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DEVELOPING THE REQUISITE ORGANIZATIONAL, ATTITUDINAL, AND BEHAVIORAL CONDITIONS FOR EFFECTIVE KNOWLEDGE MANAGEMENT: A REVIEW OF CURRENT RESEARCH

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Developing the Requisite Organizational, Attitudinal, and Behavioral Conditions for Effective Knowledge Management: A Review of Current Research

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Abstract

This paper is an exploration of the human and organizational side of knowledge management: the characteristics that facilitate knowledge creation, retention, and flow in some organizations, the lack of which impedes progress in others. The paper adopts a survey approach, and should not be viewed as empirical research. Five current issues in this area of research are identified: leadership, alignment of incentives, communications issues, organizational culture issues, and organizational structure issues. Current research in each of these areas is discussed, and opportunities for future research are suggested.

Keywords: Knowledge management, organizational culture, organizational structure, leadership, incentives

Introduction

Few developments in the current business related academic literature are receiving more attention than knowledge management. Some hail knowledge management as the most important development in the business literature in decades, combining the advances of information technology with those advancing models of progressive organizational behavior, leadership, and empowering infrastructures. The comments of others indicate that there is at least a sizeable cadre of academics and researchers that view knowledge management as the latest fad in a long line of managerial hype, with the clear expectation that it too will soon fall to earth.

What is clear in reviewing the literature is the increasing emphasis in organizational research on the importance of tapping the unrealized tacit knowledge contained in the collective memories of knowledge workers throughout the organization. While knowledge is often categorized as explicit (codified) or tacit (subjective, contextual), even explicit knowledge must be operated upon with a degree of tacit knowledge. To this extent, it can effectively be argued that all knowledge is, at its root, tacit knowledge. (Roberts, 2000) To the degree that this knowledge is untapped organizationally, the organization fails to reach its full potential as a collective repository of the knowledge contained within its individual knowledge workers. As Lew Platt, the former CEO of Hewlett-Packard, stated, "If HP knew what HP knows, we would be three times as profitable." (Coates, 2001)

One of the goals of knowledge management is the stimulation of organizations, and the individuals within them, to reuse intellectual property. (Sussman, 2001) The purpose of this goal is to retain the use of intellectual property that often departs with a human knowledge worker's leaving the firm. Another way of defining this goal is that organizations today are striving to have their collective base of knowledge centered on, or embedded within their products and services, not exclusively within their people. (Bajaria, 2000) In this way, learning is embedded permanently within the organizational memory, and not subject to the transitory nature of increasingly migratory knowledge workers.(Cross & Baird, 2000)

An additional theme becomes clear upon an even cursory review of the knowledge management literature: while knowledge management is often thought of, both conceptually and operationally, as an information technology initiative, the predominance

of implementation issues center around the human and organizational elements required to effectively enable and manage the knowledge culture. As Erik Erickson said, we are at the most basic level a "teaching species." (Maas, 2000) What occupies much of the current literature in knowledge management are methods and approaches to maximize the both the teaching and learning capacity in organizations so that the full collective potential, the full measure of the firm's intellectual capital, can be harnessed. It is this quality of the organization's "absorptive capacity" (Gold, Malhotra, & Segars, 2001) that is the focus of this paper.

The literature search connected with this review avoided issues connected with the information technology aspects of knowledge management, but instead focused on the aforementioned human and organizational prerequisites for effective knowledge management to occur, as well as the numerous obstacles and organizational (leadership and cultural) limitations constraining effective knowledge management. Although the literature in these areas is clearly divergent in many aspects (Spender, 2000), a number of common themes emerge. It is a review of these themes that is the focus of this paper.

Current Issues

Although a wide range of issues emerge in the current literature, they can be organized into the five following categories:

(1) Leadership Issues
(2) Alignment of Incentives
(3) Communication Issues
(4) Organizational Culture
(5) Organizational Structure

The literature is predominately focused on these behavioral/cultural/organizational issues rather than technological issues such as knowledge storage, collaborative-work support, etc. The primacy of these issues in the literature is intuitive: ultimately, knowledge management is concerned with sharing, teaching, and organizational communication. As one researcher framed the problem, "…the most effective planning and execution will take place outside technology; technology will serve to support the sharing of knowledge." (DeTienne & Jackson, 2001)

Leadership Issues

The goal of transforming organizations into cultures that thrive on sharing knowledge, as opposed to the traditional models that are often based on command and control and internal competition, i.e., knowledge as power, is a daunting task, and one with no hope of success without committed, informed and visionary leadership.(Martin, 2000) Knowledge is often characterized in evolutionary terms (from data, to information, to knowledge). According to one author, there is a fourth dimension beyond knowledge, that of wisdom.(Coates, 2001) It is this dimension that organizational leadership must exhibit in developing and sustaining the kinds of organizational changes required to convert the culture into one predicated on knowledge sharing/learning. One perspective suggests that three qualities are required from a leadership perspective in the creation of an effective knowledge-sharing environment: 1. A clearly communicated corporate vision that stresses the value of knowledge, 2. An alignment of individual and organizational incentives around knowledge sharing, and 3. An alignment of organizational and individual values, that provide the context for knowledge creation/sharing.(Gold, Malhotra, & Segars, 2001) Without the first of these qualities, that of clearly articulated corporate vision by leadership, the KM initiative will clearly struggle. Leadership must embrace the value of knowledge to the organization, and must assure that their behavior matches their language. Jack Welch, legendary CEO of General Electric, stated that one of the top priorities of his headquarters staff is the acquisition and dissemination of best practices to his operating units.(Stewart, 2001)

Two issues in particular emerge from the literature in relation to the role and responsibility of leadership in fostering a knowledge-sharing environment: 1. Placing a high value on experimentation, and the acceptance of the concomitant risk of failure, and 2. Understanding the impact that downsizing has on the ability of the organization to optimize its knowledge sharing capacity.

In order to create new knowledge, an organization must develop a tolerance for mistakes made in the interest of developing that knowledge. Without this sense of permission to expand the boundaries of the known, knowledge workers will develop a kind of "cautious lethargy" in the face of fearing the reaction of leadership to their well-intended mistakes.(Rose, 2001) Developing a climate of trust and openness and a tolerance for experimentation is a clear requirement for an organizational culture that nurtures good knowledge management, and nothing is more important in this regard than the messages (formal and informal) sent

throughout the ranks by leadership.(Martin, 2000) It is also crucial that leadership's message and its behavior are aligned in this regard, i.e., a message to employees that leadership is tolerant of mistakes made in the interest of increasing knowledge, followed by punitive action for making those mistakes, will fall on deaf ears. Perhaps this is best illustrated by an example: a mill superintendent at Chaparral Steel authorized investing in a radical new saw design in an attempt to improve production speed and time. After a number of iterations, this very expensive project was scrapped…the saw just didn't work as they had hoped. This same individual was subsequently promoted to V.P. of operations, ostensibly in part because he took this risk, not in spite of it.(Swap, Leonard, Shields, & Abrams, 2001) It is this kind of, not only tolerance of, but embracing of mistakes in the interest of expanding knowledge that will optimize leadership's role in sustaining a knowledge sharing and learning culture.

A second example of a key leadership role is found in the relationship between downsizing and knowledge management. It is intuitive that an organization with a history of regular downsizing will have problems extracting knowledge from its employees. After all, why should an employee do anything, e.g., share his/her tacit expertise, which will increase the likelihood of their becoming a victim of the next round of layoffs? This kind of attitude is a reversion to the "knowledge as power" paradigm that is an obstacle to the development of effective knowledge management initiatives.

Lesser and Prusak (Lesser & Prusak, 2001) have identified five negative influences of downsizing on knowledge management programs, three of which are discussed here: 1. Often, the most valuable workers go first. This can take the form of "early outs," which typically incentivize older employees to retire before their planned departure. Consequently, their embedded knowledge often goes out the door with them, 2. Downsizing can do serious damage to the requisite social networks needed for the socialization required in effective knowledge management. Again, referring to those who take the early out options mentioned above, it is often these "tribal elders" who "know who knows what." 3. Undermining trust. Trust is essential for the kind of open communication required for effective knowledge management. After all, the voluntary sharing of tacit knowledge or expertise implies some degree of loyalty to the organization. Cutbacks can often erode this trust. Some leaders have taken these potential risks associated with downsizing so seriously that they have instituted, as an alternative, across the board pay reductions. This alternative, although the source of (hopefully) temporary pain for all members of the organization, can have the dual positive effect of maintaining the employee/employer covenant, and also stimulate the kind of knowledge expansion and diffusion required to overcome the business conditions that led to the reduction in the first place. Nucor Steel's approach to this goes even further: their "share the pain" program involves no layoffs, but graduated compensation reductions (graduated upward, i.e., top management takes the largest percentage cut).(Gupta & Govindarajan, 2000)

Alignment of Incentives

A second common thread in the literature is the numerous ways in which the organization and the individual must have relative alignment of incentives in order for knowledge sharing to flourish. This is at the heart of establishing a cultural context that is supportive of knowledge management, and that will facilitate the profound organizational paradigm shift from internal competition, based on knowledge hoarding, to a willingness and enthusiasm to share knowledge. Assuming that this will be driven simply by employees' wishes to serve the common good is the height of naiveté, particularly given the high portability of knowledge workers in the information economy. Clearly, the question of "what's in it for me?" must be considered. (Mellander, 2001)

It is clear that leadership must articulate an expectation that knowledge be shared. Perhaps the best example of this comes from Robert Buckman of Buckman Labs (often cited in the literature), when he said to his employees:

> "Those of you who have something to say now have a forum in which to say it. Those of you who will not contribute also will become obvious. If you are not willing to contribute or participate, then you should understand that the many opportunities offered you in the past will no longer be available." (De Long & Fahey, 2000)

It is clear, however, that leadership must also critically examine the incentives structure of the organization (both formal and informal) to assure that the cultural context is aligned. Perhaps the best examples of this are found in reviewing the consequences of misaligned incentives. A company whose primary product was baby food compensated its sales force on an individual basis, based on (compared to) the performance of other sales people on the force, i.e., the structure clearly incentivized individual performance, potentially at the expense of group performance. This became abundantly clear when one small group of salesmen discovered a new market for baby food among geriatrics who could no longer chew their food, but kept this market a secret for years in order to maintain their "knowledge as power" based competitive advantage (De Tienne & Jackson, 2001). This

knowledge hoarding allowed the individuals to maintain a competitive edge over their internal competitors, but at the clear expense of the firm, which consequently missed an opportunity to strategically market a previously untapped market. This is a case where misaligned incentives clearly led to a culture where knowledge is not freely shared, nor will it be given the conditions in place. Pfeffer and Sutton propose a number of methods to avoid the kind of scenario mentioned above, including rewarding collaborative work (a common theme with a number of variations throughout the literature), and avoiding financial (or other) incentives that are zero-sum based, in favor of always defining success based on the success of others. (Rose, 2001) Much of the thinking that under girds this consideration of aligning individual/organizational incentives in regards to knowledge management is based on Social Exchange Theory, i.e., the expectation, upon my giving, that their be a reciprocal returned to me. (Jarveena & Staples, 2001) In the words of Laurence Prusak, IBM Institute of Knowledge Management, "Knowledge is embedded in social relationships. People by nature don't share knowledge. It takes coaxing to get them to share what they know, and to absorb what other people know." (Lim & Klobas, 2000) This coaxing is necessary when people are operating in environments when incentives are, at best, misaligned, and at worst (as in the baby food example) contra-aligned in regards to the sharing of knowledge.

The experience of several organizations is instructive in exemplifying incentive alignment. Microsoft, for example, publicly credits contributors to their knowledge base with awards such as "most frequently downloaded item" and "Gem Status" for particularly beneficial contributions. (Sussman, 2001) Contributors to the Xerox Tiger Team (a panel of experts within the organization) are likewise recognized for their contribution throughout the organization. (Cross & Baird, 2000) Perhaps the best example of many of the above principles comes, once again, from Nucor Steel. All incentives at Nucor are group-based, and are typically dependent on the objective performance of the next level up the organizational ladder, i.e., the work unit is incentivized to contribute to the overall performance of the plant, the plant to the region, etc. For a shop-floor worker, having his incentive directly connected to the performance of a work group of 25-40 others, particularly in an environment of open communication where innovation is clearly valued, converts to strong motivation to assure that any process improvements are widely shared.(Gupta & Govindarajan, 2000)

Communication Issues

Three sub-themes emerge in the literature centering around the nature and media of communication in developing organizations and cultures conducive to knowledge management. These themes are, 1. The relationship between human and information technology aspects of developing a knowledge management culture; 2. Electronic vs. information rich communication; and 3. Spatial issues (both physical and cyber).

Clearly, there is an overemphasis on the information technology aspects of knowledge management, at the expense of fully appreciating the much more difficult human and organizational obstacles. While the predominance of the literature frames knowledge management in these (managerial/organizational) terms, the propensity of managers has been to invest in and focus on the information technology side of knowledge management.(Jacob & Ebrahimpur, 2001) One of the great myths cited concerning management's fallacies in assessing knowledge management is that electronic communication can replace the rich experience of face-to-face communication, with all of its accompanying sensory cues that are absent in most forms of electronic communication.(Maas, 2000)

Many firms have come to rely on electronic communication as a major, if not the major form of internal communication. One author summarized the inherent limitations of this trend as follows, "The ability of ICT's (information communication technologies) to assist the transfer of tacit knowledge is restricted by the need for a relationship of trust and mutual understanding to exist between the parties involved. The establishment of such a relationship, although possible through electronic communication, normally requires regular face-to-face contact."(Roberts, 2000) Again, as framed earlier in this review, knowledge management, and the accompanying knowledge transfer required, is ultimately about effective (not simply efficient) communication. The issues surrounding optimizing these skills far exceed those of the information technologies themselves in importance to this field of endeavor. Again, as stated by Roberts, "If technological capabilities are permitted to determine the evolution of economic activity, the knowledge-based economy may become the 'codified knowledge economy,' with the subsequent loss of the richness, diversity, and complexity of the inarticulate embedded within the tacit dimension." (Roberts, 2000) Another effective illustration of the obstacles in attempting to transfer tacit knowledge exclusively through electronic media is the understanding the sequence of this communication channel: knowledge (the sender's) is reduced to information, which is reduced to data. This data flows through the electronic media, is retrieved by the recipient as data, which must become information to him/her, and ultimately (new) knowledge. (Roberts, 2000) This is a very slippery slope, and illustrates well the importance of rich-field communication in the transfer of tacit knowledge.

Finally, there is a spatial dimension to the important communications issues in knowledge management, to the extent that one researcher cites the Spatial School of Knowledge Management. (Earl, 2001) The development of open environments to enhance "contactivity" is the goal of proponents of this school, and its manifestations can be found in examples like the coffee house that one firm built for open and unstructured internal communication, to the medieval street that British Airways built connecting key functions at its headquarters, hopeful of unstructured and serendipitous transfer of tacit knowledge between knowledge workers, or departments, that might not otherwise come into regular contact.(Earl, 2000) Other dimensions of the spatial school are not physical, but are in the cyber realm. Microsoft's development of online communities for different categories of its team members was largely an effort to build an electronic version of the "water cooler," i.e., a place where employees regularly shared tacit knowledge in informal ways, unrestricted by organizational convention. (Sussman, 2001) Xerox created a similar structure with its Transition Alliance, an internal electronic community designed to support technology transfer (Storck & Hill, 2000). In summary, the spatial context of knowledge management is an important basis of support for success, and many organizations are creating innovative structures designed to maximize knowledge transfer through enhancing open communication.

Organizational Culture

Perhaps the biggest surprise and disappointment to the ill-prepared organizational knowledge management "missionary" is the massive degree to which corporate culture affects the success of the knowledge management venture. This facet of current research is too large to be comprehensively covered here, and has been touched on in all of the previous aspects covered above. For the purposes of this review, we examine the following issues in the relationship between knowledge management and corporate culture: 1. The importance of alignment of formal messages with informal (grapevine/story-telling) messages, 2. The importance of mutual trust and, 3. The issue of subcultures, industry culture, and other factors (gender, age, etc.).

Delong and Fahey have outlined four ways in which the prevailing organizational culture impact knowledge transfer: 1. It defines what knowledge is and what's worth sharing, 2. It defines the relationship between individual and organizational knowledge (who can hoard…who must share), 3. It creates the context for social interaction that determines how knowledge will be shared and used, and finally (and critically), it determines how new knowledge will be created and used, and creates expectations regarding outcomes of risk/failure when new knowledge initiatives do not succeed.(De Long & Fahey, 2000)

Martin et al have identified seven archetypal stories that circulate throughout most organizations in various forms (Swap, Leonard, Shields, & Abrams, 2001):

- The rule-breaking story
- Is the big boss human?
- Can the little person rise to the top?
- Will I get fired?
- Will the organization help me if I have to move?
- How will the boss react to mistakes?
- How will the organization deal with obstacles?

These authors stress the importance of realizing that the pervasiveness and intensity of these organizational stories, if they are inconsistent with the formal messages from management, will subvert the creation of a culture that nurtures and sustains the free transfer of knowledge. They further underscore the limitations of stories within the culture: they are poor vessels for the transfer of expertise and skills, but rather serve to communicate about the organizational systems and context itself.(Swap, et al, 2001)

The critical nature of mutual trust between employee and employer, and between internal groups within the organization must be considered. The imperatives of transferring tacit knowledge within the organization often bring together individuals and departments/functions that would not otherwise be in regular contact. Furthermore, these people/functions may carry with them a history of quite the opposite: intramural competition. Again, the lesson inherent in facing this obstacle is in the alignment of incentives. The key to developing the degree of trust between individuals and groups within the organization required for open transfer of knowledge is the development of reward structures (formal and informal) that avoid zero-sum outcomes, and that create a sense of allied interests in striving for the best collective outcomes. Violations of this trust will be minimized, because they are essentially violations of the parties' own self-interest. (Jarvenpaa & Staples, 2001)

Finally, a brief mention should be made of the related issue of the importance of subcultures within the organization, as well as gender and age issues. Subcultures directly impact what is seen as valid knowledge within the organization. (De Long and Fahey,

2000) The literature is full of references to the constraints faced when, for example, engineering and marketing communicate. This tension can be functional, as in the previous example, or just as often, regional. One CEO of stated that "we provide pretty much the same services in every location, but my regional managers would rather die than learn from each other." (Gupta and Govindarajan, 2000) Again, sentiments like these are diagnostic of organizations suffering from knowledge sharing pathologies that are the result of misaligned incentives. A critical review of what motivates these regional managers is required to assure that incentives for sharing are in place, and that rewards are not zero-sum.

Finally, a brief mention is made of the observation that the employee categories most likely to share knowledge are younger employees and women, meaning that older males are those least likely to share knowledge, and that workers in general are more willing to share information products than their own personal expertise.(Jarvenpaa and Staples, 2001) These findings appear to relate again to trust and alignment of incentives, but are particularly challenging in that much of the unrealized knowledge potential lying dormant within organizations is held by older males with long organizational histories. Special strategic consideration must be given to developing knowledge sharing structures, rewards, and cultural adaptations that optimize sharing from this important subset of the organization.

Organizational Structure

A brief review of organizational structure issues concludes this analysis. It is clear in reviewing current literature that effective knowledge transfer best occurs in environments of open communication, where tacit knowledge can be freely shared among members of the organization that may not normally interact, and without the constraints of those organizational norms that can place limits on knowledge transfer. Moving organizations from models that are centered around command and control to those that model free sharing of knowledge involves more than just consideration of the organization's methods of communication and its culture, but also of the very structure of the organization itself.

At the very least, organizations that develop the ability to effectively grow and disseminate knowledge have done so through various forms of structural cross-fertilization. This cross-fertilization can take the form of structures as basic as cross-functional teams, described by Van Grogh as "microcommunities of knowledge."(Allred, 2001) In more elaborate forms, this cross-fertilization can occur in matrix organizations, where every member of the organization has a dual citizenship: one in the standard hierarchical structure, and one or more in any number of project teams, communities of practice, etc. (Barrow, 2001) The specific structure is less important than examining the organization with an eye toward optimizing structural support for cross-fertilization of tacit knowledge. This cross-fertilization can clearly involve customer groups as well as employees. Hallmark Cards has developed a customer centered concept of knowledge transfer called the "permeable membrane strategy," that regularly brings the voice of the customer into the creation of organizational knowledge. (Brailsford, 2001)

Directions for Future Research

At least three possibilities for future research emerge from the previous discussion, and the literature review that supports it.

(1) The growth of the portable knowledge worker during the decade of the 90's has been a frequently discussed issue in the business literature. Although the current retreat to more normal business conditions on the part of many technology firms, and the current economic downturn, have likely decreased some of the voluntary turnover at information based firms, knowledge workers are still likely to view themselves as more capable of firm to firm migration than, for example, production workers in the (so called) "old economy." There appear to be opportunities for research exploring relationships between the migratory nature of knowledge workers, and the development of the requisite mutual trust required for effective knowledge extraction and transfer within organizations. A related area of research is the relationship between turnover rate and knowledge management effectiveness.

(2) Given the various organizational structures in which knowledge management takes place (hierarchical, matrix, etc.), opportunities for research appear to exist in establishing the existence of relationships between organizational structure and the effectiveness of knowledge management programs within the various organizational structures.

(3) Finally, opportunities for research exist in establishing the degree to which various electronic media (especially given their rapid rate of advance, e.g., virtual reality technologies) can act as proxy for the rich-media communication styles preferable in the establishment of the degree of mutual trust and shared context required for the transfer of tacit knowledge.

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