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Managing Constraints and Removing Obstacles to Knowledge Management

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ABSTRACT

Practice of knowledge management is often characterized by obstacles to creation, distribution, and transfer of knowledge from specific groups of settings. Obstacles or constraints to attempts to constitute knowledge as an organizational resource have been previously dealt within the context of organizational learning perspectives; however, there still remain barriers toward making learning available and all-pervasive throughout organizations. This is often as a result of two important factors; i) bureaucratic and hierarchical forms of organization, and ii) owing to the situated and tacit character of knowledge. This paper is a result of theoretical exploration aimed toward addressing these core issues, and proposes solutions to manage constraints and remove obstacles to knowledge management, as well as means to codify the tacit character of knowledge. The research offers a view that although it is reasonable to value knowledge in financial or economic terms, it is also important to consider the problems which make it difficult to extract and transfer knowledge within specific organizational settings. Addressing the issue of rising competitive pressure for innovation, this paper proposes several solutions to enable lateral flows of knowledge-sharing by overcoming the factors that affect acquisition of, and creation and distribution of knowledge across fluid social boundaries.

Keywords: Knowledge management – tacit knowledge – organizational learning – constraints to KM

JEL Classification Codes: E6

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INTRODUCTION

“To what problem is knowledge management the answer?” This was the question raised by Spender & Scherer (2007) in their editorial— “The philosophical foundations of Knowledge Management”. The philosophy of knowledge management is founded on the concept of synthetic analysis of the ontology of conceptual framework for exploration of knowledge processes which rests on the art and science of managing knowledge systematically (Staab, Studer and Sure, 2003). But one is free to ask—what is knowledge management? Although there are many definitions of Knowledge management (henceforth KM), I quote a widely accepted definition from Davenport (1994):

"Knowledge management is the process of capturing, distributing, and effectively using knowledge."

This formal definition may be simply redefined as “management of learned information as knowledge”, aimed at systemizing the process of knowledge management so that the knowledge processes can be organized into a structural framework. In similar thought, one may present this question in a slightly different format— “how can Knowledge management answer the questions related to the problem of removing obstacles to organizational learning?” What is the nature of obstacles to organizational learning (OL) and KM? If the obstacles are not identified and then removed, they may prove to be constraints to learning and information exchange. Decline in organizational learning activities may lead to impaired decision making, fall in innovation levels, or reduction in R&D output. It shall be kept in mind that learning organizations are containers of knowledge. Knowledge accumulates in organizations. And this is perhaps the first step toward understanding Knowledge management—how to manage the accumulated knowledge? Isn't it like *using* knowledge to *manage* knowledge itself? And furthermore, one may enquire, what has KM got to offer as a new domain? How should knowledge be managed after all, and why there is even a need for a specialized domain like KM to exist? Isn't it another fad, or is it a necessity? By avoiding such logical fallacies, I would definitely say that— KM is a “necessity” (George Giju et. al.,2010). The necessity arises on account of problems required to be tackled which often presents as bottlenecks toward efficient functioning of a knowledge organization. And this particular issue about KM is taken up in this paper which attempts to understand how the flow of information in knowledge organizations can be maintained without obstacles. Furthermore, in what way the underlying constraints (if any) which might hinder organizational knowledge growth can be reduced. This demands knowledge about OL. Managing knowledge in learning organizations has become an integral aspect of organizational culture that thrives on innovation, data mining, and R&D. Today, in a knowledge-based society, new information is essential for any organization to survive and compete in the market for competitive power. KM is important in that respect that it enables a *knowledge manager* to oversee how knowledge generated by a firm is utilized, shared, stored, and retrieved. Furthermore, KM helps us to realize how do organizations accumulate knowledge (Peters, 1993), and then, manages it? Besides, it is factual to understand that in a knowledge society, knowledge management is one of the essential components of organizational sustainability in the long run. Above all, since an organization's most valuable asset is the knowledge of its people (NHS, 2005), and since there are jobs which depend on knowledge resources, therefore, it is important to manage this form of resource— the knowledge resource.

In short, modern day KM constitute four different elemental aspects which employ technology beyond conventional means that defines organizational learning (henceforth OL), and practice. They are in order of importance— i) acquisition of knowledge, ii) knowledge distribution, iii) storage, and iv) retrieval. Knowledge is *acquired* by learning and experience. Knowledge is *created* from thinking, reasoning, and abstraction. Knowledge is stored within the brain and “*shared minds*”—servers. And knowledge is *shared* through the internet, intranet, and the ICT/communications/media, etc. The goal is to make these processes simpler so that the workforce can focus on organizations’ objectives. Pressures for more rapid innovation create a need for more efficient allocation of human resources and knowledge capital wherein knowledge is constantly converted into new products and services, and where, new information, or facts, is constantly being added to the old repository of knowledge. Today, in our knowledge-driven society, it is hence important to find solutions to remove obstacles to attempt to constitute knowledge as a capital resource for the organization (Donlon and Haapaneimi, 1997). More than that, it is also important to enable distribution of knowledge freely and uniformly across the organization by removing constraints and organizational obstacles to KM (Chatterjee, 2013). However, it is the nature of certain constraints and obstacles which make it difficult to extract and transfer knowledge from specific groups and settings. These are, but not limited to— i) bureaucratic and hierarchical forms of organization, and ii) the situated and tacit character of knowledge. The goal of this research is to address these problems in detail and in particular, explore theoretically to rein in obstacles to knowledge management. The paper takes into account certain constraints which hinders organizational learning, and models several assumptions based on which theoretical considerations could be deliberated aimed towards managing such constraints, and removing barriers to effective knowledge management.

This research is organized as follows; Section I begins with a formal discussion of knowledge management practices in organizations by addressing two critical issues mentioned above; i) bureaucratic and hierarchical forms of organization, and ii) the situated and tacit character of knowledge. This is followed by Section II which models assumptions and hypothesis testing. Section III reports the findings, and is followed by conclusion and scope for further research.

I. Preliminary Discussion

A. The nature and forms of knowledge:

An analysis of the literature associated with the management of knowledge includes works of several experts in this field which focus on the study of transformation of different types of knowledge into information through the process of codification (Kimble, 2013). However, the origin of the idea of KM perhaps stems from of the concept of *Knowledge organization* which can be traced back to the thinking of Peter F. Drucker (1977) who foresaw the importance of *knowledge organization* and hinted the arrival of knowledge worker in his book “The Age of Discontinuity,” Drucker (1969). In his another book titled “Management”, he stressed the need for responsible *middle managers* who can take up the responsibility to *manage* knowledge in knowledge organizations. Quoting from Drucker (1977)—

“Middle management has not disappeared...But yesterday’s middle management is being transformed into tomorrow’s knowledge organization.”

Drucker ascertained that since knowledge will form an essential component of future knowledge organizations, there happen to be a need for manpower and systems to manage knowledge which comes in different shapes and forms. Indeed knowledge comes in many shapes and forms; the two most important forms of knowledge widely discussed in the literature of OL and KM are tacit knowledge, and explicit knowledge (Smith, 2001). Insofar the dynamicity of organizational learning depends on the factors which define how knowledge is to be acquired, in what form, and what knowledge is important for the firm. Furthermore, the focus shifts to concerns which stress on responsibility to manage the acquired knowledge. Thus, a knowledge manager’s role is manifold; e.g., to centralize information scattered across the organization, control of labour, to develop conceptual framework to manage the tacit knowledge stock, and to deliberate means of codifying various tacit forms of knowledge (Ribeiro, 2013). The figure below depicts a formal understanding of how organizations learn and manage knowledge.

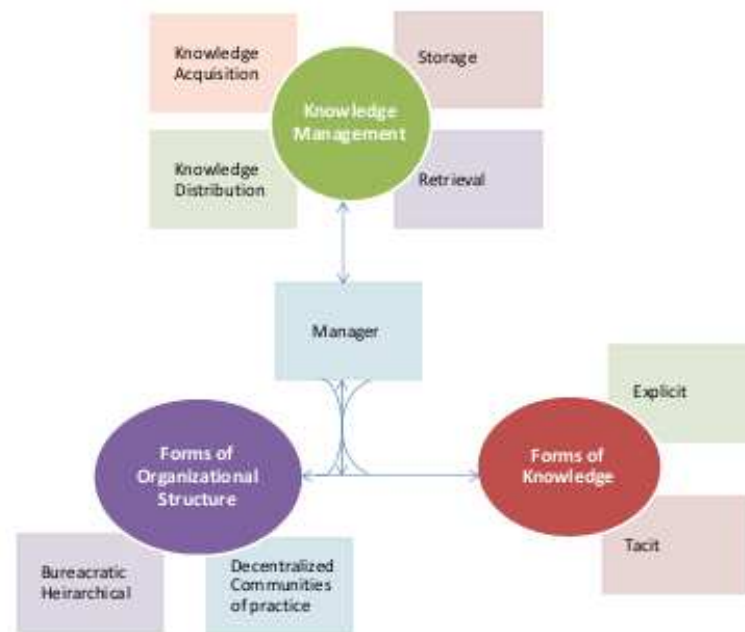


Fig. 1 A simple representation of Organizational Learning and KM process

Note that though a management's primary role is to manage people, practice, and resources, it is also relevant to mention herein that such role playing also demands strategic initiatives; i.e., to unlock the potentialities of its employees. Beyond organizing and developing centralized knowledge databases, knowledge managers should be able to monitor and ensure that such knowledge must be accessible to each and every employee within the organization. While on the other hand, a manager's role should not be limited to managing talent and abilities, but also to oversee how such acquired skills and expertises can be best utilized in the interest of the organization. At the same time, one may also find that there is a definite relationship between Human Resource Management (HRM) and KM. The former (HRM) formalizing the aim of mobilizing resources required for learning and training, while the latter (KM) being involved in allocation, sharing, distribution, storage, retrieval, and overall management and organization of such knowledge resources into meaningful assets.

Tacit Knowledge vs. Explicit Knowledge:

Learning in organization occurs primarily in two significant ways—individual learning and collective learning. Collective learning is characterized by *communities of*

practice at the occupational level (Lave & Wenger (1991), Brown & Duguid (1998)). Individual employees learn and gain experiences while on the job or from job related trainings imparted to them to acquire new skills and expertise. The knowledge comes in two forms; tacit and explicit. One form of knowledge widely discussed in the literature of OL is *tacit* knowledge. The concept of tacit knowledge was conceived by Polanyi (1966) who also laid the theoretical foundation of this notion (Taylor, 2007). According to Polanyi, this form of knowledge pertains to our internalization of experiences which builds intrinsic conception of the task that we perform, as Polanyi held the view that; “we can know more than we can tell.” In other words, consider an example of learning mathematics, which is cognitively demanding task. We all learn mathematics, but very few of us really excel. Also, consider the complex skills of a car driver where one may be able to distinguish between the “knowledge that a driver uses (common) and the knowledge that she has developed over the years (specific skills)”. She can explain or teach new learners how to drive a car but she perhaps cannot explicitly “transfer” her complete knowledge about her experiences of how to “excel” in driving which she has gained over the years as a driver. This learned formed of tacit knowledge acquired over the years also helps to develop *intuition*—an abstract perception of dealing with unfamiliar contexts. Some skill sets are developed just by watching others perform, while some other skill sets are acquired by continued practice and experience. Hence, this form of knowledge is important, and KM specifically attempts to codify “learned autonomic experiences” into coded information (explicit form) so that it can be *transferred* and reused by others. This explicit form of knowledge as often referred by Spender (1996) as *Conscious* knowledge is storable and retrievable from personal records or memory (Riege, 2005). A review of the term *tacit knowledge* in the literature of KM points to several important works by Nonaka (1994), and Taylor (2007). Tacit knowledge is defined as that knowledge which is highly situated, difficult to extract and codify into its counterpart—explicit knowledge, which is direct, comprehensible, and easily codified to enable its internalization. The role of KM is to codify (externalize) tacit knowledge into its more explicit form.

Codification involves several mechanisms to capture, codify, and transfer knowledge situated inside the head (or embedded inside the brain) to the outside via use of IT tools and expert systems into its more simpler form so that it can be used in contexts as routine. It is more like capturing thoughts and transforming it into coded commands. Tacit knowledge is hence intrinsic; e.g., the cognitive aspect of

acquired skills and experiences which cannot be observed explicitly. The knowledge cycle can be depicted as:

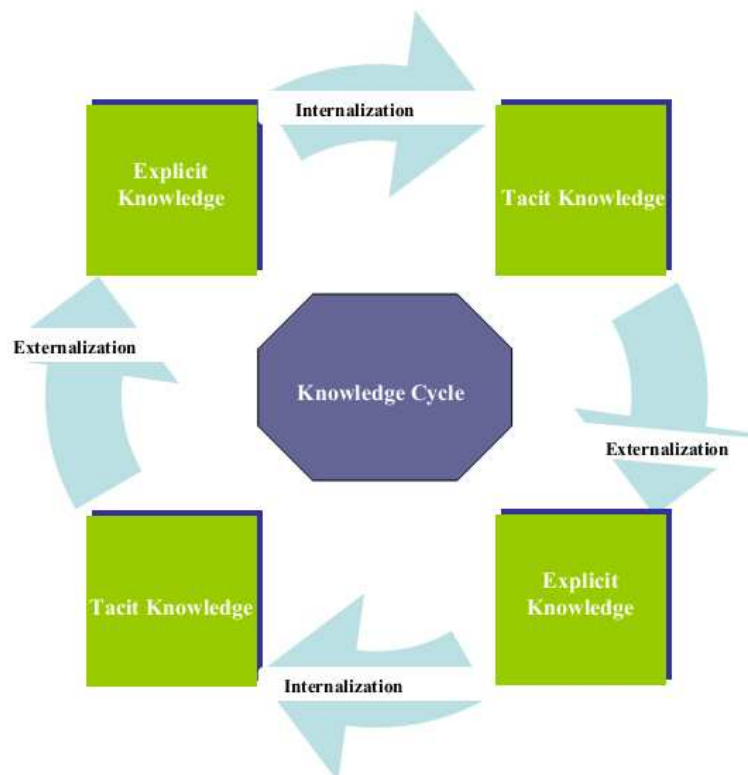


Fig. 2 The tacit-explicit Knowledge Cycle

The knowledge may be objective, yet implicit. This art of managing the acquired knowledge and its utilization is an important aspect of the practice of KM. However, the real problem of transferring this form of knowledge may face certain obstacles; meaning that, there can be impediments to converting and codifying the tacit form of knowledge by externalization.

B. The Nature and Forms of Organizational Practices

There are many forms and characters of knowledge in use by firms for converting them into desirable products and services. But it is the employees who create knowledge—thus recognized as a resource and which is widely acknowledged as a form of (embodied) intangible capital (Schiliro, 2012). In fact, *knowledge* is one of the primary constituents of *organizational learning and practice* (OLP). Knowledge distribution occurs across social boundaries in the form of definite constructs; e.g., hierarchical, horizontal, spatial, and temporal constructs. The importance of

knowledge acquisition is immense, and effective utilization of the knowledge acquired is deemed to be as important as it is considered as a form of intellectual property of an organization. The practice of knowledge management therefore, is associated with managerial thinking, employee behaviour, and decision making under organizational settings. Modern managers are more knowledgeable about how effectively they could make decisions based on incomplete information. But being knowledgeable is not enough: If the knowledge and skills, or expertise that a manager has, is not shared and externalized, it is of little value to the organization. And if the tacit form of knowledge which is a highly situated process is not codified for internalization by the employees, its full potential would not be realized. So managers have a dual role to play; e.g., managing human resources, and managing knowledge. Managers also have the responsibility of controlling labour and management (storage and retrieval) of huge amounts of information and data with which they interact on a daily basis to make informed decisions. Hence, there is a definite relationship between conventional aims and criteria of work organizations—e.g., how effectively organizations are able to create, analyze, share, and exchange information among them. For this to take place, it is relevant to acknowledge the importance of design of KM systems, since as knowledge is considered as an asset, it is essential to make learning available throughout the organization so as to enable everyone to benefit from exploiting knowledge in a systematic way for economic ends. This is also relevant for valuing knowledge in financial terms to meet economic ends of a firm or an organization.

The Role of Soft Knowledge:

Soft knowledge now dominates the hard knowledge. By soft knowledge, we mean the implicit form of knowledge which is tacit. Tacit form of knowledge is an intangible asset. Identification of intangible assets in knowledge-based organizations helps to generate value to the organization's business. Organizational structures hence should be grounded on the principles which facilitate the growth of knowledge, enable transfer of knowledge, and increase the flow of information. One recent view is that, instead of having a centralized vertically oriented organizational culture, it is better to go for decentralization and create units of excellence totally independent from the central bureaucracy given full autonomy in decision making. Organizations accumulate information and harness the power of knowledge to generate value-added services and products. Hence, learning organizations should have efficient

KM structure in place to facilitate the capture and transfer of knowledge. Horizontal processes add up knowledge transfer and sharing with minimal bureaucracy wherein knowledge can be managed systematically. A good knowledge management backbone aid in faster decision making. To cite a noteworthy example, McKinsey was among one of the first few companies which had a dedicated KM framework, headed by a Director of Knowledge Management Brook Manville. This was meant for putting in extra effort to develop and disseminate learning internally, and to promote learning from other external sources, from clients, colleagues, and from anything which have some “*embedded value*” in it (Peters, 1992). Organizations are thus containers of knowledge the content being the “learned information” about people, process, practice, and about everything beyond the *projects* —which are often considered the most important aspect of business practice. *Projects are everything*—but to deal with projects and oversee that it projects are managed successfully require expertise building, and above all, knowledge. A sound knowledge management framework helps to acquire new skills and realize the value of such skills acquired when the knowledge is managed professionally. This perspective highlights the need for professional knowledge managers, as the initiative taken by McKinsey proves to be this form of KM structure. Similar knowledge management structure based on institutional knowledge development framework has been successfully implemented by almost all the global multinational giants like Google, Accenture, Sony, Dell, E&Y and others. So, what effective KM strategies knowledge should knowledge managers adopt? Hansen *et. al.* (1999) categorizes knowledge management strategies into two distinct schemes— (i) Codification strategy, and (ii) Personalization strategy. But as one may ask, why there is a need for codification of knowledge gained by individual employees at the first place? The reason is that, codification of tacit knowledge would help people to pass their accumulated knowledge to others (Smith, 2001) to convey “what they know beyond their knowing,” i.e., the know-how. This pertains to Polanyi’s concept— “we can know more than we can tell”, and thus, “be able to tell what we really know more than we could have told”.

C. Obstacles to Knowledge Management

Constraining factors—as a state of being checked, restricted, or obliged to evade or perform certain actions related to organizational learning may severely impair an organization’s capacity to learn, as well as its performance in the long run. What can

be the nature of such constraints? Eli Goldratt (1990) defines a Constraint as,

“Anything that limits a system from achieving higher performance verses its goal.”

Incidentally, how can one diagnose this problem and identify the constraining factors? In what manner these constraining factors may present as obstacles to knowledge management (KM)? There can be many. One of the key aspects of successful KM implementations is knowledge sharing (Riege, 2005). It shall be noted that the knowledge generated in an organization should be uniformly shared among its members, or be accessible to its members *“on demand”*. Barriers to knowledge sharing may make it difficult for KM to achieve its goals and could negatively affect organizational performance, which in turn, may lead to a decline in return on investment (ROI). Vertical authority structures constrain the lateral flows of knowledge-sharing in organizations which have conventional bureaucratic and hierarchical structure. Obstacles may creep up from *“silent constrains”* which may not be explicitly observable by the management, yet often they prove as bottleneck to efficient organizational learning. This problem is widely discussed in the literature of OL, specifically by Goldratt (Theory of constraints), Scarbrough (2003), and Chatterjee (2013). Beyond barriers to knowledge-sharing, constrains may also present as impaired communication between the management and its employees, or inefficient exploitation of knowledge by unmotivated workforce, unproductive work practices, faulty learning mechanisms, lack of HR initiatives etc. The nature of impairment in learning may arise due to unproductive KM practices which may be summarized as(from Peters (1992), Typology of Learning/KMS)—

1. Impaired cross-functional knowledge-sharing
2. Lack of innovative training mechanisms, underinvestment in IT infrastructure
3. Bureaucratic interference
4. Hoarding of knowledge by knowledge-experts
5. Want for knowledge experts to train the work-force periodically
6. Lack of autonomy in learning
7. Vertical structure of organizational learning network (OLN)
8. Inefficient systemic knowledge capture
9. Lack of horizontal integration; e.g., between the management, the workforce and the external environment (project-clientele exposure, lack of *“engagement”*, etc.)

10. Learning from project failures
11. Lack of effective monitoring of employee learning curve, or failure to oversee any difficulties in their learning efforts.

One of the most important functions of a Knowledge manager is to bring people in touch with the knowledge-platform, and put them in touch with information, people and the learning network. I model a theoretical case based on hypothetical assumptions underlying learning in organization which would likely provide a “case-based” analysis of constrain-management.

III Modelling A Theoretical Case

In this section, I model a theoretical case from the viewpoint of practical observation. The aim of this study is to investigate why obstacles to KM matters, and how such obstacles to learning and KM could be removed. It is also important to acknowledge the fact— why KM systems might fail, and what are the enablers and constraints in human enterprises (Malhotra, 2003)? Hence, this study incorporates several steps. Initially, I design some formal hypotheses about how knowledge is managed within the learning organization, what is the role of knowledge managers in workplace, and what form of knowledge is important to achieve objectives. This is followed by a formal consideration about what role tacit and explicit learning play, and how constraining factors can impede knowledge transfer in a hypothesized firm? The model adopted in this research is designed to test several assumptions based on standard definitions of organizational learning curve using constraining factors as limiting variables to find out whether they hold in the context of learning and KM practice. Let us consider a firm “Q” whose business domain is R&D, with a high rate of knowledge conversion (externalization and internalization) ratio using expert systems and having a talent pool of knowledge managers dedicated to maintain an efficient knowledge pool consisting of systems of resources. This system tends to be well-organized and efficient in converting both raw inputs and tacit knowledge into its more explicit form by the process of externalization which is essential for converting knowledge into new products and services. Owing to rapid turnover of new products and services, the KM team ensures efficiency in storage and retrieval process in order to reduce a ‘high’ degree of moderation in knowledge distribution and its sharing across the organization. Modelling this scenario involves following assumptions: i.e., firms should be able to maintain competitive advantage in order to

survive; in order to maintain the competitive advantage, they must be able to sustain high product and services turnover ratio; there should not be any impediment or obstacles to knowledge sharing within the organization (Scarbrough, 2003), and finally, KM should foster high levels of innovation (Wiig and Joost, 2003). In such parlance, Knowledge is essential for continued survival of an organization (Wiig and Joost, 2003). Another factor which is essential is innovation in learning and talent management. Now, constraining factors are modelled to render the model more dynamic by using polynomial linear autoregressive Bayesian inference. We propose several hypothesis based on general assumptions which are defined as follows;

Definition 1 *KM firms should maintain a high level of efficiency in training its employees by using expert systems which simplify the work of codifying tacit form of knowledge into its more explicit form, thereby maintaining a knowledge pool which can be rapidly and easily accessed, or retrieved when required.*

Assumption 1 Let us consider that externalization of tacit knowledge is an important factor and obstacles to externalize this form of knowledge may lead to impaired innovation level.

Proposition: *Hypothesis 1—> Externalization of tacit knowledge is important since better decisions can be made with new, explicit knowledge.*

Hypothesis 2—> The anticipation that more information will be available influences manager's decisions.

We denote an equation of learning that incorporates a probability component which defines uncertainty in the knowledge process. The equation of learning is denoted by,

$$y = \alpha_0 + (1 - \beta_1 x^{k_t})^p + \varepsilon$$

eq. 1

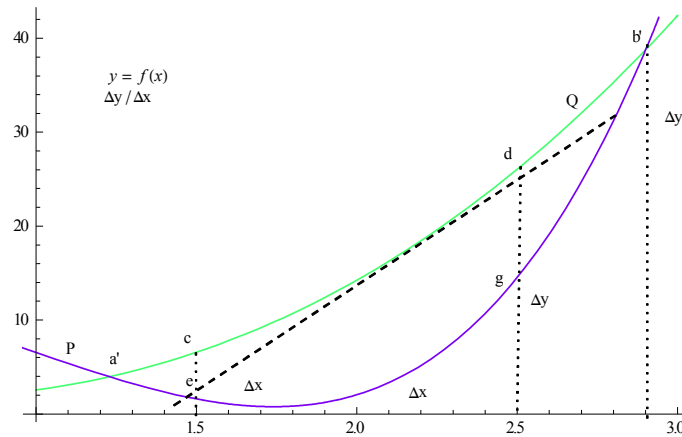


Fig. 3 Performance levels vs Knowledge growth

Wherein, $\alpha_0 = \text{constant}$, $(1 - \beta_1)^p$ is the probability factor of learning, and ϵ is the error rate in learning, and the variable “X” plots the time against variable “Y” as a number of patents applied vis-à-vis knowledge-base development on the vertical axis. In x^{k_t} , where k_t is defined as a function which takes the value of x when plotted on the graph. The rate in learning or gain in knowledge-base is given as, or can be computed from—

$$\frac{dy}{dx}$$

The equation is a given condition of two firms, “P” and “Q”, whose performance in terms of number of patents per period is the function of learning and gain in knowledge-base for each of the two firms. The value of the parameter k_t determines the nature of the learning curve, and a low value of k_t signifies a flat learning curve while a higher value indicates a parabolic shift to the right. This is a simple representation of the nature of relationship between output and learning. Now, let us introduce some degree of constraint defined as—

$$\alpha_0 + (1 - \beta_1 x^{k_t})^{\frac{1}{\theta}} + \epsilon \quad \text{eq.2}$$

Wherein, $\frac{1}{\theta}$ is the constraining factor which is defined by $\theta \leq 0$. And if, $\theta \leq 0.36$, then $\frac{1}{\theta}$ or the accompanying factor-constraint must be ≤ 0.1 . This signifies that

organizations have a very low tolerance for constraining factors which negatively affect learning, and hence, they should be dealt within the context of KM.

Definition 2 *For a firm specializing in R&D, the rate of fall in periodic investments in KM and the rate of fall in R&D investment and expenditures is proportional to and reflects in its plummeting innovation window.*

Assumption 2 *A company can increase its operating costs (which is unwanted) with all other things remaining constant, if there is a sudden, sustained fall in R&D knowledge-base owing to neglect of KM practices that may reduce its innovation window, and thereby raise future operational costs.*

Proposition: *Hypothesis 2—> There is a cost factor to compensate for the lost knowledge-base.*

Let us assume that there are two firms, “P” & “Q”, who compete for different markets but produces identical goods, all other things remaining constant. Both follow vaguely distinguishable models of innovation, invest heavily on R&D, and have considerable product offerings in terms of patents over a period of past two years. Now, both these firms rely heavily on KM practices and much of their research and development activities, and production management, is heavily reliant on expert systems. Initial conditions for their operating environments are stated as below:

1. Both firms start with equal amount of resources, have identical client base and operates in markets with imperfect information. Both firms have a dedicated KM team in place.
2. Initially, both firms— P & Q, have had a similar management structure; i.e., decentralized management systems which fosters knowledge sharing across the board.
3. Both firms have had a considerable amount of knowledge resource pool during the initial conditions.

Now, let us consider the following scenario: After about one full year in business, it has been observed that firm “P” lags behind firm “Q” in terms of innovation, and the number of patents applied by firm P declined considerably over a period of say, one year. What could have accounted for such a decline in innovation level for firm “P”? As depicted in the Figure 2 above, firms P and Q shows a differential trend in

knowledge growth, knowledge-base, and innovation (no. of patents). A detailed investigation and performance analysis of firm “P” revealed striking evidences in the tune of—

1. Change Management: There has been a change in the management and leadership structure in firm “P” in recent times. Note that change management can be disastrous if it does not serve the intended purpose.
2. The new management adopted a somewhat centralized, hierarchical structure with some degree of bureaucracy creeping in that resulted in loss of coordination and reduced knowledge sharing among different levels of workforce.
3. It was observed, however, that the resources allocated to the R&D was efficiently utilized.
4. There was no decline in investments in R&D though, and in fact, the total investments increased in the subsequent years, but ROI or returns to R&D declined considerably over the following years. The number of patents applied by firm “P”, however, declined. The management and the CEO were clueless about what was causing a decline in ROI even though there has been a considerable increase in R&D investment expenditures.
5. On further examination, it was observed that there appeared severe constraints which affected employee learning as a result of some obstacles which cropped up that hindered efficient sharing of information. These obstacles persistently jostled the smooth flow of knowledge across the organization, and among the employees.

Remedial Measures:

When an inquisitive investigation supported the fact that there were inherent obstacles to KM practices, the foremost job was to manage organizational learning deficiencies by clearing bottlenecks to organization-wide learning and knowledge sharing. A change in organizational structure was prescribed which would horizontally align and integrate knowledge pool, human resources, and the management to link values, behaviour, and knowledge with the executive functionaries of the firm. Several measures were recommended to monitor efficient KM practice. Some of these measures are widely discussed in the literature of knowledge management (See for a detailed review in Holsapple (2003)). These were in the tune of—

1. Identify and remove barriers and obstacles to learning and KM
2. Improve not just learning, but quality of learning as well
3. Capitalize on the internet and intranet to associate all departments with the knowledge process
4. Change the organizational structure from a more vertically integrated to horizontally inclusive structure
5. Develop knowledge management approaches that can be replicated; i.e., codify tacit knowledge to increase knowledge base
6. Ensure communities of practice
7. Encourage learning and information sharing among the employees and the management at all levels
8. Reorient knowledge experts to form organizational “teaching groups”
9. Implement proactive KM strategies
10. Control chaos
11. Institutionalize KM
12. Develop knowledge leadership and knowledge innovation strategies
13. Collaborate and cooperate.

Some of these remedial measures took time to take shape, and involved considerable cost to the organization (i.e., hiring outside consultants), but it was worth the price since following diagnosis and remedial measures prescribed, gradual growth in knowledge base resumed, and it was possible to revive the lost trajectory as it is evident from the curve of firm “P” (See Fig. 3). In essence, what could have induced such a drastic fall in the firm’s performance levels? It was found out that owing to the constraints which acted as a bottleneck, information sharing was impaired, and coordination was lacking. There were obstacles to organization-wide learning. Coordinators and experts responsible for educating the workforce ceased to interact periodically with the top management, and furthermore, they were hoarding information meant to be shared among members at the expense of the wider organization’s total learning. This issue has been particularly considered by Peters (1992) who stressed the need for efficient knowledge management structures in organizations.

Conclusion:

This study concludes with a final note: effective KM practices require efficient knowledge manager. Knowledge managers should not only be experts, teachers or executives, but they should also be able to monitor and manage the workforce, and educate them whenever required, in whatever manner deemed appropriate according to KM guidelines. Furthermore, it is also important to diagnose, identify, and remove constraining factors that often prove to be real obstacles to KM, and which unconstructively affect firm level performances. Hence, future studies should be directed toward managing factors which impact KM in a negative way, and to formulate strategies which would effectively counteract such constraining factors by reining in on the obstacles to KM practice.

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