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# Knowledge Management Strategies: developing an activity-based approach

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## Abstract

*In practice, the implementation of knowledge management strategies may be driven by alternative orientations. This paper examines the relationship between the orientations that drive the implementation of KM strategies and the distinct knowledge management activities themselves. An alternative approach to the development of knowledge management strategies that uses an appropriate combination of knowledge management drivers is proposed and a preliminary analysis of practitioners who have implemented knowledge management initiatives is presented as the basis for further research.*

## Keywords

Knowledge Management, Knowledge Management Strategy, Knowledge Processes

## INTRODUCTION

Given the somewhat elusive nature of definitions of Knowledge Management (KM), managers can ascribe alternative meanings to the concept (Alavi and Leidner, 2001). Therefore in practice, the implementation of knowledge management strategies may be driven by alternative orientations including; an orientation toward the technology infrastructure; an orientation toward the activities and interactions of knowledge workers; and an orientation toward management and control practices (Miles *et al.*, 1998; Holtshouse, 1998). While the social processes of knowledge creation, transfer, storage and application are acknowledged to be important (Pentland, 1995), developing and implementing these social processes based solely on a single orientation may fail to ensure the success of KM initiatives. Furthermore, the popular resource-based view of knowledge in many knowledge management strategies may run counter to the social nature of knowledge activities.

This paper presents an initial study within larger research program that seeks to articulate a framework to guide the development of KM strategies. Rather than driving knowledge activities from preconceived orientations, the proposed framework aims to develop an appropriate combination of knowledge management drivers that are contingent to the social processes of KM. For the purposes of this paper, the relationship between the orientations that drive the implementation KM strategies and the knowledge management activities themselves are first examined and an alternative approach to the formulation of KM strategies is then proposed. As the basis for further research into the development of an activity-based framework for KM strategies, we then present some preliminary results from a survey of practitioners who have implemented or are considering the implementation of knowledge management.

## SOCIAL PROCESSES OF KNOWLEDGE MANAGEMENT

The social processes of knowledge management can be considered as the “last mile” of knowledge management initiatives. They are the activities that the drivers of knowledge management seek to influence and facilitate. The social nature of these processes is widely discussed under the broad research tradition of the sociology of knowledge (e.g. Berger and Luckman, 1967; Holzner and Marx, 1979). In this tradition, organisations are viewed as “knowledge systems” encompassing a collection of social activities enacted as “knowledge processes” (Holzner and Marx, 1979). These knowledge processes are identified as:

- Construction – The process through which new material is added or replaced within the collective stock of knowledge.

- Organisation – The process in which bodies of knowledge are related to each other, classified and integrated.
- Storage – The process whereby observations and experiences that have been tested and socially ratified are stored.
- Distribution – The process of channelling knowledge to needy recipients.
- Application – The process whereby knowledge is applied in practices (Holzner and Marx, 1979).

These five processes are considered to be essential parts of an effective learning process in a social collective (Pentland, 1995) or as important knowledge process management foci (Gold *et al.*, 2001). Nonetheless, the social nature of these processes is overshadowed by an emphasis on knowledge (Teece, 1998; Glazer, 1998; Holtshouse, 1998). In practice then, attention is directed toward “knowledge objects” rather than the social activities from which knowledge emerges. The consequence of viewing knowledge activities as five processes is that knowledge can be appropriated and managed as any other form of resource. This resource-based view of knowledge pervades KM research within the information system research tradition (Alavi and Leidner, 2000). Various authors for example, consider variations to the processes as: acquire, convert, apply and protect (Gold *et al.*, 2001); create, transfer and use (Skyrme and Amidon, 1998; Spender, 1996); acquire, collaborate, integrate and experiment (Leonard, 1995); create, transfer, assemble, integrate and exploit (Teece, 1998); create, store, transfer and apply (Alavi and Leidner, 2000). Inevitably in such classifications, the social nature of these activities is either acknowledged to be problematic (e.g. Huber, 2001; Constant *et al.*, 1994; Rappleye, 2000) or largely assumed to be ideal and non-problematic. In this study, we seek an alternative view and propose that by emphasising the *social* aspects of knowledge management activities, KM strategies that are more sensitive to the complexities of human interaction can be formulated.

## **KNOWLEDGE MANAGEMENT STRATEGIES AND DRIVERS**

A knowledge management strategy can be considered as “a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that strive to improve organisational performance” (O’Dell and Grayson, 1998). Knowledge management drivers on the other hand can be considered to be the focus of strategy design and implementation that deals with the direction and emphasis that KM initiatives take. The drivers of knowledge management will influence choices in investment in KM initiatives, both in terms of information technology and investment in social capital. Our analysis of the KM literature has identified three major drivers of KM strategy that are summarised below.

### **Technology-Centric View (Technology Driven Strategy)**

The information and communications technology (ICT) infrastructure of organisations is critical to knowledge management activities (Earl, 2001; Alavi and Leidner, 2001). For instance Alavi and Leidner (2001:108) recognise that “...Advanced information technologies (e.g., the Internet, intranets, extranets, browsers, data warehouses, data mining techniques, and software agents) can be used to systemize, enhance, and expedite large-scale intra- and inter-firm knowledge management”. As such, information technologies are viewed as forming crucial elements of structural dimension needed to mobilise social capital in facilitating knowledge activities (Gold *et al.*, 2001). In a similar vein, technology is also often associated with intellectual capital (Davenport and Prusak, 1997) as well as enterprise intelligence such as the trade-driven notion of the “Enterprise Intelligence Quotient” – that is, the ability to leverage technology as a tool for effectively sharing information throughout the extended enterprise.

Technology optimists view information technology as an important ingredient in the design of learning organisations, even to the point of asserting that knowledge management starts with technology (Greengard, 1998). Given the inherent acceptance of technologies and the wide array of technological solutions (Blake, 2000), many organisations have become inclined to embrace technologically driven approach to knowledge management strategies.

While IT departments are often seen as “prisoners of their own fascination” (Davenport, 1999), knowledge management cannot be completely encompassed by technology but merely augmented by it (Hilderbrand, 1999). Over reliance on technologies may lead to the promotion of incompetent human behaviour or “competency traps” (Levitt and March, 1998) which in some instances, leads to the abandonment of technology altogether. As Huber (2001) notes, the most problematic issues are in getting workers to use technology and engaging them in knowledge management activities.

The failings of technological solutions within business and social environments (Lawton, 2001; Strassmann, 1997) suggest that wholly technologically driven knowledge management strategies should be exercised with extreme caution.

### **Social-Centric View (Knowledge Worker Driven Strategy)**

Although widely recognised as important in the information systems academic literature, people and “soft” issues are in practice, rarely given explicit treatment (though not attention) by managers (Doherty and King, 1998). This trend is also apparent with respect to knowledge management with a great deal of emphasis on defining and measuring the value of knowledge, as well as its flow and application (Teece, 1998; Glazer, 1998; Holtshouse, 1998). In effect, while the concept of knowledge has gained much attention, the people who create and manipulate knowledge remain largely unattended.

However, with increasing attention being paid to the roles of tacit knowledge and intangible information (Polanyi, 1974; Constant *et al.*, 1994), many researchers are focusing on the social activities of knowledge workers. For example, Nonaka and Takeuchi (1995) examine how knowledge is socially created; Zack (1999b) investigated the effects of workers’ shared knowledge space on the codification of knowledge; Von Krogh *et al.* (2000) focus on the fostering of “micro-communities” – closely tied social working groups; Marshall and Brady (2001) highlight the political nature of knowledge; and even the socio-psychological aspects of knowledge workers have been noted in various research on commitment (Newman and Rajiv, 1996; Kwon and Zmud, 1987; Markus, 1981) and motivation (Huber, 2001; Constant *et al.*, 1994; Rappleye, 2000).

Adopting KM strategies driven by knowledge worker activities and interactions channels organisational focus toward the sociological properties whereby workers’ communities are effective and encompass learning opportunities (George *et al.*, 1995). However, depending on the stability and how pervasive and entrenched the knowledge workers’ social practices are, employees can potentially engage in “defensive routines” that undermine learning (Barley, 1986). Given that knowledge workers frequently have multiple competing interests, specific strategies are hard to specify and enforce (Heimer, 1992). Therefore while knowledge worker driven strategies capture the attention of management, this does not readily translate into action.

### **Organisation-Centric View (Management Driven Strategies)**

The role of organisational management has also been identified as critical in any knowledge management strategic equation (e.g. Pan and Scarbrough, 1999; Nambisan *et al.*, 1999). However, various difficulties arise if knowledge management strategies become too organisation-centric.

According to Drucker (1993), an organisation is a single-purposed, single-minded social ecology. The concern for knowledge management therefore becomes the formulation of broader management objectives, and in turn, this translates into management practices that are by large skewed to the benefits of the organisation. Knowledge workers are conditioned under management-driven practices to fulfil organisational objectives in which knowledge that is deemed to be of no direct value to the organisation is not considered to be knowledge at all. Consequently, organisation-centric knowledge management initiatives are considered to be the most commercial in orientation (Earl, 2001). Such approaches are popular due to the economic gains and the level of accountability and control presented to senior management (Miles *et al.*, 1998; Holtshouse, 1998).

While the perceivable gains and accountability of knowledge management initiatives vary between organisations, O’Dell and Grayson (1998) developed the value proposition

approach to improve the visibility of KM benefits and organisational objectives by providing a link between action (KM strategy) and the payoff or outcome of the strategy. "*The value proposition is the business case for action (and investment)*" (O'Dell and Grayson, 1998:31). This approach was developed with the intention of assisting organisations identifying their focus in knowledge management and consists of three categories:

1. Customer intimacy – Focuses on capturing knowledge about customers, developing and transferring knowledge and understanding of customers' needs, preferences, and business to increase sales, as well as bringing knowledge of the organisation to bear on customer problems.
2. Operational excellence – Focuses on the transfer of operational processes and know-how from top-performing business units and processes to less-well-performing businesses, ultimately improving the organisation's overall performance, reducing expenses, and increasing revenue.
3. Product-to-market excellence – Focuses on two transfer strategies: 1) ensuring new ideas and new design from inside and outside the organisation are incorporated into product and services offering; and 2) accelerating the product development process by reusing lessons learned from earlier attempts.

Notwithstanding the increased visibility of organisational benefits, if organisations are viewed as a collection of differing motives and interests (Corbett and Scarbrough, 1992), an organisation-centric approach may potentially work against the benefits of the employees as it do not pay explicit attention to them. Through the total organisation-centric view, knowledge management practices are formulated with the objectivity epistemological principle whereby knowledge activities are often taken for granted (Epple *et al.*, 1991). Practices of this kind assume the acts of knowledge management are ready to enact and non-problematic. Consequently, "the social nature of the underlying phenomena gets lost in the rhetoric of information processing and managerial decision making" (Pentland, 1995:4). In general, there is immense censorship of information under the "hidden leadership" of such practices (Churchman, 1968). At the operational level, the emphasis of control and accountability runs counter to the nature of knowledge activities (Miles *et al.*, 1998; Holtshouse, 1998), stifling creativity and knowledge creation (Blizzard and Hasenauer, 2000). Other problems include the restriction of innovations through "creative gatekeepers" (Bernacki, 2000) as well as issues with information and expertise ownership (Jarvenpaa and Staples, 2000) reflecting the conflicting interests of organisations and knowledge workers.

## **CONVENTIONAL KNOWLEDGE MANAGEMENT STRATEGY**

A typical KM strategy formulation process initially requires the development of KM objectives that are aligned with the broader organisational objectives. Organisations must determine the focus of business needs and analyse how the management of knowledge assets can assist in achieving these needs. As an example, the value proposition approach (O'Dell and Grayson, 1998) is a technique that organisations can use to establish the linkage between business objectives and KM focus. Having established the above, an organisation has to decide to invest in and implement that KM focus. These decisions depend on the orientations of the KM strategy group (i.e. technology-centric, social-centric, organisation-centric). Through investment and implementation, the processes of knowledge construction, organisation, storage, distribution and application will be guided by the adopted orientation (Figure 1). In this sense, the way in which knowledge processes are conducted is highly dependent on the orientation of KM drivers.

## **ACTIVITY-BASED KNOWLEDGE MANAGEMENT STRATEGY**

All three drivers of knowledge management provide crucial insights to how KM can be initiated and conducted. The success of knowledge management strategies depends on the integration of these three perspectives. Variations in the degree of emphasis provide a myriad of potential knowledge management initiatives (Earl, 2001).

However, under the conventional strategy formulation process, there are at least two stages whereby the intricate balance of integration can be toppled:

1. At the initial formulation stage, the variation of KM drivers will usually occur within the constraints of a strategy that is contingent on broad organisational objectives (Davenport *et al.*, 1998; Zack, 1999a). Thus the problems associated with an organisation-centric view of knowledge management initiatives discussed above can dominate strategy formulation.
2. At the investment and implementation stages of KM initiatives strategy formulation, knowledge activities may be driven by an inappropriate orientation. For example, a KM implementation driven by a technology-centric view would inevitably be laden with technological artefacts. Assuming finite resources, other critical aspects of the KM initiatives may be given only cursory attention.

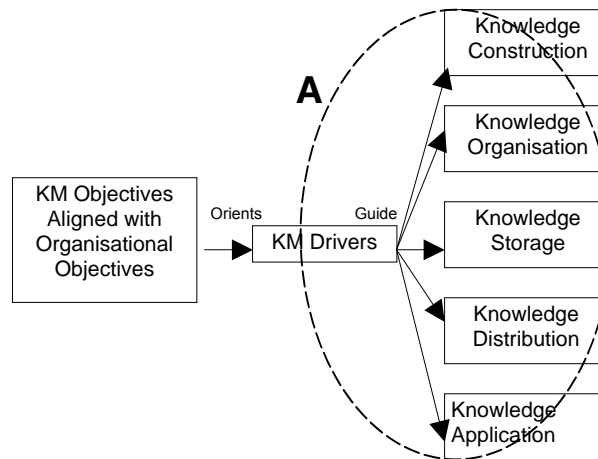


Figure 1: Typical KM strategy formulation

Furthermore, a resource-based view of knowledge typically de-emphasises the social nature of knowledge activities and consequently:

3. Following implementation, organisations can face difficulties associated with the social interaction of knowledge activities e.g. motivating people to engage in knowledge activities.

The conventional view of knowledge management strategy uses KM drivers aligned with organisational objectives to develop knowledge management activities (Figure 1). We reframe this approach and ask “how can the knowledge activities themselves be used to orient KM drivers and subsequently, how can we align these with organisational objectives (Figure 2)?” As an outcome of a wider research program, it is proposed that a bottom-up strategy based on the social processes of knowledge management addresses problems with the conventional approach highlighted above by:

- Refocusing strategy away from preconceived driving emphases set in place during initial formulation (with consequent influences on investment and implementation decisions), toward emphasising the actual requirements of knowledge activities themselves.
- Resolving social interaction difficulties encountered under the conventional approach by focusing on the social characteristics of KM activities.

## RESEARCH OBJECTIVE

The primary objective of the broad research program is twofold:

1. To develop a KM strategy that integrates the KM drivers.
2. To develop a KM strategy that is cognisant of the social nature of knowledge activities.

One way to achieve these is to de-construct the typical approach to formulating knowledge management strategy (Figure 1) and understand how drivers of knowledge management influence each of the knowledge management activities. Through this understanding it is envisaged KM strategies based on the social process of individual KM activities can be formulated (Figure 2).

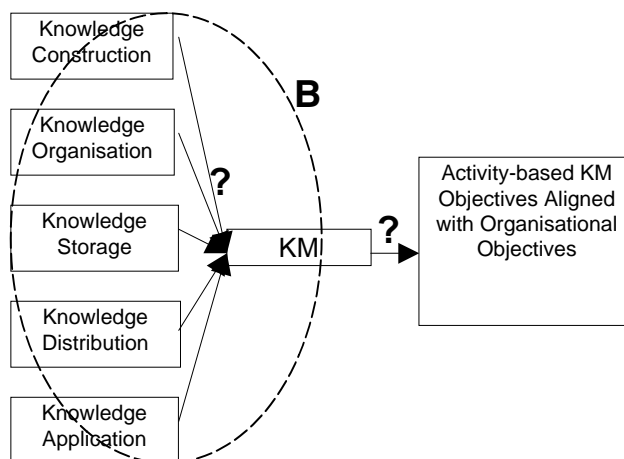


Figure 2: Proposed activity-based approach KM strategy formulation

This research is still in its preliminary stages and it is necessary to gain a better understanding of the relationships between knowledge management drivers and currently practiced knowledge management activities (Figure 1 – circle A) as part of the deconstruction process. The understanding of these relationships presents avenues for investigation whereby through further research, hypotheses relating to how knowledge activities can orientate KM drivers can be formulated and investigated (Figure 2 – circle B). As an initial step, a survey of practitioners has been conducted in order to explore the (conventional) relationships between KM drivers and KM activities. This study and some preliminary analyses are detailed in the following sections.

## PRELIMINARY STUDY

An online survey of practitioners who have implemented or are considering the implementation of knowledge management initiatives within their organisation was conducted over an eight-week period from January to March 2002. Participants in the survey were recruited from members of an online discussion group that is principally dedicated to the discussion of knowledge management issues. Online surveys have been used in a variety of research studies including attitude and behaviour studies, customer and employee satisfaction studies, advertising research and concept tests (Miller, 2002). The limitations of this approach are discussed in a later section but as this particular study is exploratory and does not aim to hypothesise generalisable results by itself, the online survey was deemed as being suitable.

The survey consisted of a total of 53 questions and using 5-point Likert scale, (Strongly Agree, Agree, Neither, Disagree and Strongly Disagree), participants were asked to respond to a series of statements in relation to the knowledge management activities of their organisations. Questions in the survey were derived from literature and were divided into 5 main sections, each with 3 sub-sections:

Section 1: Knowledge management outcomes (value propositions)

- Customer intimacy
- Product-to-market excellences
- Operational excellence

Section 2 – 5: Knowledge processes (construction, storage, distribution and application)

- Technology driven
- Knowledge worker driven
- Management driven

Responses to the statements in section 1 explore the success of knowledge management initiatives. These questions are derived from the literature on value propositions. In particular, they relate to, how knowledge can improve organisations' ability to 1) empower front-line service employees, 2) ensure improved knowledge of customers, 3) ensure

internal and external new ideas are incorporated into product and services offering, 4) accelerating development through applications of experience and expertise, and 5) close performance gaps between business units.

Responses to statements in sections 2-5 explore the various activities that are implemented to enact the four knowledge processes of creation, storage, transfer and application. (For the purposes of this survey, the organisation of knowledge is seen as a prerequisite to the knowledge storing process, and is therefore excluded). Questions from this section were derived from a variety of literature concerned with knowledge management initiatives, theories and approaches, e.g. Earl's knowledge management strategy framework (2001) and Von Krogh *et al.*'s knowledge enablers (2000). These questions are further classified according to the knowledge drivers that are guiding them, i.e. management, knowledge worker or technology driven. The purpose of this classification is to identify the KM drivers or orientation of knowledge management implementations. This classification was not however revealed to participants in the survey to whom the questions appeared as a congruent whole.

## **PRELIMINARY STUDY LIMITATIONS**

There are various issues involved in conducting online research, especially non-sampling errors due to limited access to online media, respondent refusals, non-response, inaccurate response, and incomplete response (Miller, 2001). While various measures are taken to minimise the effects, such as incentives for participants and limiting participants to those with online access to discussion groups, problems with respondent refusals and non-response persist with only 20% of the group members actually responded, assuming that all members are aware of the survey. Also, significant anonymity exists in the conduct of the survey and precautions are taken in the form of validating emails provided as well as web server log file analysis to weed out inconsistencies between originating addresses and purported organisation affiliations. Despite these limitations, researches on online research indicate that it is comparable to research done through traditional media (Miller, 2001).

## **DESCRIPTIVE RESULTS OF THE PRELIMINARY STUDY**

### **Participants' Demographics**

Total membership of the online discussion group from which the participants was recruited is 415. A total of 115 responses across 17 countries were received and 92 of them were deemed to be usable. Most of the respondents were from Australia (44), USA (10), UK (8) and India (8). The organisations represented by the respondents were in industries ranging through information technology, education, medical and agriculture, engineering and entertainment. Individual respondents were involved in range of activities including business administration, marketing, research and development, however 36% were IS/ IT personnel.

Since the recruited participants include those who intend to implement knowledge management at a later date and have no prior experience, responses were further filtered to include only those that have existing experience with the actual implementation of knowledge management. The final data set therefore consisted of results from 55 participants. A summary of their responses is presented below. For ease of presentation, "Strongly Agree" and "Agree" responses have been collapsed under one column, as is the case with "Strongly Disagree"/ "Disagree" and "Neither"/ "No Opinion".

### **Section 1: Assessing Knowledge Management Outcomes via Value Propositions Approach**

It is observed in this section that half of the respondents generally agree that their knowledge management initiatives brought improvement to customer intimacy, product-to-market excellence and operational excellence (Table 1). However, there is not enough statistical significance to indicate which value proposition benefits more from knowledge management.



<b>Knowledge Outcomes (value propositions)</b>	<b>“Strongly Agree” and “Agree” % (n of 55)</b>	<b>“Neither” or “No Opinion” % (n of 55)</b>	<b>“Strongly Disagree” and “Disagree” % (n of 55)</b>
Improved Customer intimacy	48.36% (27)	18.91% (10)	32.73% (18)
Improved Product-to-market excellence	57.27% (31)	21.21% (12)	21.52% (12)
Improved Operational excellence	58.79% (32)	21.51% (12)	19.70% (11)

Table 1: Knowledge management initiatives and value propositions

Section 2-5: Exploring KM Drivers on Social Processes of Knowledge Management

This section sought to identify the implementation orientations of knowledge activities. Using factor analysis, the statistical relationships between multiple responses towards individual activities are considered, and the aggregated responses are presented below (Table 2). Under this section, how the social processes of respondents’ knowledge management initiatives are driven was identified. There are indications of the variability of what KM drivers practitioners felt influenced each of the KM activities. Of particular note is that respondents’ perceived knowledge transfer (distribution) and knowledge application as being driven predominantly by a single KM driver. This has broad implication to the broad research program as it challenges the proposed integrative nature of KM strategy.

<b>KMD on Knowledge Processes</b>	<b>“Strongly Agree” and “Agree” % (n of 55)</b>	<b>“Neither” or “No Opinion” % (n of 55)</b>	<b>“Strongly Disagree” and “Disagree” % (n of 55)</b>
Knowledge creation is driven by management practices	45.91% (25)	21.36% (12)	32.73% (18)
Knowledge creation is driven by knowledge workers	47.27% (26)	21.21% (12)	31.52% (17)
Knowledge creation is driven by technology	44.55% (24)	14.54% (9)	40.91% (22)
Knowledge storage is driven by management practices	58.18% (32)	22.73% (13)	19.09% (10)
Knowledge storage is driven by knowledge workers	46.36% (25)	27.28% (16)	26.36% (14)
Knowledge storage is driven by technology	42.42% (23)	29.10% (16)	28.48% (16)
Knowledge transfer is driven by management practices	51.82% (28)	16.36% (10)	31.82% (17)
Knowledge transfer is driven by knowledge workers	55.45% (30)	21.37% (12)	23.18% (13)
Knowledge transfer is driven by technology	32.73% (18)	22.72% (13)	44.55% (24)
Knowledge application is driven by management practices	32.73% (18)	23.63% (13)	43.64% (24)
Knowledge application is driven by knowledge workers	52.27% (29)	30.00% (16)	17.73% (10)
Knowledge application is driven by technology	16.36% (9)	20.00% (11)	63.64% (35)

Table 2: Knowledge processes and KM drivers.

## FURTHER RESEARCH

The purpose of the survey has been to gain some preliminary understanding of the relationship between KM drivers and the various knowledge social processes. It contributes to such understanding by identifying the KM drivers that have been adopted in KM initiatives, as well as indicating which KM drivers influence the various knowledge processes.

Since this survey represents the initial stage of a broader research program and full statistical analysis is yet to be performed, it is prudent at this stage not to make firm inferences from the collected data. However, preliminary results do provide an indication of how the research domain can be narrowed down. For example, section 2-5 of the survey prompted further investigation into the decision rationale behind the adoption of dominant KM drivers in knowledge transfer and application processes.

The social nature of this research mandates a line of investigation of an interpretive nature and following this preliminary study, we intend to formulate working hypotheses to guide further development of the strategic framework outlined in this paper. Further investigation of these working hypotheses will be conducted by means of case studies of specific knowledge management initiatives and action research in organisational settings in the process of formulating KM initiatives.

## CONCLUSION

The formulation of knowledge management strategy is difficult since the differing emphases of broad approaches (management, worker, technology driven) are often conflicting and even paradoxical. While a mixture of approaches is often advocated, little or no indication is given regarding what is considered to be an appropriate blend.

It has been asserted in this paper that by basing KM strategy on specific knowledge processes, some of the shortcomings and difficulties encountered by conventional KM strategy formulation, can be overcome. From the preliminary study and analysis presented in this paper, there are indications regarding the relationships between the knowledge drivers and the five categories of knowledge processes. These indications can be used to construct hypotheses for further investigation and development of an integrative KM strategy framework that is contingent on the social characteristics of knowledge processes.

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