

Knowledge Management Process Capability: Operations Strategy Perspective

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ABSTRACT

According to the resource based view (RBV) of the firm (Wernerfeldt, 1984; Barney, 2004) and distributed knowledge system view of the firm, knowledge is a critical organizational resource that contributes to superior performance if relevant KM capabilities are built and applied to the knowledge resources. The perspective that sound operations strategy applied to knowledge is necessary for a firm to take full advantage of knowledge management programmes is explored in this paper. The objective of this paper is to document empirical evidence from existing literature on the effect of KM process capability on performance of firms and to identify opportunities for further research which can generate more knowledge to help in the understanding of this relationship leading to the improvement of the contribution of knowledge to performance. An empirical literature survey method was used to collect information regarding KM process capability and its effect on performance. The results suggest that knowledge management process operations positively impact performance. Arising from these findings, it is proposed that studies be launched to determine the relative disposition and contribution of each of the KM process capabilities' operations to performance. Such studies will guide organizations in building KM process capabilities and carrying out operations which can be leveraged for sustainable superior performance using knowledge resources.

Keywords: knowledge; knowledge management (KM); KM process operations; operations strategy; performance

INTRODUCTION

The velocity and dynamic nature of the new marketplace has created a competitive incentive among many companies to consolidate and reconcile knowledge assets as a means of creating value that is sustainable over time. In order to achieve competitive sustainability, many firms are launching extensive knowledge management efforts. The competence paradigm, with its assertion that firm-specific factors are as important (Rumelt, 1984) as industry market factors in determining advantage over time, occupies a central part of the broader competitive strategy landscape (Foss & Knudsen, 1995). In order to discern the relationship between KM and operations strategy, it is necessary to define and review literature on the underlying concepts; namely, knowledge, knowledge management, operations, and operations strategy.

Knowledge

Knowledge has been recognized as one of the most important resources of the 21st Century and has received considerable attention in the management literature (McFadyen & Cannella, 2004, as cited in Ondari-Okemwa, 2006). Szulanski (2003) contends that the rise of the knowledge economy has helped organizations to recognize that knowledge assets are rapidly becoming their most precious competitive advantage and that learning to manage those assets better has become a competitive necessity.

Davenport and Prusak (1998) define knowledge as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. Nonaka *et al.* (2000) regard knowledge as the application of information and its output. Knowledge comprises both the “hardware” and “software” side. The hardware side or the articulative form of knowledge is that

which is represented explicitly in physical or material objects, such as a patent. It is the know-how of information (Kogut & Zander, 1992). Tacit knowledge (Polanyi, 1969, Hedlund/Nonaka, 1993), the software side, is intuitive, non-verbalized, and not yet articulated. It is the know-how of the practical skills or expertise that allows a researcher to work smoothly and efficiently (Von Hippel, 1988; Kogut & Zander, 1992. Hedlund & Noaka (1993) claim that the creation of knowledge occurs when tacit knowledge is articulated through the codification of experience and information into articulate form. Research indicates that more than half of the knowledge in organizations is tacit and that an even greater portion of the valuable knowledge is tacit (Snyder, 1996, 1997). Bearing this in mind, it is apparent that knowledge operations processes that can enable the conversion and transfer of knowledge in firms are crucial. Furthermore, the risks associated with the transfer and sharing of knowledge should be the concern of all managers since “making knowledge easy to transfer is a double-edged sword, because the characteristics that facilitate knowledge transfer inside the firm - articulability, observability, system independence - are also likely to make it relatively easy for competitors to imitate (Kogut & Zander, 1992, quoted in Teigland *et al.*, 2000). Kogut and Zander’s (1992) argument that ‘firms outperform markets as vehicles for tacit knowledge transfer’ is one important guard against competitive imitation and is consistent with the findings of Teigland *et al* (2000) regarding the importance of a one-company-wide culture.

Knowledge Management

Knowledge management is the systematic and organizationally specified process of acquiring, organizing and communicating knowledge of employees so that other employees may make use of it to be more effective and productive in their work (Alavi & Leidner, 1999). According to Davenport *et al* (1996, 1998), knowledge management treats knowledge as an extremely important asset that deserves to be carefully looked after. Anything related to knowledge assets, their acquisition, organizing, sharing and use, are KM activities (Liu and Tsai, 2007). According to Diakoulakis *et al.* (2004), KM focuses on the integration and coordination of individuals’ knowledge through appropriate management of current organizational knowledge and the creation of knowledge.

Despite the competitive necessity of becoming a knowledge-based organization, senior managers have found it difficult to transform their firms through programs of knowledge management. This is particularly true if their organizations have long histories of processes and a tradition of business success (Gold *et al.*, 2001). It is therefore necessary that organizations increase their capacity to successfully implement knowledge management programmes and leverage knowledge for sustainable competitive advantage. Besides coming up with KM process capabilities (or strategies), firms should formulate and carry out operations around these KM processes to ensure that knowledge contributes to the firms’ competitiveness.

The central premise behind organizational knowledge management is that all factors that lead to superior performance - organizational creativity, operational effectiveness, and quality of products and services - are improved when more knowledge is made available and used competently (Wiig, 1994). Davenport and Volpel (2001) assert that knowledge management infrastructure is considered as the backbone of KM. This argument supports an earlier observation by O’Dell and Grayson (1998) that almost every successful organization that applies KM realizes the need and importance of an explicit and supportive infrastructure to assist KM practices. Hence, it is acknowledged that the efficient and effective application of KM requires a strong and appropriate KM infrastructure (Tiwana, 2000), which is composed of four components (see also Gold *et al.*, 2001): technology, organizational culture, organizational structure and intellectual capital.

Operations

Operations are what a company does on a day-to-day basis in its conduct of business. It is how it delivers its products to customers. An organization has the ultimate goal of delivering value to the client, but the processes of designing a product or service, manufacturing, analyzing, and then finally delivering, are the driving forces for the company’s success. All these work processes collectively define a bigger purpose; namely, the operations for that organization. With regard to knowledge management, it is recognized that in order to take advantage of and leverage knowledge as a critical competitive resource, activities in support of the realization of key KM processes (acquisition, conversion, application and protection) are crucial. In this case, knowledge management is the cross-cutting process among all other organizational processes. Thus, through effective operations targeting knowledge, it

should be possible for firms to address the requirements of the marketplace. As an example, the market may require customization of products, flexibility in delivery of products and services, among other requirements. To be able to meet these demands, organizations need knowledge resources as a basis of effective customization and delivery. The implication is that there is a premium on organizational knowledge operations. The effect of knowledge management systems on operating performance has been documented in empirical literature (Liu & Tsai, 2007). Further, market knowledge competence (which can only be achieved through effective KM operations) has been shown to exert positive influence on new product advantage (Calantone & Li, 1998).

Operations Strategy

Operations strategy is the total pattern of decisions which shape the long-term capabilities of any type of operations and their contribution to the overall corporate strategy, through the reconciliation of market requirements with operations resources. Operations strategy is concerned with matching the characteristics of the operations function with the requirements of the market in order to fulfill the needs of the business. A proper appreciation of this process requires not merely an understanding of the ideas and method used to develop an operations strategy, but also knowledge of the techniques and principles involved in its implementation. A strategy for knowledge management competence is suggested if an organization is to reap maximum rewards from the present knowledge economy.

Portfolio Of Knowledge Opportunity

A hallmark of the new economy is the ability of organizations to realize economic value from their collection of knowledge assets as well as their assets of information, production distribution, and affiliation. However, despite the necessity of becoming a knowledge-based organization, senior managers have found it difficult to transform their firms through programs of KM (Gold, Mahorta & Segars, 2001).

In the study of knowledge intensive business firms, Larsen (2001) found that the knowledge base of a firm is intrinsically linked to the knowledge of their employees. This is particularly the case in knowledge-intensive business services where production of services is almost entirely dependent on the ability of the firm to make use of the knowledge of the employees.

According to Gold *et al.* (2001), organizational capabilities are conceived in two broad dimensions - KM process capability and KM infrastructure capability. Further, knowledge is both tacit and explicit Gold *et al.*, 2001, having both a content and capability dimension. Table 1 shows a portfolio of knowledge opportunity.

Managers therefore need to strike a balance between knowledge content (tacit versus explicit) and knowledge capability (process versus infrastructure). Without such a balance, the benefits of knowledge as a critical competitive resource will be lost. Specifically, an attempt to over-codify tacit knowledge in a bid to make it explicit will certainly result in losing the qualities of the tacit knowledge. This paper focuses on knowledge management (KM) process operations.

METHODOLOGY

The methodology used in this paper is the review of KM empirical literature with a focus on the relationship between KM implementation and performance of firms. According to Montana (2000), KM is a discipline focused on systematic and innovative methods, practices, and tools for managing the generation, acquisition, exchange, protection, distribution, and utilization of knowledge, intellectual capital and intangible assets.

Table 1: A Portfolio of Knowledge Opportunity

Tacit	<p>Mining ‘High Tech’ and ‘High Touch’ approach for developing shared meaning and dialogue of knowledge objects</p>	<p>Growth ‘High Touch’ approach for developing new models of organizational governance to expand and enhance the creation and sharing of knowledge</p>
Knowledge content		
Explicit	<p>Codification ‘High Tech’ approach for developing schemes of capture and storage for knowledge objects</p>	<p>Integration ‘High Tech’ approach for developing unique forms of process and technology to integrate existing and form new knowledge objects</p>
	----- Process	-----> Infrastructure

Knowledge Capability

Source: Adapted from Gold *et al.* (2001), “Knowledge Management: An Organizational Capabilities perspective”, *Journal of Management Information Systems*, Summer, 2001 Vol. 18, No.1

Resource-Based View Theory Of The Firm

Building on the resource-based view theory of the firm (Wernerfelt, 1984), this study applies a knowledge-based view of the firm. Resources that are valuable, unique, and difficult to imitate can provide a basis for a firm’s competitive advantage. In turn, these competitive advantages produce positive returns. Knowledge is such a resource. The special capabilities of organizations for creating and transferring knowledge are being identified as a central element of organizational advantage (Nahapiet and Ghoshal, 1998, quoted in Khandewal and Gottschalk, 2003). Davenport *et al.*, 1998 state that scholars and observers from disciplines as disparate as sociology, economics, and management science agree that a transformation has occurred – knowledge is at centre stage.

Role of Knowledge

The role of knowledge on the attainment of competitive advantage and superior performance is widely covered in empirical literature. According to Alavi and Leidner (2001), the interest in organizational knowledge has prompted the need to manage knowledge to the organization’s advantage. They cite two surveys to justify their argument. A survey of European firms found that almost half of the companies suffered a significant setback after losing key staff, with 43% of the firms experiencing impaired client or supplier relations and 13% of the firms facing loss of income because of the departure of a single employee. In another survey, the majority of companies believed that much of the knowledge they needed existed inside the company, but identifying that it existed, finding it, and leveraging it remained.

KM Organizational Capability Perspective

Two key KM capabilities have been found to positively and significantly affect KM’s success. According to Gold, Malhotra and Segars (2001), KM, from the organizational capabilities perspective, suggests that a knowledge infrastructure consisting of technology, structure, and culture, along with a knowledge process architecture of acquisition, conversion, application and protection, are essential organizational capabilities or pre-conditions for effective KM. The results provide a basis for understanding the predisposition of organizations as they enter a program of KM. In a survey of over 300 senior executives, key aspects of the dimensions - knowledge infrastructure and knowledge process architecture - were modeled and uncovered. The results provide a basis of understanding the competitive predisposition of a firm as it enters the KM program.

KM And Success Of Organizations

The key to understanding the success or failure of KM within organizations is the identification and assessment of ‘pre-conditions’ or ‘capabilities’ that are necessary for the effort to flourish. In their conclusion, Gold et al (2001) state that new research will be needed to understand specific strategies and organizational programs for sustaining structures that facilitate KM and lead to an increase in the effectiveness of organizations. The two salient capabilities established through this research should help managers and researchers benchmark KM efforts against best-in-class and also facilitate the identification of trajectories of KM initiatives with respect to type and outcome. Such studies will be useful in understanding and guiding the transformation of organizations to entities that create, share and learn from information, experience and insight. Liu and Tsai (2007) found that KM impacts the performance among hi-tech companies in Taiwan. They measured performance using a balanced score card (Kaplan and Norton, 1996).

Impact Of Market Knowledge Competence On New Product Advantage

In their conceptualization and empirical examination of the impact of market knowledge competence on new product advantage, Li and Calantone (1998) found: 1) that market knowledge competence (i.e., processes that generate and integrate market knowledge) exerts a positive influence on new product advantage and 2) that there is a positive association between new product advantage and product market performance. Since organizational competences (Hamel and Prahalad, 1994) and capabilities (Teece and Pisano, 1994) fall within unique, inimitable resources of a firm in the context of the RBV theory of the firm, this study extended the findings of this study (Li and Clantone, 1998) to organizational capability.

Empirical Findings On Factors That Influence KM Process

Some of the variables that impact the KM process operations in a firm are culture, structure and technology because they have an effect on the extent of knowledge dissemination and sharing.

Corporate Culture Including The Vision And Core Values

In the study of the MNCs with globally-dispersed R&D operations, Birkinshaw, Fey and Teigland (2000) found that shared vision and core values impacted knowledge sharing in hi-tech global R&D operations. Specifically, the authors suggest that “knowledge flow in an MNC appears to be facilitated by establishing a one-company culture”. These are a number of operations that need to be carried out to realize a one-company culture and these should be part of the focus of a KM operations strategy. According to Teigland *et al.* (2000), these operations are: 1) team work, 2) evaluation of each individual’s contribution and assimilation, 3) goals that promote overall company improvement, and 4) extensive personnel rotation.

Organizational Structure And Social Networks

In line with the corporate culture, decentralization and communities of practice impact knowledge sharing and use in organizations for purposes of improving performance. In this sense, teamwork should be incorporated in organizations as a company value to enhance collaboration among members of an organization. In network-oriented models of MNCs, there is strong orientation towards the global acquisition of and use (or application) of knowledge (Kasper et al., 2008). Knowledge about the whole company should be embedded in all parts of the MNC system, hence the importance of the KM operations strategy.

Literature indicates that the extent centralization versus decentralization impact the sharing and use of knowledge in firms. Macharzina et al. (2001, quoted in Kasper et al., 2008, p. 59) assert that “as a matter of fact, organizations that decentralize decision-making may be more adaptive, more innovative and are more capable to deal with complex environments than those organizations that maintain centralized decision-making and coordination. In addition, social networks play a crucial role in organizational knowledge sharing; tacit knowledge is transformed into explicit knowledge through such social gatherings.

Further, the existence or absence of communities of practice is a key consideration in leveraging KM to ensure that there is an effective cooperation among communities of practice at whatever dispersed geographical location they may be. Similarly, collaboration has been shown to reduce lead time to the commercialization of product and service innovations. Indeed, in decentralized global R&D (Teigland et al., 2000), the need for real-time collaboration is critical to realize sharing of product knowledge. This is enabled partly by IT infrastructure.

Technology

Knowledge transfer and dissemination requires modern telecommunication systems. These systems should be able to transfer the knowledge without delay or distortion. This has been realized, to a great extent, by the wide deployment of modern telecommunication systems using highly reliable transmission media, such as optical fibre transmission media and even satellite systems. In Kenya, thanks to Safaricom, Jamii Telkom Kenya, Kenya Data Networks, Telkom Kenya, Zain, and now Econet, among other providers, the deployment of optical fibre cables between the service providers and the clients makes communication - and therefore the transfer of knowledge - efficient. Efficient systems result in superior performance; therefore, operations aimed at ensuring constant supply of communication means is critical.

Information technology (IT) systems enable the transfer and sharing of knowledge among geographically dispersed global R&D centres. The implication of this technology is that an organization should have efficient IT systems together with supporting telecommunication systems to support their KM programs.

KM PROCESS CAPABILITIES

The ability to generate knowledge and diffuse it throughout the organization has been recognized as a major strategic capability for gaining sustainable competitive advantage (Roth, 2003; Beveren, 2002, as cited in Zaim *et al.*, 2007). The special capabilities of organizations for creating and transferring knowledge are being identified as a central element of organizational advantage (Nahapiet & Ghoshal, 1998, quoted in Khandewal & Gottschalk, 2003). In literature, four KM process capabilities can be clearly discerned (Gold, Malhotra and Segars, 2001). They are: 1) acquisition process, 2) conversion process, 3) application process, and 4) protection process. Through these KM process capabilities, organizations, including firms, should be able to leverage knowledge resources to achieve superior performance in areas such as service flexibility through superior service operations strategy.

Service Operations Strategy

Issues regarding operations strategy content and process are often discussed in the current operations literature. The process of operations strategy is discerned according to how strategic decisions are made in an organizational setting (Ho, 1996). Definitions of strategy always mention enhancement of the firm's competitive position in the marketplace through resource building or positioning (Swink and Way, 1995). For Example, most research in operations strategy has focused primarily on the number of decision areas and goals of manufacturing in terms of performance criteria (Leong *et al.*, 1990). Skinner (1969) identified a set of decision areas through which manufacturing objectives are achieved.

Service Flexibility

Most literature on operations strategy has concentrated on the manufacturing industries; however, in recent times, operations management strategy has been adapted for service oriented industries/firms. Flexibility, when focused only on technology implementation, does not lead to a competitive advantage (Gupta and Somers, 1996). It is crucial to carefully plan and manage the whole system flexibility (Gustavsson, 1988) by creating a plant (and indeed an organizational infrastructure) that allows such system flexibility (Upton, 1995). This implies that all operations (such as acquisition of service-related information/knowledge in the impact flexibility in service provision, such as customer knowledge acquisition and sharing, should be undertaken in real terms. It is emphasized that flexibility is among the competitive priorities of a firm and one which should be executed through sound operational strategy founded on knowledge.

In this context, flexibility in services involves the introduction of new designs and services into the service delivery system quickly, adjusting capacity rapidly, customizing services, handling changes in the service mix quickly, and handling variations in customer delivery schedules (Suarez *et al.*, 1996). Thus, improving the timing and quantity of resource allocations for performing a process to avoid employing human and material resources when they are not needed represents the core goal of service flexibility (Druclos *et al.*, 1995). This is the essence of operations strategy. It is therefore suggested that service flexibility operations strategies be crafted and implemented to guarantee success of organizations, whatever their type.

KM Process And Service Operations

The KM process capabilities that are suggested to have an impact on service operations are discussed below.

Knowledge Acquisition

These are the processes oriented towards obtaining knowledge. Many terms have been used to describe these processes - acquire, seek, generate, create, capture, and collaborate. For example, the creation of organizational knowledge requires the sharing and dissemination (i.e., collaboration) of personal experience. This process takes place at two levels - between the individuals and between the organization and its network of business partners (Gold, Malhotra and Segars, 2001, p. 190). Thus, operations geared toward knowledge acquisition (accumulation) are required if this process is to contribute toward the superior performance of the organization. In other words, organizations that are efficient in knowledge accumulation and use regarding the marketplace should be able to perform better than those that do not have this capability.

Knowledge Conversion

Conversion oriented KM processes are those oriented toward making existing knowledge useful. Some of the processes that enable knowledge conversion are the firm's ability to organize, integrate, combine, structure, coordinate, or distribute knowledge. An organization must develop a framework for organizing or structuring its knowledge since without common representation standards, no consistency or common dialogue of knowledge would exist. According to Grant (1996, cited in Gold *et al.*, 2001), a primary goal of any organization should be to integrate specialized knowledge of many individuals. Four commonly cited mechanisms for facilitating integration are rules and directives, sequencing, routines, and group problem-solving and decision-making.

Knowledge Application

Perhaps the most significant example of the importance of sharing knowledge comes from the Linux operating system. This product continues to be openly developed (i.e., anyone who wants to can make modifications to the program and the source code is freely available). As a result of sharing knowledge, product development times are accelerated, functionality has increased rapidly, and its adoption has become widespread. In a discussion of customer support knowledge, Davenport and Kahr (1998) note that the effective application of knowledge has helped companies improve their efficiency and reduce costs.

Knowledge Protection

For a resource to confer competitiveness to a firm and result in superior performance, it has to be valuable, rare, inimitable and non-substitutable. This resource must be protected. However, though knowledge protection can be effected through IT systems and other physical means, it should be recognized that a very significant amount of organizational knowledge resides in the employees in which case softer methods of protecting this knowledge through employee incentives should be implemented as well.

Thus, operations strategy should be crafted covering the complete scope of the KM process capability. Operations will, for instance, address how knowledge is acquired, processed, stored, retrieved, transferred, shared, applied, and protected.

Knowledge Dissemination

Multinational corporations (MNC) have built their success, in large part, on their ability to create competitive advantages through technological innovations by leveraging research and development (R&D). The traditional centralized R&D structure is gradually being eclipsed by emergence of global R&D networks (Ronstadt, 1977; Terpstra, 1977; Lall, 1979; Hakanson, 1990; and quoted in Teigland *et al.*, 2000). In a study of knowledge dissemination in MNCs Global R&D Operations, Teigland *et al* (2000) found that knowledge flow in an MNC appears to be facilitated by establishing a one-company culture through 1) incorporating teamwork as a company value, 2) evaluating individual knowledge contribution and assimilation in performance appraisals, 3) implementing a goal that promotes overall company improvement, and 4) facilitating extensive personnel rotation.

Performance Measures

Performance measures reflect how well the different competitive priorities fit in the implemented operations strategy (Suarez *et al.*, 1996). For service industries, effective performance measures related to operations strategies require a shift from measures that focus on manufacturing efficiency to those capturing the critical success factors related to customer initiated demands (Abernethy and Lillis, 1995). It therefore follows that any operations strategy that seeks to enable leveraging of knowledge needs to have clear measurement embedded in its operations/activities.

EMPRICAL FINDINGS ON KM OPERATIONS

The following empirical literature cases illustrate the importance of KM operations to a firm:

Case 1: The Impact of Market Knowledge Competence on New Product Advantage

In their conceptualization of market knowledge competence as being the processes that generate and integrate market knowledge, Calantone and Li (1998, p. 13) found that each of the three processes of market knowledge competence; namely, customer knowledge process, marketing-R&D interface, and competitor knowledge process, exerts a positive influence on new product advantage. The results also reveal a positive association between new product advantage and market performance.

Case 2: Effect of KM Systems on Operating Performance in Hi-tech Firms in Korea

In a study which utilized the balanced score card approach to investigate the effects of introduction of KM systems on operating performance, 560 managers from major Taiwanese hi-tech companies completed a specially designed questionnaire. The results showed that after introducing KM, there was 5% to 10% improvement on performance in the customer, financial and internal business process areas and a 10 to 15% improvement in performance in the learning and growth area, suggesting that the KM systems that were introduced had a positive effect on operating performance (Liu and Tsai, 2007, p.734).

Case 3: Role of KM in Knowledge-intensive Service Firms

By applying a view of organizations as knowledge systems in a study of Norwegian and Australian law firms on their use of IT to support their knowledge management practice, Khandelwal and Gottschalk (2003) found that the extent of knowledge cooperation had a significant impact on the use of IT to support interorganizational knowledge management. This has implications for KM process, specifically knowledge application, which deals with how knowledge resources are used to generate value for firms after application.

Knowledge embedded in the organization's business processes and employees' skills provide the firm with unique capabilities to deliver customers with products or services. Knowledge is therefore a unique resource which, if well managed, can confer an organization with competitive advantages. In a case study of a Danish knowledge-intensive business service firm, Larsen (2001, p. 81) found that knowledge not only resides in the minds of individual employees, but also that it constructed in the social interactions between members of teams.

Case 4: Knowledge Dissemination in Global R&D Operations

Teigland, Fey and Birkinshaw (2000, p. 49) found that flow in an MNC appeared to be facilitated by establishing a one-company culture through 1) incorporating teamwork as a company value, 2) evaluating individual knowledge contribution and assimilation in performance appraisals, 3) implementing a goal that promotes overall company improvement, and 4) facilitating extensive personnel rotation. This finding underscores the importance of corporate culture in knowledge management with specific emphasis on how knowledge is generated and shared. The implication is that operations on corporate culture should enhance knowledge use.

DISCUSSION

Knowledge Management – Operations Strategy Nexus

It is suggested that organizations of whatever type build operational organizational capabilities to enable the leveraging of KM for competitive advantage. Strategy exists at different levels; i.e., corporate strategy, business unit strategy, and operations strategy. It is the operations strategy which actualizes the business strategy. In turn, the business strategy contributes towards the achievement of the corporate strategy. It is also recognized that although creation of a strategy is intellectually simple, its implementation poses a number of challenges to firms. Operations strategy addresses the strategy implementation problem. In this regard, a clear operations strategy that focuses on KM operations and ensures that the KM processes are aligned to the demands of the competitive market space is imperative for organizations. It is suggested that an empirical inquiry be made into the strength of the knowledge management-operations strategy nexus and the performance among high performing firms in order to indicate thresholds for such linkages and to use them as a benchmark to guide organizations that are launching or intending to launch KM programs.

Management Implications

There is agreement in literature that KM implementation positively impacts performance of organizations (Liu and Tsai, 2007). Literature surveys on knowledge and knowledge management points to important implications for managers in charge of operations strategy formulation and its implementation. It is desirable that organizations effectively implement their corporate strategies through sound operations strategy. In this regard, managers need to continuously seek better methods of executing operations strategies of their organizations by ensuring that KM operations support and optimize core operations strategies that they pursue in an effort to realize their strategic mission.

Research Implications

From research already carried out and reported in literature, key capabilities that are pre-conditions for a successful launch of a KM program have been identified. Both KM process and KM infrastructural capabilities are discerned in empirical literature. It is suggested that research be launched to empirically inquire into the relative importance of each aspect of the KM process capability. Such research would guide practitioners on how much effort and sequence of implementation to apply to each (i.e., knowledge acquisition, conversion, application and protection) operations. It is also noted in empirical literature that most of the KM research has been carried out outside of Africa and Kenya, except the qualitative case study on the international livestock research institute (Ondari-Okemwa, 2006).

The role of corporate culture in knowledge dissemination has also received considerable attention in KM research. Indeed, organizations can be studied to find out how their corporate culture is suited to the launch and success of a KM program. Specifically, Teigland et al (2000) observed three impediments to knowledge flow in MNCs: 1) opportunity cost of time (employees do not have time to share knowledge), 2) knowledge is power (employees in R&D are reluctant to share knowledge to protect their turfs), and 3) not-invented-here (some researchers are not receptive to knowledge from the 'outside'). It would be of interest to find out how organizations in Kenya rank on these impediments. The findings would indicate the extent to which the organizations are ready to leverage knowledge. Managers will then take action to lower the levels of impediments through targeted KM operations strategy.

CONCLUSION

Clearly, the quest to move beyond information management into the realm of KM is a complex undertaking involving the development of structures that allow the firm to recognize, create, transform and distribute knowledge (Gold *et al.* 2001, p. 186). Consequently, the key operations of KM process capability; namely, acquisition, conversion, application, and protection, need keen attention of all managers. Further, managers should strike a balance on the key dimensions of knowledge; namely, knowledge content (explicit and tacit) and knowledge capability (process and infrastructure). This paper has dwelled on the KM process capability operations.

It is suggested that studies to determine the relative disposition of firms in an industry and across industries to leverage knowledge for sustainable competitive advantage and superior performance by use of operations focusing on KM process capability need to be launched in Kenya to generate knowledge that will assist firms to improve their performance. Such studies will point to best-practices in KM process operations and show a roadmap that can guide managers to launch their own KM programs from a point of reliable empirical knowledge. KM case studies of successful firms in Kenya can be launched and findings replicated as benchmarks for other less performing ones.

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