissemination of an organizational best practice can raise awareness of the practice among employees but is not sufficient to change their behavior toward using the practice (Rogers, 1995). Indeed, until early adopters set the example, the adoption rate is unlikely to take off. The extremely important role of these opinion leaders is explained by uncertainty-reduction theory: the main motivation for individuals to communicate is to reduce uncertainty (Johnson, Meyer, Berkowitz, Ethington, & Miller, 1997; Papa & Papa, 1992). Innovation creates uncertainty, which is reduced through communication with trusted peers in one's communication and task network, especially those who have had experience with the innovation (Rogers, 1995). Valente and Davis's (1999) "optimal matching" diffusion strategy proposes, and supports through computer simulations, that implementers can accelerate diffusion by selecting opinion leaders (ideally, through nominations from the community) and then matching community members to their "closest" opinion leaders, who provide legitimization, training and support.

Innovation networks may be both internal and external. At the individual-level within organizations, innovation adoption by lower-level users is often stimulated by higher level employees (who are sources of greater initial resources), such as when managers adopt email first (Rice & Case, 1983). Papa and Papa (1992) reported that greater network diversity and size, but not sheer frequency of communication, influenced how and the rate at which employees learned to increase their performance using an insurance information query system. This finding is consistent with Granovetter's (1977) "strength of weak ties" argument, which suggests that innovations diffuse more rapidly through weak and diverse ties. At the inter-organizational level, Newell and Clark (1990) suggested that one of the reasons why British inventory and

control system manufacturers were less innovative than comparable U.S. manufacturers was that they had less communication with external organizations, conferences, and associations. Organizations may learn from networks either directly, through its members and organizational experiences, or indirectly, by adding new members who have new knowledge and finding out about other organizations' experiences (Johnson & Rice, 1987; Levitt & March, 1995; Locke & Jain, 1995; Rice & Rogers, 1983; Simon, 1991). But new ideas must also be sought out in order for them to be adopted. Benchmarking as a fundamental activity in TQM is a specific form of proactive seeking of indirect learning from other organizations.

3.2 Attributes of Innovations, Recipient and Source, Knowledge, and Source-Recipient Relationships

3.2.1 Attributes of Innovations

Attributes of innovations can be thought of as facilitators or barriers to diffusion. Different attributes influence different stages of the diffusion process, such as rejection, acceptance, continued use, and reinvention.

The innovation must be perceived as compatible with previous organizational experiences for users to accept it (Agarwal & Prasad, 1997; DeLone & McLean, 1992; Moore & Benbasat, 1991; Rogers, 1983; Tornatzky & Klein, 1982). However, consistent with the newness-confirmation model of communication (Weizsacker, 1972 in (Wigand, Picot, & Reichwald, 1997)), the innovation should neither be too novel or too familiar: entirely new information cannot be acted upon because it cannot be linked with past experiences or fitted to existing schemas and practices. Information that only contains confirmation of past experiences is not an innovation and will foster no new action (Wigand et al., 1997). A large disconnect between sender and recipients' knowledge bases will be detrimental to transfer: "if the skill gap between partners is too great, learning becomes almost impossible" (Hamel, 1991, p.97). Furthermore, a key predictor of acceptance of a specific innovation is the user's perception of the degree of external pressures to adopt it. When pressure is perceived as high, users will be more inclined to accept the innovation (DeLone & MacLean, 1992; Moore & Benbasat, 1991).

The perceived complexity of the innovation is negatively related to its acceptance and continued use. If a best practice is perceived as being too complex, organizational members will not adopt it (Rogers, 1983; Tornatzky & Klein, 1982). A practice's causal ambiguity, or the difficulty to link measurable results to its implementation, is a powerful barrier to transfer and was found in one study to be a more important factor than knowledge tacitness and complexity (Simonin, 1999). Transfer is facilitated by how easy to articulate the knowledge is (Bresman, Birkinshaw, & Nobel, 1999) and how easy it is to teach to others (Zander & Kogut, 1995) (what Rogers calls "communicability"). The best practice must also be high in trialability, which is the degree to which the innovation can be easily divided for experimentation, and in observability, which is the degree to which it can easily be seen by other organizational members to encourage further adoption (DeLone & McLean, 1992; Moore & Benbasat, 1991; Rogers, 1983). A difficulty for best practices is that the costs and benefits for the adopter are difficult to measure or even estimate: trialability and observability are lower for organizational innovations than for technical innovations (Alange et al., 1998).

The best practice's relative advantage, which represents the degree to which employees see it as superior to other possible innovations, must be high to foster both initial adoption and continued use (Moore & Benbasat, 1991; Rogers, 1983; Tornatzky & Klein, 1982). Furthermore,

while the practice should not be too ambiguous, it should also be diverse enough to solve problems across the organizations' functional units (Lapre & Van Wassenhove, 2001).

Cool, Dierickx, and Szulanski (1997) note that previous diffusion models are not adequate for intraorganizational diffusion because they assume equal opportunity to adopt among members of the social system. For organizations, supply factors are also important because they create unequal adoption opportunities among organizational members. For example, a supply factor can be the relative cost of the innovation. At the inter-organizational level, an organization might not have the financial capabilities to support the implementation of a new best practice. Similarly, at the intra-organizational level, it might be too costly for a unit to adapt a best practice from another unit to its particular context.

3.2.2 Attributes of the Recipient and Attributes of the Source

Attributes of the recipient, knowledge, and source-recipient relationship may also affect the diffusion of best practices. Szulanski (1995) found that the better a unit is, the less likely it is to adopt a new best practice, a manifestation of the NIH (not invented here) syndrome. However, the very best units within an organization are also the most open to trying out new best practices, and have greater absorptive capacity (Szulanski, 1996). Ideal targets for transfer are therefore poor or excellent performing units. It should be noted that although unit influence is an important predictor of initial acceptance, the influence of group uses and attitudes on individual continued use tends to disappear over time (Kraut et al., 1998).

The source of the best practice should be a successful unit. Research on imitation across organizations has shown that firms will more readily copy practices of a successful firm than an unsuccessful one (Argote, 1999; Haunschild & Miner, 1997). Concerning internal transfer of best practices, if a unit is striving to be successful, it makes more sense to copy the practices of a successful unit. In copying the practice, units may seek not only success but legitimacy. This is linked to the previously mentioned concept of institutional isomorphism (DiMaggio, 1983), which suggests that firms imitate the practices of industry leaders in a search for legitimacy.

3.2.3 Source-Recipient Relationship

The third most important barrier found by Szulanski was a difficult relationship between the source of knowledge and the receiving unit. This result points to the importance of trust in knowledge transfer. Trust in source-recipient knowledge relationships can be affected by the "status of the knower" (Davenport & Prusak, 1998) in relationship to the recipient. Certain organizational cultures value some categories of employees over others, with the result that certain sources of knowledge are favored over others (Davenport & Prusak, 1998). Some organizational cultures tend to foster intergroup competition by evaluating performance through comparison across units, ultimately limiting the possibility of knowledge sharing between groups (Argote, 1999; Kramer, 1991).

Another variable known to influence source-recipient relationship and the outcome of transfer is geography. Although still inconclusive, research findings suggest that knowledge travels more rapidly and more easily between units that are located in proximity to one another (Argote, 1999; Epple, Argote, & Murphy, 1996; Galbraith, 1990). Research on regional economies also show that knowledge travels more easily to closer locations (Jaffe, Trajtenberg, & Henderson 1993; Almeida & Kogut 1999). Possible cultural differences between units that are farther apart should also be considered (Kostova, 1996).

The source of the transfer will have to gain awareness of the unit members' concerns in adopting the innovation. Typically, users of a new innovation have three concerns: how will the

innovation affect performance, how does it fit with the local culture and norms, and how much uncertainty will it trigger (Lewis, 1997; Lewis & Siebold, 1996). Initial communication channels between source and recipient are a predictor of innovation transfer success: getting information to the recipient unit in the beginning of the transfer was found to be more important than getting participation and feedback (Lewis, 1999).

3.2.4 Attributes of Knowledge

The manager concerned with best practice transfer must evaluate where this knowledge resides within the organization. While this may seem like a simple task, knowledge most frequently is embedded in multiple organizational components: people (Starbuck, 1992), often working as groups in sub-networks, as well as products, tools and technology (Argote & Ingram, 2000). Successful transfer may involve moving people, tools and technology from the sender to the receiver.

The second most important transfer barrier found by Szulanski was another attribute of the transferred knowledge: causal ambiguity. Causal ambiguity occurs when cause and effect relationships between knowledge and productivity results are difficult to identify. Van de Ven (1986) points out to the difficulty of managing part-whole relationships: linking the innovation to organizational outcomes. It is often difficult to measure how a best practice really affects organizational outcomes because of the high content of tacit knowledge and constant redefinition in the diffusion process (Alange et al., 1998). O'Dell and Grayson (1998) suggest focusing initial efforts of best practice transfer on critical business issues that have high payoff and are aligned with organizational values and strategy, and focusing on areas where dramatic performance improvement is linked to an underlying process. Once organizational members are convinced of the value of best practice transfer by an obvious cause-and-effect instance, they are more likely to support subsequent, more causally ambiguous, transfer.

Other attributes of knowledge that act as diffusion barriers within organizations are its leakiness and stickiness (Brown & Duguid, 1991). Work practices are embedded in communities of practice. This locally-embedded knowledge is "sticky", meaning that it does not travel easily across communities of practice (Brown & Duguid, 1991; Brown & Duguid, 1998; Orlikowski, 2002). Organizational practices are difficult to imitate across departments and conditions because they involve the transfer of tacit knowledge (Brown & Duguid, 1991; Brown & Duguid, 1998; Cole, 1999; Nonaka, 1994; Polanyi, 1967). Extended communities associated with professions (i.e., communities of practice) lie across firm boundaries. Diffusing knowledge among groups with similar professions is easier than moving it across heterogeneous groups within a firm (Brown & Duguid, 1991; Davenport & Prusak, 1998). Thus knowledge may travel more easily between organizations (knowledge is leaky) than within organizations (knowledge is sticky).

3.2.5 The Nature of Organizational Knowledge and the Difficulty of Measuring Best Practice Transfer

Even when a unit has learned how to use a new practice, imitating is made difficult by subtle differences in conditions (Cole, 1999). An appropriate transfer process goes beyond imitation, and also includes reinvention, or the adaptation of an innovation after adoption (Cole, 1999; Johnson & Rice, 1987; Rice & Rogers, 1983). Because each division comprises its own local conditions, a pervasive barrier to knowledge diffusion is a perceived lack of fit of the practice with the specific work practices of the divisions (the innovation attribute of "perceived compatibility" (Rogers, 1983)).

Another barrier to the diffusion of best practices lies in the definition of what constitutes successful transfer. Because the diffusion of tacit knowledge involves reinvention, the transfer process itself is difficult to measure: the definition of the practice can change as the organization changes (Winter, 1994). One could even argue that the practice is altered every time it is absorbed by a different adopter (Alange et al., 1998). Indeed, the initial advantage of the best practice can be lost in the alteration process (Alange et al., 1998). One way to measure transfer success and the level of alteration of the practice is to assess the velocity of the transfer, which represents the relative speed at which the transfer has occurred, and the viscosity of the transfer, which is how much of the knowledge intended for transfer has been successfully absorbed by the recipient (Davenport & Prusak, 1998).

However, it is sometimes impossible to make tacit knowledge explicit enough for complete transfer. Epple et al. (1991) note that the transfer of know-how is never complete, because some knowledge remains in the heads of the employees and is not transferable. Therefore, the best way to transfer knowledge across divisions is to move knowledgeable employees. Berry and Boradbent (1987) have found that even though these knowledgeable employees cannot explicitly articulate the tacit knowledge, they can apply tacit knowledge to a different task, making "personnel movement a powerful transfer mechanism" (Argote, 1999, p.176).

3.3 An Industry Example of Diffusion-Related Barriers and Facilitators: The Case of HP

In the 1980s, Hewlett Packard started the process of importing Total Quality Management practices from its YHP subsidiary based in Japan. Because YHP's successes with Quality were so prevalent, HP employees recognized the practice as "best" and established a trustworthy relationship with YHP during the transfer (Cole, 1999). However, because of the ambiguous nature of knowledge, it was difficult for HP employees to connect the Japanese productivity results with Total Quality Control (TQC) practices. Hence, many HP managers resisted the transfer of TQC, arguing that there was no link between TQC and productivity. Fortunately, top management championed the initiative and success stories attributable to TQC, and the transfer was completed successfully (Cole, 1999).

4. MANAGEMENT-RELATED FACTORS

Once barriers linked to the organizational context and the diffusion process have been overcome and a practice has made it from one unit to the other, managers need to worry about the recipient unit retaining the practice. Successful transfer entails a complete integration of the practice into the recipient unit's daily processes. This is where management-related factors are the most important in best practice transfer.

4.1 Managerial Commitment

Some researchers suggest that the type of employee determines the necessity of managerial intervention. Consistent with previous research (Leonard-Barton & Deschamps, 1988), Astebro (1995) found that the adoption of an organizational innovation was positively related to management involvement for employees who tended to be late adopters, had low skills, were poor performers, were less likely to perceive their task as important and more likely to think that innovation adoption had little relevance to their job performance. Therefore, one must consider characteristics of employees of the receiving unit for assessing the impact of managerial commitment in best practice transfer.

A lack of managerial commitment has been identified by the TQM and innovation diffusion literature as one of the most important barriers to organizational change (Brown, Hitchcock, &

Willard, 1994; Covin & Kilman, 1999; Crosby, 1996; Winter, 1994). For effective transfer of best practices, leaders need to consistently champion the message of knowledge sharing for the greater good of the organization (O'Dell & Grayson, 1998). Allen and Brady (1997) found that in two organizations implementing TQM, organizational commitment and perceived organizational support were higher, there were more positive employee-top management and coworker communication relationships, and more quality information from top management. Also, these explained more variance in organizational commitment and perceived organizational support than in the one non-implementing organization. In discussing the results, Allen and Brady suggest that "positive employee-superior communication relationships may be important because superiors articulate an organization's values and goals, describe how employees can reach these goals, and establish a departmental climate personifying positive aspects of the employee-organization relationship in the absence of clearly articulated messages from top management" (1997, p. 335).

However, Molinski (1997) warns about the dangers of putting too much emphasis on commitment. Molinski presents three paradoxes of change. The first is that "Change needs to be managed, but management inhibits change" (p. 314). Without managerial commitment, change won't be implemented. However, the innovation runs the risk of becoming associated with a specific leader or division and thus suffer from "sponsorship bias," inhibiting adoption throughout the organization outside of the sponsor's unit (Molinski, 1997). This is especially important for best practice diffusion: if the best practice becomes too closely associated with a specific leader or division, it is likely to be perceived as non-transferable to other organizational units, or to be abandoned should that leader leave the organization.

The second paradox is that "change needs committed leaders, but too much commitment diffuses and dilutes the change" (p. 316). An overemphasis on commitment to change by management can overwhelm organizational resources and detract employees from accomplishing their work. Beyond championing best practice transfer, managers must act to implement them: implementation can get lost in meetings and documents (Pfeffer & Sutton, 1999). Furthermore, multiple change projects also tend to confuse employees, suggesting that best practices should be implemented one at a time. Too many change projects can also lessen the outcome of any change by diluting organizational resources; an organization can only invest in a finite amount of change at a time (O'Dell & Grayson, 1998).

The third paradox Molinski warns against is that "change needs rhetoric, but rhetoric inhibits change." Simard and Rice (2006) apply Mintzberg's (1980) managerial roles to suggest ways for the manager to foster knowledge sharing and learning in TQM implementation. The manager needs to act as a liaison, fostering networks of knowledge sharing between employees and units that can be conducive for best practice transfer. The manager also needs to act as an opinion leader, encouraging trust-building communication activities which encourage risk-taking.

4.2 Training

Another barrier to implementation particularly emphasized by the TQM literature is a lack of training. Epple et al. (1991) found that the amount of knowledge carried forward from one unit to the next is linked to large investments in training. Brown et al. (1994) identify two causes for training failure. The first is unrealistic expectations. Rogers (1983) specifies that an innovation should be compatible with existing values and experiences. Therefore, if an employee lacks sufficient previous experience to successfully link his work to the innovative practice,

training is likely to be ineffective. The second cause is training that is not tailored to the audience. Rogers also warns about the degree of perceived complexity of the innovation by employees, which negatively influences its rate of diffusion. If training is too complex for a category of employees, the practice will not be understood. Other causes of training failure is the lack of applicability of training to the employee's daily work and a lack of opportunity for building experience with the new work practice. Again, Rogers points out that an innovation should easily be "trialable" as part of the employee's daily work, and that is should be compatible with the employee's work experience. However, some best practices can require higher cognitive abilities, technical knowledge, and problem solving abilities. In some cases, training will not be sufficient and the organization may have to modify jobs to fit employee ability, with the participation of the employees (Stone & Eddy, 1996). Further, fostering more complex applications or reinvention of a best practice requires training that emphasizes conceptualizations of the practice, rather than just technical operations or routine uses. For example, training can emphasize that word processing may be the foundation for document management and transfer instead of simple text input (Johnson & Rice, 1987), or voice mail can support dynamic collaboration instead of just asynchronous message storage (Rice & Danowski, 1993). Brown et al. (1994) suggest five ways to assess the adequacy of training in regard to a new best practice: availability of resources for training, frequency of training, number of employee levels enrolled in the same training sessions, number of employees trained, and satisfaction of employees with overall training.

4.3 Reward System

Also at the managerial level, the issue of the inappropriateness of reward systems is pervasive in the TQM literature. Inappropriate rewards can lead to implementation failure. Even if the practice was successfully transferred, a failure to adapt the corresponding reward system could mean premature abandonment of the practice. Several authors warn that outdated appraisal methods are a barrier to TQM implementation, especially where competition is rewarded over cooperation, and individual results over team results (Brown et al., 1994; O'Dell & Grayson, 1998; Pfeffer & Sutton, 1999).

The difficulty of achieving the right balance between team and individual rewards is a major barrier to best practice implementation. Thompson (1998) notes that the paradox of rewards in TQM is the necessity to reward team work while maintaining a good performance climate for individuals. Thompson prescribes a delicate balancing act by the manager to effectively reward teams and individuals at the same time, focusing on individual performances within teams. Three factors should be considered: specific job performance, productivity of the team, and individual contribution to the team. Similarly, individuals, as well as teams, must be rewarded for sharing and using best practices. Management must exercise caution when asking employees to give up personal rewards, which can lower commitment to the change (Winter, 1994).

The use of performance appraisals can also act as a barrier to best practice implementation. While they provide information on job performance and necessary improvements, they can put too much emphasis on short-term results, institute fear and distrust among employees, and be incongruent with organizational quality goals by focusing on people rather than on process improvements (Stone & Eddy, 1996). A focus on results from the best practice -- especially early on, when users are attempting to understand, learn, and apply the practice -- will most likely cause fear of using the practice and inhibit experimentation with the practice.

The difficulty and necessity of matching individual and organizational goals in reward systems is also important, which means that organizational members should have their input in reward system formulation (Stone & Eddy, 1996). However, Winter (1994) notes that individuals must be ready to sacrifice short-term goals for the benefit of the organization in TQM implementation, even while the new best practice can entail higher uncertainty in the form of job reorganizations and new role definitions. Therefore, management must make clear to the employees that they will receive some other, or long-term benefits for their sacrifices. Winter (1994) also warns that the best motivation for implementing TQM is a perceived threat to the organization's survival, in which case employees will be more willing to sacrifice short-term individual rewards in favor of organizational goals. In the case of best practice transfer, not only a threat to the organization's survival but also a perceived threat to the receiving unit's survival could serve as a lever to the adoption of a new practice. As noted above, however, in extreme crisis situations, individuals, groups and organizations are less likely to try out new practices (Staw et al., 1981).

The reward system needs to be matched with the orientation of the best practice (control vs. learning – Simard & Rice, 2006; Sitkin et al., 1996). In what Carson and Steward (1996) call traditional TQM (Total Quality Control), management creates control systems aimed at improving and maintaining quality, with specific roles assigned to employees and clearly defined expectations. In this case, it makes sense to reward individuals on the basis of those clearly defined expectations and statistical results in quality improvements and customer satisfaction. Applied to best practices, this would mean, in a control environment, rewarding individuals on using a practice of quality improvement based on clearly defined expectations. However, if organizational adaptability and learning is the goal (as in Total Quality Learning), individuals should be rewarded for experimenting with the practice, changing or reinventing it, and even failing at it (Johnson & Rice, 1987). In the case of Total Quality Learning (Carson & Stewart, 1996; Sitkin et al., 1994), where exploration is the main focus of the employee's work, management should deemphasize hierarchical control and reward risk-taking, which also means recognizing the benefits of failure (Sitkin, 1996).

Hackman and Wageman (1995) warn about a risk of motivation discrepancy between the few workers who are part of quality teams and take part in best practice formulation, transfer, and implementation, and the rest of the employees who do the work according to practice specifications over which they have little say. Members of a knowledge production unit who have taken part in the creation of knowledge have more intrinsic motivation in sharing it (Osterloh & Frey, 2000). The implementation of best practices must therefore consider the motivation to use the best practice, especially for employees who had little say over the design, transfer and adaptation of the practice.

Organizations must also achieve the right balance between extrinsic and intrinsic rewards in best practice implementation. According to Goodale, Koerner, and Roney (1997), intrinsic rewards are important to successful best practice implementation. They found that customer service employee empowerment significantly increased the quality of service delivered to customers. If the best practice contains a high level of intrinsic rewards for employees, such as higher empowerment and job satisfaction, it will therefore be more likely to be successfully implemented. O'Dell and Grayson (1998) also point to intrinsic rewards as the key to get employees to use the practice. Hackman and Wageman (1995) warn about the dangers of extrinsic rewards in TQM implementation. Pay-for-performance can put too much emphasis on

specific outcomes and cause employees to lose sight of the "larger picture." For best practices, this means that a monetary reward for using the best practice can lead employees to misuse the practice. In that case, employees might decide to use the practice in a situation no longer appropriate for it, especially problematic in the case of ongoing changes in the environment. Also, receiving monetary incentives to use a practice can discourage any attempts to experiment with the practice, taking risks, and bring improvements to the practice, since the reward is associated with a specific definition of the practice. Furthermore, pay-for-performance tends to diminish the rewards of intrinsic motivation by placing too much emphasis on financial goals. Encouraging employee competition for a pool of monetary rewards can also pose a threat to team work rewarding and undermine work relationships (Hackman & Wageman, 1995). However, intrinsic rewards alone may not be enough for TQM and best practices, so organizations must achieve an appropriate balance between intrinsic and contingent extrinsic rewards (Hackman & Wageman, 1995).

One of the most crucial kinds of rewards for effective best practice transfer are diffusion-related rewards, or knowledge sharing to foster best practice transfer between units. However, O'Dell and Grayson (1998) warn about the use of artificial rewards for diffusion: knowledge sharing has to be supported by the organizational culture and be rewarding in itself, such as through a sense of contributing to the greater good of the organization, increased work efficiency, and recognition from peers. O'Dell and Grayson (1998) conclude that successful firms focus on embedding knowledge and practice transfer into their employees' work methods and recognize employees for their contributions. A difficult issue faced by organizations seeking to reward knowledge sharing is how to evaluate the quality and impact of the knowledge being shared to match rewards to the contribution. Furthermore, today's knowledge workers, faced with waves of reorganization and downsizing, can feel that their job security is dependent on their personal level of knowledge and be very reluctant to share that knowledge, perceiving it as a loss of "competitive advantage" over other organizational members (Davenport & Prusak, 1998).

4.4 An Industry Example of Management-Related Barriers and Facilitators: The Case of Texas Instruments

In 1994, Texas Instruments began its best-practice transfer efforts. From the start, top-management championed the initiative, formulated an organizational vision around best-practice transfer, and modeled the desired behavior. A specific group at Texas Instruments was in charge of providing continuous support and creating reward systems in tune with the new practice. Texas Instrument's efforts are viewed as a managerial success-story in the transfer of best practices (O'Dell & Grayson, 1998).

5. STRATEGIES FOR DIFFUSING BEST PRACTICES

As Table One summarizes, this chapter has reviewed selected literature to offer a picture of the most common barriers to the implementation and diffusion of organizational best practices. Faced with this multitude of potential barriers, how can the organization successfully identify, transfer, and implement best practices? A review of all possible strategies is not within the scope of this chapter. Identifying the possible barriers, as exemplified in Table One, is the first step in developing necessary means to overcome them. However, some authors offer practical advice on how to overcome diffusion-specific barriers.

Table 1. *Barriers and Facilitators to the Transfer of Internal Best Practices: Institutional, Diffusion Process, and Management Factors, at Industry, Organizational or Unit Levels*

Factors	**Levels**	**Barriers and Facilitators**
Institutional		
Institutional Forces	Industry Organizational Unit	F: practices legitimized by institutional environment B: practices that detract from institutionalized values or existing institutionalized practices B: when institutional distance between source and recipient is high
Environment	Industry Organizational Unit	B: stable environments foster status quo B: when practice orientation (control/learning) is not adapted to environment F: dynamic environment drives motivation for change
Control vs. Learning Orientation	Organizational	F: match practice orientation with environmental uncertainty B: mismatch of practice with environmental uncertainty
Absorptive Capacity	Organizational Recipient Unit Individual	F: organizational culture facilitating learning B: when innovation lock-in happens B: when organization and unit have low absorptive capacity
Prior Success	Organizational Unit Individual	B: success encourages competency trap F: the very best units are more open to change; Individuals need to experience success associated with experimentation
Organizational Identity and Human Cognition	Organizational Unit Individual (human cognition)	B: practices beyond individual constructs and radically detracting from org. identity will be rejected. F: changes geared towards attaining ideal org. identity and changes that can be interpreted by human cognition (shared interpretation)
Culture	Organizational Unit Individual(job satisfaction)	B: dictates acceptable behavior B: low job satisfaction and low employee performance is associated with the practice F: best practice is consistent with existing culture F: high job satisfaction and high employee performance is associated with the practice
Firm Size	Organizational Unit	B: stability inhibit change B: large bureaucracies reinforce pre-defined roles F: more resources to support implementation F: large firms rely on processes – best practice transfer is less affected by employee turnover
Diffusion Process-Related		
Stages of Diffusion	Unit	F: early adopters

	Individual	B: early adopters do not use the practice
Attributes of Innovation	Individual	F: best practice has high compatibility, low complexity, high trialability, high observability, high perceived advantage, mid-range newness, low relative cost B: the practice has low compatibility, extreme or no newness low trialability, low observability, high complexity, low perceived advantage and high cost
Source-Recipient Relationship	Unit	F: high trust B: low trust F: high levels of shared experience B: high geographical distance
Nature of Knowledge	Unit Individual	B: causal ambiguity; knowledge tacitness/knowledge stickiness B: low perceived fit of practice to local conditions F: low causal ambiguity F: high perceived fit of practice to local conditions F: knowledgeable employees are involved in transfer
Management-Related		
Managerial Commitment	Organizational Unit Individual	B: lack of commitment B: too much commitment F: employees who are late adopters, have low skills, perceive new practice as unrelated to performance F: manager acts as a trust-builder
Training	Unit Individual	F: ongoing, adaptive, conceptual training B: best practice is not compatible with previous experience; practice is not trialable; training is not tailored to audience, degree of perceived complexity is too high
Reward System	Unit Individual	F: alignment of individual, unit, and organizational goals; Intrinsic reward associated with best practice; adequate balance of team and individual reward B: extrinsic rewards are overemphasized B: individual and divisional competition is favored over cooperation B: rewards are not adapted to orientation (control/learning) of the practice

Since best practices contain some degree of tacit, "sticky" knowledge located in the minds of individuals, transferring people should be the most effective way to transfer knowledge (Argote, 1999). Brown and Duguid (1998) propose the identification of key individuals and

boundary objects as strategies for the internal diffusion of knowledge. The first strategy is to identify translators and opinion leaders who can help in the diffusion process. Translators are individuals who have the ability to frame one division's interest in terms of another division's perspective. These individuals are meant to overcome the stickiness of knowledge, whereby knowledge does not travel easily across communities of practice (Brown & Duguid, 1991). Translators should have sufficient knowledge of the different communities and have the trust of the different communities (Brown & Duguid, 1998). Other key individuals who can be used in the transfer process are knowledge brokers. These individuals are loosely linked to several communities and can facilitate knowledge flows between communities.

Boundary objects can also serve as bridges between communities. Boundary objects are those artifacts, metaphors, and objects "held in common across different parts of a … community, but which are adapted to customized use" (Star, 1993, p. 93). Useful "boundary objects", according to Star, are plastic enough to adapt to local contingencies, yet robust enough to maintain common identity, becoming more strongly structured in local use. Star's typology of boundary objects includes (1) repositories (ordered sets of objects indexed in a standardized way), (2) ideal types (some general metaphor or map good enough for all participants to use), (3) some shared terrain, whether physical or informational, and (4) forms and labels (common terms or formats that avoid or ignore locally specific information). For example, the same technology can be used differently ("reinvented") by different communities or units. These boundary objects can serve as linking points in the transfer of best practices. Business processes can also be used as boundary objects*:* one function of organizational processes should be to enable groups to align themselves with one another and with the organization (Brown & Duguid, 1998). Thus, enabling processes should involve boundary objects that encourage negotiation and knowledge sharing between communities (Brown & Duguid, 1998).

Other strategies for encouraging knowledge sharing between units are to provide sharing incentives, emphasize competition with other firms, and focus not on internal organizational boundaries, but on higher level boundaries between organization and environment (Argote, 1999).

O'Dell and Grayson (1998) review the most commonly used methods for best practice transfer in organizations. The first is the use of benchmarking teams, who are responsible for evaluating the current state of an organizational process, identify gaps, and search for best practices aimed at bridging that gap outside the company. These teams can also be used to perform internal benchmarking: an internal organizational unit might already be a leader in that best practice and outperform other organizations. The second strategy is the use of best practice teams, which are designed to encourage knowledge sharing between individuals of similar levels from various part of the organization. These teams usually consist of managers who meet quarterly. The third method is knowledge and practice networks. These knowledge networks usually occur within communities of practice and are often aided by information technology (O'Dell & Grayson, 1998). The key is to provide opportunities for interaction between organizational members from various units (Argote, 1999).

Information technology (such as best practice databases, intranets, and online discussion lists) can serve as support for best practice sharing but does not represent a solution in itself (O'Dell & Grayson, 1998). Developments in IT have created much hope for knowledge management and knowledge transfer. O'Dell and Grayson (1998) suggest matching the knowledge with the technological solution. The most "valuable" and tacit knowledge is located

within individuals, implying a low-tech transfer solution. Computer databases are appropriate to transfer data and highly explicit knowledge, but highly valuable and ambiguous knowledge is best transferred through people. These people-enabled sharing platforms include discussion groups, internal assessments and audits, such as "share fairs," to identify knowledge gaps and serve as platforms for knowledge sharing (O'Dell & Grayson, 1998). Corporate intranets, social networking programs, and wikis represent the latest IT-enabled support for knowledge sharing, but the real benefits of intranets in best practice identification and transfer are still undocumented.

6. CONCLUSION: THE NEED FOR A HOLISTIC APPROACH TO BEST PRACTICE TRANSFER

This chapter has offered a review of the literature from the fields of best practices, total quality management, organizational learning, knowledge management, and diffusion of innovations to discuss the barriers to the internal implementation and diffusion of organizational best practices. We have divided the barriers to the transfer and implementation of best practices in three equally important categories: factors of the firm and its environment, factors linked to the diffusion process, and management-related factors, each to some extent constrained or influenced by the prior category. Research suggests that higher implementation success is associated with a tendency for organizational members to over-anticipate potential barriers to implementation (Lewis, 2000). Therefore, using the framework depicted in this chapter, the manager can gain increased awareness of potential barriers to best practice transfer.

First, the manager concerned with best practice transfer has to evaluate the organizational context in which the transfer will take place. Does the organization already possess absorptive capacity? If not, organizational members will have little ability and incentives to identify and transfer new knowledge within the organization. The manager can evaluate the forces of institutional factors within the organization. Is the practice to be transferred seen as legitimate? Is the previously used work process highly linked to the organization's culture? Old practices can become institutionalized to the point of being very difficult to replace, acquiring a "rule"-like legitimacy status within the organization. In that case, the biggest problem might not be the practice to be transferred, but the practice to be replaced. Is the institutional environment of the recipient unit supportive of the practice? Units that show a strong attachment to a specific professional culture are more likely to resist a practice that is not recognized as legitimate by members of their professions. The manager must also be aware of the limits of human cognition and ensure that the transfer and implementation process is gradual, so that organizational members can interpret the change. The new practice must not challenge organizational identity too radically, and present itself as a mean to attain an ideal organizational identity. Is the new practice consistent with organizational culture? Measurements of performance and employee satisfaction will be two important ways to measure transfer success. Is the organization too big and slow to implement a new practice successfully? Complex bureaucratic structures enforce pre-defined roles and inhibit experimentation with a new practice. However, if the organization is small, does it have the resources to spend on the transfer and implementation of a new practice?

Considering possible barriers linked to the diffusion process, the manager should focus efforts on early adopters, who are key in achieving a critical mass of best practice users, especially for nonsubstitutable practices that generate increasing returns, and opinion leaders, who have the power to convince others (either explicitly or implicitly) to use the best practice.

The best practice itself should be seen as superior to others by organizational members, and should be compatible with previous experiences of the members of the receiving unit, without being too redundant with previous practices. The practice should be easy to observe, and to try, by members of the receiving unit. The receiving unit should ideally be one with poor performance or one with extremely high performance with a high degree of absorptive capacity. The source of the best practice should be perceived as successful. Attributes of the knowledge to be transferred should also be considered. If the practice contains high levels of tacit knowledge, transfer will be difficult across heterogeneous groups. Furthermore, high levels of causal ambiguity between the best practice and organizational outcomes represent an added barrier to successful transfer. The relationship between source and recipient unit is another important potential barrier. A relationship emphasizing trust over competition will facilitate the transfer. Finally, the practice itself should be perceived as compatible with the local conditions of the receiving unit.

Then, evaluating management-related barriers, the manager will first have to assess his or her own commitment to the best practice, as well as the commitment of his or her peers. Managers must adapt their intervention in the implementation of the practice to the needs of different employees. Employees with low skills and lower performance levels are the most important target for managerial involvement in best practice implementation. However, too much emphasis on managerial commitment can be detrimental to change. If a best practice is too associated with a specific manager, it will probably be seen as nontransferable to other organizational units. Too much managerial commitment to change can overwhelm organizational resources and dilute the effect of a single change initiative. Too much emphasis on change rhetoric can foster skepticism on part of the employees and inhibit adoption of a new practice. The role of the manager is to act as a liaison and opinion leader, fostering the creation of knowledge networks and knowledge sharing and trust-building activities between units. Training with the new best practice will be an important influence on transfer success. If employees are not properly trained in using the practice, it is likely to be abandoned. Training should be tailored to the employees of the receiving unit, should be compatible with employees' previous experiences, should make the innovation easy to try and experiment with for employees, and should at some point emphasize conceptual bases of the practice. Similarly, reward systems should be adapted to the best practice. Managers need to achieve the right balance between individual and team rewards, and foster cooperation over competition. Performance reviews can inhibit experimentation with the practice, as can an overemphasis on extrinsic rewards. The most important type of reward for our discussion is rewards for sharing and using best practices.

Previous literature on best practice transfer and implementation has tended to focus on specific barriers within one of the three major categories identified here. The main contribution of this chapter is to offer the reader a comprehensive picture of the multiple possible barriers to the successful transfer of best practices. The first step in overcoming barriers to knowledge transfer is to become aware of them. An important conclusion to be drawn from this chapter is that each barrier can also become a facilitator of best practice transfer, depending on the context. This realization should be encouraging for practitioners, who should seek not only to overcome the barriers to best practice transfer, but, when possible, turn them into facilitators of transfer.

This review and organization of selected literature can serve as a model for empirical testing of the relative weight of all of the mentioned facilitators and barriers at various organizational levels. Based on the literature, the following research propositions offer some possible

relationships between these multiple factors and best practice transfer success, and thus also potentially valuable future research venues.

Table 2. *Forty-three Research Propositions*

- 1: The higher the recognition of the practice as "best" by the industry and within the organization, the easier the transfer.
- 2: The higher the level of institutionalization of a practice within the organization or the receiving unit, the more difficult the replacement of that practice by a new one.
- 3: The higher the fit between the type of best practice to be adopted and previous best practices adopted by the unit, the easier the transfer.
- 4: The higher the institutional and geographical distance between source and receiving unit (i.e., the higher the level of decentralization), the more difficult the transfer.
- 5: The higher the level of environmental uncertainty, but less than crisis levels, the easier the practice transfer, due to higher motivation to change.
- 6: The higher the level of environmental uncertainty, especially in crisis levels, the more difficult the best practice transfer, due to the higher level of ambiguity in cause-and-effect relationships.
- 7: the higher the fit between best practice orientation (control/learning) and environmental uncertainty, the easier the best practice transfer.
- 8: The higher the level of absorptive capacity of a firm/unit (state of previous knowledge), the easier the best practice transfer to that firm/unit.
- 9: The higher the level of organizational complacency resulting from prior success, the more difficult the best practice transfer.
- 10: The higher the level of "change" associated with the best practice in individuals' perceptions, the more difficult the transfer.
- 11: The higher the fit between best practice and ideal organizational/unit identity, the easier the transfer.
- 12: The lower the level of shared interpretations about organizational identity, the harder the best practice transfer.
- 13: The higher the levels of employee performance and job satisfaction in the receiving unit, the more likely the new best practice will be retained.
- 14: The greater the resources available to implement change, the easier the best practice transfer.
- 15: The higher the level of bureaucratization of the organization, the more difficult the best practice transfer.
- 16: The higher the level of organizational reliance on individuals rather than processes, the more likely a best practice will be affected by employee turnover.
- 17: The earlier that a non-substitutable best practice which generates increasing benefits gains a significant set of initial adopters, the easier the later transfer.
- 18: The higher the adoption level from influential opinion leaders, the easier and faster the complete transfer.
- 19: The higher the level of trust between source and recipient unit, the easier the best practice transfer.

- 20: The more diverse an organization's internal and external innovation networks, the easier the identification and transfer of best practices.
- 21: Best practices of mid-range newness will be easier to transfer than highly complex ones or highly familiar ones.
- 22: Observability and trialability are positively related to successful best practice transfer.
- 23: The better performing the unit is, the more likely it will suffer from the NIH syndrome, and thus the more difficult the transfer of a best practice to that unit. However, Best practice transfer to extremely successful units is easier than to simply successful units.
- 24: The higher the perceived success of the source of the best practice, the easier the transfer.
- 25: The higher the cost associated with the best practice transfer for the receiving unit, the more difficult the transfer.
- 26: The higher the level of tacit knowledge embedded in the best practice, the more difficult the transfer.
- 27: The higher the velocity and viscosity of the transfer, the more successful the transfer.
- 28: The higher the amount of knowledgeable employees involved in the transfer, the easier the transfer.
- 29: The higher the level of management commitment, the easier the best practice transfer when employees of the receiving unit have low skills, are late adopters, and are poor performers.
- 30: The higher the level of identification of the best practice with a single leader, the more difficult the transfer throughout the organization.
- 31: The higher the number of multiple change projects existing simultaneously in the organization, the more difficult the transfer of the best practice.
- 32: The higher the level of employee skepticism toward change, the more difficult the transfer of the best practice.
- 33: Trust-building activities by managers are positively associated with more successful best practice transfer.
- 34: Compatibility of the best practice with previous employee experience is positively related to training success in best practice transfer.
- 35: Trialability and applicability of the best practice as part of the employee’s daily work is positively related to training success in best practice transfer.
- 36: Tailoring training to the audience is positively related to training success in best practice transfer.
- 37: Training that emphasizes the conceptual bases of the best practice is associated with more complete and diverse adoption of the practice.
- 38: A reward system encouraging competition and individual performance is negatively associated with more successful best practice transfer.
- 39: Employee and managerial readiness to sacrifice short-term goals is positively related with more successful best practice transfer.
- 40: A perceived threat to organizational or unit survival is positively related with more successful best practice transfer.
- 41: The existence of intrinsic rewards for knowledge sharing and using the practice is positively related to more successful best practice transfer. An overemphasis on extrinsic rewards for knowledge sharing and using the practice is negatively related to more successful best practice transfer.

- 42: Participation in the transfer and implementation of the best practice is positively related to adoption of the practice.
- 43: Organizational support for experimentation with the new practice is associated with more successful transfer over time.

REFERENCES

Agarwal, R. & Prasad, J. (1997). The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences, 28* (1), 557-582.

Alange, S., Jacobson, S. & Jarnehammar, A. (1998). Some aspects of an analytical framework for studying the diffusion of organizational innovations. *Technology Analysis & Strategy Management, 10* (1), 3-12.

Almeida, P. & Kogut, B. (1999). Localization of knowledge and the mobility of engineers in regional networks. *Management Science, 45* (7), 905-917.

Allen, M. & Brady, R. (1997). Total quality management, organizational commitment, perceived organizational support, and intraorganizational communication. *Management Communication Quarterly, 10* (3), 316-341.

American Productivity and Quality Center. (1999). *What is benchmarking*. Retreived from http://www.apcq.org.

Argote, L. (1999). *Organizational learning: Creating, retaining and transferring knowledge*. Boston, MA: Kluwer Academic Publisher.

Argote, L. & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational Behavior and Human Decision Processes, 82* (1), 150-169.

Argyris, C. & Schon, D. (1978). *Organizational learning: A theory of action perspective*. Reading, MA: Addison-Wesley.

Arthur, W. B. (1989). Competing technologies, increasing returns, and lock-in by historical events. *The Economic Journal, 99* (394), 116-131.

Astebro, T. (1995). The effect of management and social interaction on the intra-firm diffusion of electronic mail systems. *IEEE Transactions on Engineering Management, 42* (4), 319-331.

Becker, S. W. (1993). Ten reasons why misguided attempts fail (discussion of O. Harari's Jan. 1993 article). *Management Review, 82* (5), 30-32.

Berry, D.C. & Broadbent, D.E. (1987). The combination of explicit and implicit learning processes in task control. *Psychological Research, 49*, 7-15.

Bresman, H., Birkinshaw, J., & Nobel, R. (1999). Knowledge transfer in international acquisitions. *Journal of International Business Studies, 30* (3), 469-462.

Brown, J. S., & Duguid, P. (1991). Organizational learning and communities-of-practice: Toward a unified view of working, learning, and innovation. *Organization Science, 2* (1), 40-57.

Brown, J. S., & Duguid, P. (1998). Organizing knowledge. *California Management Review, 40* (3), 90-111.

Brown, M. G., Hitchcock, D. E., & Willard, M. L. (1994). *Why TQM fails and what to do about it*. Burr Ridge, IL: Irwin Professional Publisher.

Carson, K., & Stewart, G. (1996). Job analysis and the sociotechnical approach to quality: A critical examination. *Journal of Quality Management, 1*(1), 49-65.

Chang, F. S., & Wiebe, H. A. (1996). The ideal culture profile for total quality management: A competing values perspective. *Engineering Management Journal, 8* (2), 19-26.

Chumer, M., Hull, R., & Prichard, C. (2000). Introduction: Situating discussions about 'knowledge'. In C. Prichard, R. Hull, M. Chumer & H. Willmott (Eds.), *Managing knowledge: Critical investigations of work and learning*. (pp. xv-xxx). New York: St. Martin's Press.

Cohen, W. M., & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly, 35* (1), 128-152.

Cole, R. (1999). *Managing quality fads.* Oxford: Oxford University Press.

Covin, T., & Kilmann, R. (1990). Participant perceptions of positive and negative influence on large-scale change. *Group and Organizational Studies, 15*, 233-248.

Competitive Intelligence Magazine (1999). "Best practice" companies incorporate knowledge management in strategic goals. *Competitive Intelligence Magazine, 2* (2), 7.

Cool, K., Dierickx, I., & Szulanski, G. (1997). Diffusion of innovations within organizations: Electronic switching in the Bell system, 1971-1982. *Organization Science, 8* (5), 543-539.

Crosby, P. B. (1996). Illusions about quality. *Across the Board, 33* (6), 38-41.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge*. Boston, MA: Harvard Business School Press.

DeLone, W., & McLean, E. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research, 3* (1), 60-95.

DeLong, D., & Fahey, L. (2000). Diagnosing cultural barriers to knowledge management. *Academy of Management Executive, 14* (4), 113-127.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 48*, 147-160.

Dougherty, D. (1996). Organizing for innovation. In S. R. Clegg & W. R. Nord (Eds.), *Handbook of organizational studies* (pp. 424-439). Thousand Oaks, CA: Sage.

Earl, M. J., & Scott, I. A. (1999). What is a chief knowledge officer? *Sloan Management Review, 4* (2), 29-38.

Epple, D., Argote, L., & Devadas, R. (1991). Organizational learning curves: A method for investigating intra-plant transfer of knowledge acquired though learning by doing. *Organization Science, 2*, 58-70.

Epple, D., Argote, L., & Murphy, K. (1996). An empirical investigation of the micro structure of knowledge acquisition and transfer through learning by doing. *Operations Research, 44*, 77-86.

Fiol, C. M. (1996). Squeezing harder doesn't always work: Continuing the search for consistency in innovation research. *Academy of Management Review, 21* (4), 1012-1021.

Galbraith, C. S. (1990). Transferring core manufacturing technologies in high tech firms. *California Management Review, 32* (4), 56-70.

Garvin, D. A. (1993). Building a learning organization. *Harvard Business Review, 71* (4), 78-91.

Goodale, J., Koerner, M., & Roney, J. (1997). Analyzing the impact of service provider empowerment on perceptions of service quality inside an organization. *Journal of Quality Management, 2* (2), 191-215.

Granovetter, M.S. (1977). The strength of weak ties. *American Journal of Sociology, 78,* 347-367.

Hackman, J. R., & Wageman, R. (1995). Total quality management: Empirical, conceptual, and practical issues. *Administrative Science Quarterly, 40,* 309-342.

Hamel, G. (1991). Competition for competence and inter-partner learning within international strategic alliances. *Strategic Management Journal, 12,* 83-103.

Haunschild, P. R., & Miner, A. S. (1997). Modes of interorganizational imitation: The effects of outcome salience and uncertainty. *Administrative Science Quarterly, 42,* 472-500.

Hiam, A. (1993). *Does quality work? A review of relevant studies* (1043). New York, NY: The Conference Board.

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Sciences, 2* (1), 88-115.

Jaffe, A., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *Quarterly Journal of Economics, 108,* 577-598.

Johnson, B. M., & Rice, R. E. (1987). *Managing organizational innovation*. NY: Columbia University Press.

Johnson, D. J., Meyer, M. E., Berkowitz, J. M., Ethington, C. T., & Miller, V. D. (1997). Testing two contrasting structural models of innovativeness in a contractual network. *Human Communication Research, 24* (2), 320-348.

Khurana, A. (1999). Managing complex production processes. *Sloan Management Review, 40* (2), 85-97.

Kogut, B., & Zander, U. (1992). Knowledge of the firms, combinative capabilities, and the replication of technology. *Organization Science, 3* (3), 14-37.

Kostova, T. (1996). *Success of the transnational transfer of organizational practices within multinational companies.* Unpublished Ph.D.thesis. University of Minnesota.

Kramer, R. M. (1991). Intergroup relations and organizational dilemmas: The role of categorization processes. *Research in organization behavior, 13,* 191-228.

Lapre, M.A.,, & Van Wassenhove, L.N. (2001). Creating and transferring knowledge for productivity improvements in factories. *Management Science, 47* (10), 1311-1325.

Leonard-Barton, D., & Deschamps, I. (1988). Managerial influence in the implementation of new technology. *Management Science, 34* (10), 1252-1265.

Leonard, D. (1995). *Wellsprings of knowledge*. Boston, MA: Harvard Business School Press.

Levitt, B. S., & March, J. G. (Eds.). (1995). *Organizational learning*. Thousand Oaks, CA: Sage.

Lewis, L. (1997). Users' individual communicative responses to intraorganizationally implemented innovations and other planned changes. *Management Communication Quarterly, 10* (4), 455-490.

Lewis, L. (1999). Disseminating information and soliciting input during planned organizational change: Implementers' targets, sources, and channels for communicating. *Management Communication Quarterly, 13* (1), 43-75.

Lewis, L. (2000). 'Blindsided by that one' and 'I saw that one coming': The relative anticipation and occurrence of communication problems and other problems in implementers' hindsight. *Journal of Applied Communication Research, 28* (1), 44-67.

Lewis, L., & Siebold, D. (1996). Communication during intraorganizational innovation adoption: Predicting users' behavioral coping responses to innovations in organizations. *Communication Monographs, 63* (2), 131-157.

Lewis, M. (2000). Exploring paradox: Toward a more comprehensive guide. *Academy of Management Review, 25* (4), 760-776.

Locke, E. A., & Jain, V. K. (1995). Organizational learning and continuous improvement. *The International Journal of Organizational Analysis, 3* (1), 35-68.

Management Review (1999). Survey on knowledge management. *Management Review, 88* (4), 20-23.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science, 2* (1), 71-87.

March, J. G., Sproull, L. S., & Tamuz, M. (1991). Learning from samples of one or fewer. *Organization Science, 2* (1), 1-13.

Martin, G., & Beaumont, P. (1998). Diffusing 'best practice' in multinational firms: Prospects, practice and contestation. *The International Journal of Human Resource Management, 9* (4), August 1998.

McNabb, D. E., & Sepic, F. T. (1995). Culture, climate, and total quality management: Measuring readiness for change. *Public Productivity & Management Review, 18* (4), 369.

Mintzberg, H. (1980). *The nature of managerial work*. Englewood Cliffs, NJ: Prentice-Hall.

Molinski, A. (1997). Sanding down the edges: Paradoxical impediments to organizational change. In L. Dosier & J. B. Keys (Eds.), *Academy of Management best paper proceeding*s (pp. 314-318). Boston, MA: Georgia Southern University.

Moore, G., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research, 2* (3), 192-222.

Newell, S. & Clark, P. (1990). The importance of extra-organizational networks in the diffusion and appropriation of new technologies. *Knowledge: Creation, Diffusion, Utilization, 12* (2), 199-212.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5* (1), 14-37.

O'Dell, C., & Grayson, C.J. (1998). *If only we knew what we know: The transfer of internal knowledge and best practice*. New York: The Free Press.

Oliver, C. (1992). The antecedents of deinstitutionalization. *Organization Studies, 13* (4), 563-588.

O'Neill, H., Pouder, R., & Ruchholtz, A. (1998). Patterns in the diffusion of strategies across organizations: Insights from the innovation diffusion literature. *Academy of Management Review, 32* (1), 98-114.

Orlikowski, W. (2002). Knowing in practice: enacting a collective capability in distributed organizing. *Organization Science, 13* (3), 249-273.

Osterloh, M., & Frey, B.S. (2000). Motivation, knowledge transfer, and organizational forms. *Organization Science, 11* (5), 538-550.

Papa, W. H., & Papa, M. J. (1992). Communication network patterns and the re-invention of new technology. *Journal of Business Communication, 29* (1), 41-61.

Pfeffer, J., & Sutton, R. (2000). *The knowing-doing gap: How smart companies turn knowledge into action*. Boston, MA: Harvard Business School Press.

Polanyi, M. (1967). *The tacit dimension*. London: Routledge.
Reger, R.K., Gustafson, L.T., Demarie, S.M., & Mullane, J. (1994). Reframing the organization: Why implementing total quality is easier said than done. *Academy of Management Review, 19* (3), 565-575.
Rice, R. E., & Case, D. (1983). Computer-based messaging in the university: A description of use and utility. *Journal of Communication, 33* (1), 131-152.
Rice, R.E., & Danowski, J. (1993). Is it really just like a fancy answering machine? Comparing semantic networks of different types of voice mail users. *Journal of Business Communication, 30* (4), 369-397.
Rice, R.E., & Rogers, E.M. (1983). Reinvention in the innovation process. *Knowledge: Creation, Diffusion, Utilization, 1* (4), 499-513.
Rogers, E.M. (1983). *Diffusion of innovations* (4th ed.). New York: The Free Press.
Rogers, E.M. (1995). Lessons for guidelines from the diffusion of innovations. *The Joint Commission Journal on Quality Improvement, 21* (7), 324-327.
Rosenberg, N. (1994). *Exploring the black box: Technology, economics, and history*. Cambridge, UK: Cambridge University Press.
Simard, C., & Rice, R.E. (2006). Managerial information behavior: Relationships among total quality management orientation, information use environments, and managerial roles. *Total Quality Management and Business Excellence, 17* (1), 79-95.
Simon, H.A. (1991). Bounded rationality and organizational learning. *Organization Science, 2* (1), 125-134.
Simonin, B.L. (1999). Ambiguity and the process of knowledge transfer in strategic alliances. *Strategic Management Journal, 20*, 535-623.
Sitkin, S., Sutcliffe, K., & Browning, L. (1996). *Organizational effectiveness and tailoring TQM to situational requirements: Distinguishing control from learning in total quality management.* ASQC Web Page, Project summary.
Sitkin, S.B. (1996). Learning through failure: The strategy of small losses. In M. D. Cohen & L. S. Sproull (Eds.), *Organizational learning* (pp. 541-577). Thousand Oaks, CA: Sage.
Sitkin, S.B., Sutcliffe, K. M., & Schroeder, R. G. (1994). Distinguishing control from learning in total quality management: a contingency perspective. *Academy of Management Review, 19* (3), 537-565.
Soin, S.S. (1992). *TQC essentials: Key elements, methodologies, and managing for success*. New York: McGraw-Hill.
Star, S.L. (1993). Cooperation without consensus in scientific problem solving: Dynamics of closure in open systems. In S. Easterbrook (Ed.), *CSCW: Cooperation or conflict*. London: Springer-Verlag.
Starbuck, W.H. (1983). Learning by knowledge-intensive firms. *Journal of Management Studies, 29*, 713-738.
Staw, B., Sandelands, L., & Dutton, J. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly, 26*, 501-524.
Stone, D., & Eddy, E. (1996). A model of individual and organizational factors affecting quality-related outcomes. *Journal of Quality Management, 1* (1), 21-48.
Szulanski, G. (1995). *Appropriating rents from existing knowledge: Intra-firm transfer of best practice*. Fontainebleau, FR: INSEAD.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practices within the firm. *Strategic Management Journal, 17,* 27-43.

Thompson, K.R. (1998). Confronting the paradoxes in a total quality environment. *Organizational Dynamics, 26* (3), 62-74.

Tornatzky, L.G., & Klein, K.J. (1982). Innovation characteristics and innovation adoption-implementation: A meta-analysis of findings. *IEEE Transactions on Engineering Management, 29* (1), 28-45.

Van de Ven, A.H. (1986). Central problems in the management of innovation. *Management Science, 32*, 590-607.

Walsh, J., & Ungson, G. (1991). Organizational memory. *Academy of Management Review, 16* (1), 57-91.

Watzlawick, P., Weakland, J., & Fisch, R. (1974). *Change: Principles of problem formation and problem resolution*. New York: Norton.

Weick, K.E. (1969). *The social psychology of organizing* (2nd ed.). Reading, MA: Addison-Wesley.

Westbrook, J.D. (1993). Organizational culture and its relationship to TQM. *Industrial Management, January/February*, 1-3.

Wigand, R., Picot, A., & Reichwald, R. (1997). *Information, organization and management*. New York: Wiley.

Winter, S.G. (1987). Knowledge and competence as strategic assets. In D.J. Teece (Ed.), *The competitive challenge: Strategies for individual innovation and renewal* (pp. 159-184). Cambridge: Ballinger

Winter, S.G. (1994). Organizing for continuous improvement: Evolutionary theory meets the quality revolution. In J. A. C. Baum & J. V. Singh (Eds.), *Evolutionary dynamics of organizations* (pp. 90-108). New York: Oxford University Press.

Zander U., & Kogut B. (1995). Knowledge and the speed of the transfer and imitation of organization capabilities: An empirical test. *Organization Science, 6* (1), 76-92.

Zuckerman, A., & Buell, H. (1998). Is the world ready for knowledge management? *Quality Progress, 31* (6), 81-84.