Free technology essay: knowledge management

Business, Management

Why do some knowledge-based organizations perform well in terms of innovation but less well in terms of efficiencyTo what extent can information systems help to redress this balance?

ABSTRACT

In this paper, focus will be given on analysing how an innovative organisation can be in-efficient. The key role of information systems in addressing this issue will be discussed. The perspectives of various researchers will be taken into consideration. The different type of knowledge management will also be discussed. The drawbacks of Knowledge Management without proper information systems will be highlighted.

Keywords: Knowledge Management, information systems, knowledge management disadvantages, knowledge management innovation

INTRODUCTION

It has regularly been said that the knowledge based organisations are not as efficient as they are innovative. The report by the top consultancy firm, KPMG also confirms this statement. A knowledge manager of KPMG, Nagle (1999) says that one of the major challenges being faced by the firms in today’s world is how to best capture, store, retain and share the vast amount of knowledge possesses by their professionals. As per Cameron (2000), “ Knowledge is power, but without the adequate management of that

knowledge, the consequences for [organizations] could be devastating". It should not come as a surprise to us that most of the firms are of the view that the key enabler for efficient knowledge management will betechnology. Currently the corporate efforts are concentrated more on the group of technologies called as Knowledge Management Systems (KMS).

KMS in firms assists its employees to easily access the information in a better way, share ideas and learn from previous mistakes. In theory, by facilitating the sharing of ideas, KMS improves the innovativeness of the business. However, the downside of this is that by following this process, firms become less efficient. In this process, employees tend to spend more time in doing things, discussing different ideas which results in issues in streamlining the work and doing it in an efficient manner.

The central question of discussion here is how information systems like SAP or ERM can help in enhancing the efficiency of KMS. How can the implementations of a new information system can help in reduction of time wastage and simultaneously assist in making the knowledge transfer process more efficient.

In this paper, first an introduction to the knowledge processes will be given. Then how the role of knowledge management evolved in organisations will be discussed. The merits of knowledge management will be highlighted. Furthermore the potential inefficiencies due to knowledge management will be discussed. Afterwards the role of information systems in curbing the drawbacks of knowledge management will be discussed in detail taking the

example of few organisations who successfully implemented information systems in their organisations.

KNOWLEDGE MANAGEMENT

“ Knowledge Management is concerned with the exploitation and development of the knowledge assets of an organisation with a view to furthering the organization’s objectives. The knowledge to be managed includes both explicit, documented knowledge and tacit, subjective knowledge. Management entails all those processes involved with identification, sharing and creation of knowledge.” (Davenport et al, 1998).

Figure 1: Knowledge hierarchy

Figure 1 gives a good idea of the hierarchy of knowledge. It shows how value can be added from the raw data which are at the disposal of organisations. By following the hierarchy, it can be seen how the data become information when applied to a particular context. This perspective will be discussed in detail later on. Furthermore, that information becomes knowledge when a particular meaning is applied to it. Finally that knowledge becomes wisdom when it is used as an insight. This wisdom is then useful for any organisation.

Knowledge can mainly be classified into two types: tacit and explicit knowledge. It has always been difficult to define these two types of knowledge. Tacit knowledge is basically rooted in a specific context, is subjective, highly experimental and largely unconscious. While explicit knowledge is mainly rule based, reusable and is objective.

Figure 2: Tacit and Explicit Knowledge

Figure 2 displays the difference between explicit and implicit knowledge when applied in the context of adding value to an organisation. It highlights the fact that the main difference between the two is use ofcommunicationin tacit knowledge. While in the case of explicit knowledge models are being used to add value.

Figure 3: Types of Knowledge (Willcocks and Whitley, 2009)

Knowledge can further be classified into individual level and collective level. Figure 3 shows the interaction between the types of knowledge in a matrix form. This figure further highlights the difference between the explicit and tacit knowledge.

In the case of knowledge based organisation, KM can mainly be classified into two varieties. First is, IT-focussed where knowledge is an object. IT is used to increase productivity of an organisation. Firms attempt to leverage the already held data. The firm wide relationship is enabled electronically. Second variety is Human- centred where knowledge is a process which leads to creation of more knowledge. It is primarily focussed on sharing knowledge and learning and innovation.

Figure 4: Interaction of Knowing and Types of Knowledge

Source: Small and Sage, 2005/2006

Figure 4 shows how knowledge is applied in the context of an organisation. In this interaction, the process of ‘ knowing’ remains at the core of the matrix and is used as an ‘ action’.

Different academics are of different views about knowledge based organisations. Pentland (1995) says that knowledge is mostly constructed socially and is shared between the participants in an organisationalcultureeven though the participants have their own individual perspectives and views of the organisational situations. Sahay and Robey (1996) further capture on this concept in their proposal of knowledge operationalization as “ social interpretation” (Schultze and Leidner, 2002).

The different perspectives of knowledge in an organisational context are: knowledge vis-a-vis data and information, state of mind, object, process, access to information and capacity. To further elaborate on the same it can be said that data is facts, raw numbers. Knowledge is customized information. In this case, KM concentrates on passing potentially useful information to individuals, thereby enabling incorporation of information. Next is the perspective of “ state of mind” where knowledge behaves as the expression of knowing and interpreting. Here KM includes improving employees learning and understanding by providing information. Another perspective is that knowledge is perceived as a body to be stored and modified. Fourth is the view of knowledge being perceived as the expertise application process. The central focus of KM is over the process of creation, sharing, distribution and flow of knowledge. Fifth perspective is the knowledge being viewed as a requirement to retrieve information. The KM

focuses of on methodological access to and retrieval of information. Finally knowledge is perceived as the potential to influence action.

KNOWLEDGE BASED ORGANISATIONS

In this section, it will be analysed as to how knowledge based organisations innovate better than the ones who are not knowledge based. Automotive industry provides a very good opportunity to examine inter-organizational learning. More than 70 per cent of the value of vehicle is developed and manufactured by OEMs and their supplier networks. As a consequence of this, the productivity of the network of firms working in collaboration is directly related to the quality and cost of the automobile. Most of the research in automotive sector shows that Japanese automotive network, in particular, Toyota has been far superior in transferring the productivity improving knowledge throughout the supply network (Dyer and Nobeoka, 2000).

Figure 5: Comparison between Automotive Labor Productivity of US and Japanese Carmakers

The ‘ network’ of Toyota seems very effective in facilitating inter-organisational knowledge transfers (Dyer and Nobeoka, 2000). It will not be wrong to call it a model for the future of automotive industry.

One of the major dilemmas which Toyota faced while implementing the knowledge management processes in their organisation is to how to do the knowledge transfers among a large number of individual members in the most efficient manner. There were appropriate conditions to take care of

other dilemmas like keeping the individuals motivated enough to participate actively and curbing free riding. But the critical steps necessary for proper flow of knowledge among members was not efficient enough. While explicit knowledge can easily be codified and transmitted to a large group of individuals via meetings and other activities, transfer of tacit knowledge required strong collaboration and can probably be transferred merely to a small cluster of individuals at a particular location only(Dyer and Nobeoka, 2000). Sharing information through meetings will result in inefficiency in transfer of tacit knowledge.

To counter this issue, Toyota promoted the thinking of kyoson kyoei and created a collective network-level knowledge transmission, repository and processes of diffusion. Four of the key network-level processes were: “(1) the supplier association (a network-level forum for creating a shared social community, inculcating network norms, and sharing knowledge), (2) Toyota’s operations management consulting division (a network-level unit givenaccountabilityfor knowledge acquisition, storage, and diffusion within the network), (3) voluntary small group learning teams (jishuken), or a sub-network forum for knowledge sharing that creates strong ties and a shared community among small groups of suppliers, and (4) inter-firm employee transfers (some job rotations occur at the network level)” (Dyer and Nobeoka, 2000). These four critical processes managed to create an ‘ identity’ of the network. Moreover it also facilitated knowledge transfer among network member.

Figure 6: Toyota’s network-level knowledge-sharing processes

Figure 6 gives a fuller picture of the knowledge sharing processes implemented in Toyota. By following these processes, Toyota managed to build robust mutual relationship with suppliers. Furthermore suppliers also started getting critical knowledge at nominal cost. As of result of this, suppliers participated in the network with a keen interest. It was not only to show their commitment towards Toyota but also to get knowledge transfers from Toyota. The more valuable tacit knowledge was being transferred in the bilateral atmosphere. This resulted in giving a powerful identity to the network. Suppliers began to correlate with the social community of the network.

All this was made possible by the learning groups which resulted in strong multi-dimensional relationships. Moreover suppliers also recognised the merits of sharing of knowledge. Additionally the Toyota suppliers were also in competition among themselves in the sense that the quickest grasping supplier will most probably get business for the new model.

It has been a major accomplishment for Toyota in the way they managed to " motivate all the members to participate and contribute knowledge" (Burgess, 2005) for the collective good.

Organisations who are leaders in knowledge management have used extrinsic rewards (Davenport & Prusak, 1998). To further substantiate this statement, experienced consultants at Ernst & Young and McKinsey were evaluated, on the basis of knowledge they contribute to their organisation. These consultants are of the view that " one party has to be willing to give something or get something from another party". They were of the view that

open and organic information culture leads to larger sharing. Furthermore they also proposed that those individuals who feel that their knowledge belongs to them rather than to their organisation can be expected to share their knowledge more (Burgess, 2005).

Disadvantages of KM

Research has shown that the ready availability of examples for KMS users led to a significant enhancement in their problem-solving skills when compared to the skills level gained through the use of traditional reference materials (McCall et al, 2008). Results have further shown that groups having access to KMS far outperforms those working in the traditional groups. Moreover this edge vanishes when the KMS access is removed. It has also been deducted that while both the groups gain different types of explicit knowledge the traditional groups have a tendency to encode most of the rules in memory. However the KMS group manages to gain superior-level of explicit knowledge which acts as a key to tacit knowledge formulation.

In the context of business, researchers have found that employees are more willing to exchange knowledge if it is related to businessgoals(Small and Sage, 2005/2006). They have put more emphasis on the importance of business strategy to be communicated to the employees. Another important aspect to be noted here is that the knowledge sometimes acts as a double-edged sword; though too less leads to in-efficiencies, too much can lead to rigidities that can be counterproductive in a rapidly changing world. Furthermore too little may lead to muddled social relations, too much will lead to curbing of different perspectives (Bowker and Star, 1999). According

to Schultze and Leidner (2002), too little may lead to costly errors, too much may lead to undesirable answerability. IT can play a major role in all the knowledge management processes like knowledge creation, storage/retrieval, transfer and application.

One of the most critical issues being faced by the organisations in today's world is their deficiency of skill to capture and incorporate information located in different sources. While some of these are internal to an organisation (data warehouse, transaction database, knowledge portals) others are external (commercial database, credit reports, news agency announcements, etc.) (Delen and Hawamdeh, 2009). If the organisations try to integrate the multiple sources into a single unified system just for the sake of centralization of the sources of information then it leads to highly rigid systems which are not practically manageable.

Some of the major reasons of thefailureof KM are the multifaceted and multidimensional nature of knowledge available in an organisation. The dynamic nature and relationships between the knowledge management frameworks is also cited as one of the major reasons of failure of KMS.

Role of Information Systems

An efficient KMS should allow the user to easily access the explicit knowledge stored in any system that can be applied to address the issue in hand. KMS should increase the ease with which user can find a potential solution to the problematic situation. KMS makes the user relax about the need to encode the explicit knowledge in long-term memory as the

knowledge components can easily be accesses by the user’s active working memory (McCall et al, 2008).

There are two critical demerits of KMS which might balance out the potential of the encoding of the knowledge available explicitly. Firstly, the vast amount of information and different ways of retrieving it via KMS could lead to likely increase in the amount of mental workout to retrieve the information (Rose and Wolfe, 2000; Rose, 2005). Secondly, it is the supposed simplicity of availability. If the information is easily accessible then the user will just use it for his situation without feeling any kind ofmotivationto encode the knowledge.

Researchers have found that many companies who have implemented Enterprise Resource Planning (ERP) are of the view that the software will provide them a new chance to improve operational support and will simultaneously provide them a competitive advantage also (Irani et al, 2007). However the concept of ‘ justification’ happens only at those places where every employee is made aware of the importance of the new software for the organisational sustainability. Although the resources of knowledge varies firm wide but usually it constitutes of manuals, letters, information about customers and derived knowledge of work processes. Organisations are realising that knowledge will not automatically flow throughout the company.

A critical aspect of knowledge sharing is providing the right means which should work within the organisational context. Over the period of time, organisations have realised that information technology (IT) is the only

means by which enterprise knowledge can be shared effectively. Video-conferencing, sharing of application and providing support electronically are some of the key enablers of knowledge sharing processes. They can provide an excellent support to the already existing infrastructure of knowledge management.

Few of the major benefits of Knowledge Management systems are (1) In-valuable information can be shared throughout the hierarchy of the organisation. (2) Provides the opportunity to do away with churning out the same work thereby resulting in reduction of out-dated work. (3) New employees can be trained in a shorter period. (4) The intellectual property is retained by the organisation even of the employees' leaves if it is possible to codify that knowledge. Some of the organisations who implemented the KMS very effectively and efficiently are MIT Open Course Ware, Knowledge Wharton. Although both of these organisations are educational institutions they provide an excellentcase studyof efficiently using information systems in their KM processes.

The key role being played by information systems is to assist in the storage and diffusion of knowledge so that knowledge can be accessed across the space and time (Schultze and Leidner, 2002). Information systems provide visibility to the invisible work and the complexity involved in doing that work.

Figure 7: KMS Success Model (Halawi et al, 2007-2008)

Figure 7 shows the key role being played by information systems in the success of KM projects. Normally it is at the centre of many KM projects (Halawi et al, 2007-2008).

However organisations who are implementing information systems into their KMS need to take few factors into consideration. The so-called ‘ free’ exchange of knowledge is possible only in an ‘ open’ corporate culture, non-departmental hierarchy. Furthermore sometimes this ‘ open’ culture can act as an obstacle for employee empowerment (Irani et al, 2007).

Another point to be noted about multi-faceted aspect of KMS is that an effective KMS in not just about technology. It incorporates cultural and organisational aspects as well, it is necessary to design proper metrics to access the positives of KMS (Halawi et al, 2007-2008). Furthermore an integrated technical architecture is the critical driver for KMS. Proper use of information systems will facilitate the process of knowledge transfer, assisting in both the transmission and absorption and utilisation of knowledge. Researchers have found groupware, an IT tool for working in a group is of immense help in the proper implementation of KM in organisations. Groupware helps in interpersonal communications and facilitates the transfer of tacit knowledge (Wua et al, 2010). Researchers have found that the software tools and information systems applications are very crucial for both the ‘ provider’ side and ‘ receiver’ side.

Most of the top technology firms rely mainly on their dynamic ability to transform the knowledge in their organisation to add value to their customers. Researchers are of the view that the focus on tacit knowledge

should not lead to not giving due importance to proper implementation of information systems. A proper balance needs to be found and exercised (Kalkan, 2008). In the current world, any organisation having improper implementation of information systems will be at a disadvantage position in the marketplace. Implementation of information systems should always be knowledge oriented.

CONCLUSION

This paper makes an attempt to analyse the role of information systems in efficient utilisation of KM. It has been highlighted as to how information systems are crucial in making an innovative organisation highly efficient. The demerits of KM without proper information systems are discussed. The efficient way in which Toyota managed its knowledge sharing using information systems within the organisation and across its suppliers has been discussed in detail. An attempt has been made to throw more light on the other aspects of proper IS implementation. Organisations should not consider that just by implementing Information systems all our problems will be solved. Information Systems should not be considered as a ‘ silver bullet’.

As the research area is still evolving, more future research can be done on this topic. There are further sub-categories within KM which can be researched in more detail. Those categories will further provide a detailed view of the topic. While few organisations who implemented information systems has been analysed, other organisations also need to be analysed in this regard. Furthermore the definition of innovation and efficiency can be

analysed from the perspectives of organisations implementing. This will provide a broader picture of the research area.

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