Association for Information Systems
AIS Electronic Library (AISeL)

WHICEB 2014 Proceedings

Wuhan International Conference on e-Business

Summer 6-1-2014

A Study on the Enterprises' Internal and External Knowledge Network Management

Xuejun Lei
Huazhong University of Science and Technology, Wuhan China

Follow this and additional works at: http://aisel.aisnet.org/whiceb2014

Recommended Citation

Lei, Xuejun, "A Study on the Enterprises' Internal and External Knowledge Network Management" (2014). *WHICEB 2014 Proceedings*. 22.
http://aisel.aisnet.org/whiceb2014/22

A Study on the Enterprises' Internal and External Knowledge Network Management

Lei Xuejun

Huazhong University of Science and Technology, Wuhan China

Abstract: Knowledge management is a platform that adjust to the desire of enterprises' knowledge management .The thesis focused on the matter of enterprises' knowledge network management system, built the internal knowledge network system and external knowledge network system respectively, and described features and content of different models, also discussed how to take full advantage of knowledge network's function to support enterprises on aspect of running system as well. At last, it pointed out some problems we should pay attention to when building the knowledge network.

Key words: Knowledge management; Enterprise; Internal;External; Structure system;

1.   INTRODUCTION

In order to remain invincible in the process of competition, all enterprises need to constantly get access to all kinds of knowledge. While connecting with external organizations and institutions, enterprises can not only get massive useful knowledge, but also can improve the ability of their innovation value by sharing and transferring knowledge at the same time. So, the starting point of enterprises' knowledge management is to treat knowledge as the most important resource, gaining knowledge and using knowledge as much as possible is the key to improve enterprises' core competitiveness. In general ,knowledge of enterprises' can be divided into three sorts: First is the faculty's knowledge of an enterprise, including their learning results, views, relation network, experiences and lessons, for this kind of resource, knowledge management is mainly about collecting, filing and realizing sharing in the enterprise as much as possible; Second is all kinds of internal documents and materials of the enterprise, for this sort of resource, knowledge management is to share these in the enterprise to the maximum; The third sort is collecting outside information and service, on this sort of resource, knowledge management is to collect and clear up, divide into sorts and screening, store and use of them. Knowledge management is a platform that adjusts to the desire of enterprises' knowledge management, and it can fix effectively the existed knowledge leakage in knowledge management running system.

2.   INTERNAL MANAGEMENT SYSTEM OF ENTERPRISES' KNOWLEDGE NETWORK

2.1   Enterprise's internal knowledge network structure system

If to understand knowledge network from computer science aspect, knowledge network is based on unified criteria and standards, backed on digital information, supported by distributed mass resource system(knowledge warehouse), approached by intelligent retrieval technology, managed by e-commerce, transported by broadband high-speed network to get information transferred between different enterprises, to get the goal of knowledge sharing. Enterprises users can get their needed systematic, specific knowledge and information conveniently and quickly by using knowledge network.

Reference to the OSI open system interconnection model in computer network, this thesis built an enterprise's internal knowledge network structure system, as shown in figure 1. This model used the existing information technology and tools, constructed a framework of knowledge warehouse. This model helps us further understand how knowledge warehouse get enterprise's knowledge resources orderly organized.
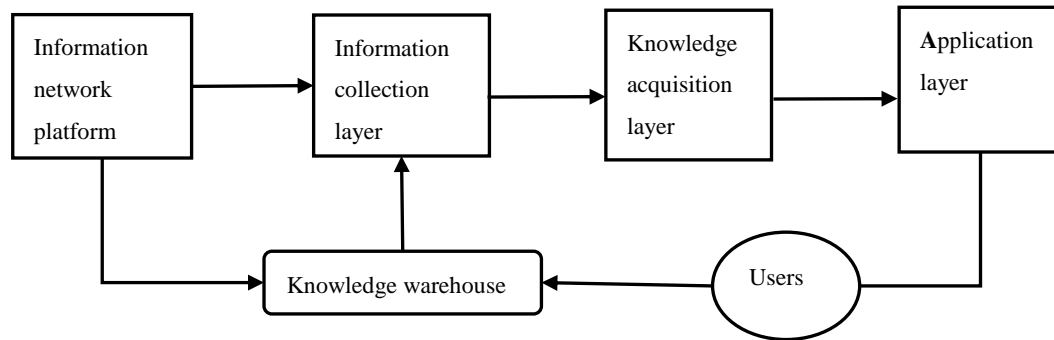
Figure 1.   Enterprise's internal knowledge network structure system

Information network platform is the operation foundation of the knowledge network, it's the technology basis to promote knowledge resources sharing, it's a network system mainly consists of Internet, network download tools, network interactive system and so on. Information collection layer is responsible for information acquisition, organization and storage, classifying and merging similar information and constructing the knowledge warehouse of the enterprise. Knowledge warehouse is the core part of an enterprise's knowledge network, it stores all the available information and knowledge of the enterprise, including method library, model base, database, document library and so on, and it can enlarge or decrease its storage according to the condition of the enterprise knowledge construction. In an enterprise, new employees can be familiar to predecessors' work environment, learn other staff's experience quickly on the basis of knowledge warehouse. Knowledge acquisition layer is responsible for the dynamic link of knowledge units, which means present knowledge and it's background at the same time. The main opponent of knowledge acquisition layer is knowledge engine, it's a computer system applied artificial intelligence technology. It accepts the access request from application layer, then analyses the description of the link among relevant knowledge units in Meta data, connects the relevant knowledge units of the knowledge warehouse dynamically and submits to the application layer. It can use a variety of knowledge acquisition algorithms to match the search requests from application layer with knowledge units, then store the matching process, and readjust internal parameters of knowledge acquisition algorithm according to interaction with users until the result obtained satisfied the need. Application layer is responsible for presentation of knowledge, it also can be called user interface layer. This layer faces the decision makers, it adopts many artificial intelligence technology, such as neural network, genetic algorithm, case-based reasoning and so on to help make scientific decision. Different algorithm adapts to different cope, so the platform also needs the ability to pick up different algorithms according to the environment. The application layer also faces the enterprise's knowledge reference demand, it can apply the way of natural language retrieval to provide friendly GUI interface. Taking full consideration of the enterprise's personalized knowledge demand, according to the learner's condition reunites related knowledge and generating personalized teaching materials.

2·2   Knowledge network's operating mechanism
2·2·1 Knowledge classification mechanism

In order to share and apply enterprises' knowledge better, enterprises should establish knowledge classification system and knowledge standardization system. Classification of enterprises' knowledge is not only according to the position, professional, but also more according to the local knowledge and global knowledge, explicit knowledge and tacit knowledge. Local knowledge refers to knowledge which should share in a team, a department of an enterprise, and globe knowledge refers to knowledge that should share in all the departments of an enterprise. Enterprises should become a learning organization,   staff should be lifelong learning

individuals, however because of the time, funds and resource constraints, we also have to emphasize the concept of learning timely. So local knowledge and globe knowledge can be trained by different levels.

2·2·2 Knowledge sharing mechanism

Without knowledge sharing, enterprises' important employee's turnover and retirement can cause great loss to the enterprise. Because important employees' experience, customer relations, unique skills and professional knowledge are enterprise's intangible wealth, making full use of such wealth is an important factor to enterprises' quick development. At the same time, communication between employees, complementary of knowledge difference and strengthen of the corporate culture values, all need a knowledge sharing mechanism. By the establishment of knowledge sharing mechanism, all employees of enterprises can learn from each other. This can be of significant value in enterprises that have a lot of branches, because by dividing one apartment's successful experience and best practice into document, and with effective document sharing mechanism, the experience can be shared quickly in other departments, and thus avoiding resource wasting because of lack of knowledge sharing and influence of information communication.

2·2·3 Knowledge updating mechanism

In order to make sure that the knowledge in an enterprise's knowledge warehouse can play its due role continuously and effectively, enterprise is necessary to establish knowledge regular updating mechanism, which requests administrators to check whether the existed knowledge is outdated, useless or in conflict with others. Once such situations are found, the related knowledge updating mechanism should be operated to make sure knowledge of the enterprise is useful, accurate and concise and uniformity. The main way of enterprise's internal knowledge updating is through the combination of different kinds of knowledge, which means to put different subjects, different kind of knowledge together to create new knowledge. From the view of specific knowledge units, any creation of new knowledge is based on original knowledge, by digging and using of existed knowledge to solve new problems, so this actually is a process which reunited different style of knowledge in units and creating new knowledge. The combination of knowledge breaks the state of original knowledge; the essence is some kind of dynamic communication, collision and integration of knowledge.

2·3 External management system of enterprise's knowledge network

Based on the demand of knowledge and knowledge management, every enterprise should build connection with external institutions to realize the sharing of knowledge in different enterprises, so we should build an external knowledge network structure system which symbolized by knowledge communication, knowledge combination and knowledge sharing, as shown in figure 2. In this figure, the core enterprise is our target enterprise; it's the subject of building external knowledge network, while others belong to affiliated institutions. Affiliated institutions are institutions that share knowledge with core enterprise on some specific area, including other enterprises or groups, scientific research institutes, universities, consulting institutions and all kinds of institutions. The cooperative activities opened by each affiliated institution may only contain one part of core enterprise's knowledge network operation. The ability that enterprises get knowledge from outside environment depends on the degree how affiliated institutions such as scientific research institutes and universities' concentrated and their communication with the enterprise. The formation of enterprises' external knowledge network is often close to educational and scientific centers in geology, which helps accumulate and update the knowledge in knowledge network. Along with the intense combination of enterprises, universities and researches, affiliated institutions such as scientific institutions will build a steady and inter-trustful relation with the core enterprise, and this kind of relation will help promote further combination of enterprises, universities

and researches, improve external knowledge network's supporting to enterprises. From regional economy's view, combined knowledge network is the skeleton of regional innovation system, and enterprises, universities, intermediaries, government are nodes(units) in regional knowledge network structure. There exists multiple, cross, nonlinear, strong coupling interaction relations among these nodes, thus to improve the enterprises' core competitiveness and get win-win effects. Similar to the internal knowledge network, we must establish related running mechanism if enterprises' external knowledge network wants to function normally.
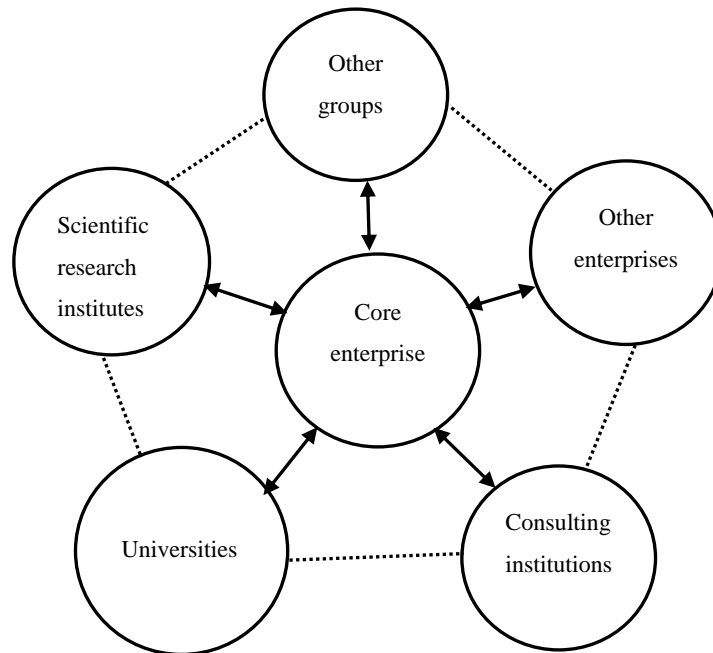

Figure 2.   Enterprise'sexternal knowledge network structure system

2 3 1 Collection and accumulation of information

Information collection is typical for external environment. Knowledge can only be called information before it was processed. Change in external environment can affects the existence and development of enterprises directly or indirectly in many situations, collecting external information is the major task for enterprises' knowledge network management. These information contains politics, economy, laws, social culture, science and technology education, market supply and demand and all kinds, some can intuitively gets through media, some may need a little efforts, expenses of some resources from enterprises, such as knowledge getting from inviting expects to give lectures and training, asking help from consulting agencies, taking part in related conferences or forums, while others may need systematical investment and research to get. The ability to collect external information is a important standard in measuring enterprises' knowledge management competence. An effective knowledge management enterprise should have the ability to analyze opportunities and challenges of the external environment, the ability to get relevant information and adjust enterprises' strategies accordingly.

Accumulation is for internal environment. Establish information accumulation system is to ask knowledge administrators to process enterprises' technology knacks, marketing strategies and excellent marketing methods and technology into literal materials, sort and file them to help share among employees. The other way of accumulation is the knowledge accumulation from the employees themselves. By training, self-learning and other ways to get the" knowledge employees" who can make full use of modern technology to improve working efficiency and at the same time have a strong learning and innovative ability. Actually, self-learning is a good way to knowledge accumulation, it has various styles, it's flexible, and also costs less.

2 3 2 Communication and combination of knowledge

There also exists the matter of knowledge sharing in enterprises' external knowledge network, in detail, it's knowledge communication and combination. About the matter of communication, famous American writer Bernard shaw has a renowned statement:" If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas. So does knowledge. Especially for those core enterprises in knowledge network, communicating information or knowledge with their affiliated institutions is inevitable and also should be strengthened strongly. Different communication mechanism has a big difference in fostering trust, solving complex problems, communicating conveniently. Effective knowledge network can choose different communication media to get different purposes intuitively. Knowledge can only get developed by communication, new knowledge can only get emerged from existed knowledge by using. More widely knowledge get communicated the better, only if knowledge get shared by more people, can knowledge owner get bigger profit.

Compared with communication, knowledge combination is no easy thing. Knowledge combination is a dynamic process, which means enterprises should clear up and divide all their knowledge in the external knowledge network into different sorts to make them combine organically, make the knowledge orderly and systematically, it's updating for the internal knowledge network. There emerges a large amount of different kind of new knowledge and mixed with the original knowledge. Different knowledge has different origins, different content, different degree of science and viscosity, also not distributed orderly in enterprises' internal network. Some knowledge is confined to specific unit or unit network to solve specific problems, but it didn't get full used to the whole knowledge network. The purpose of combination is to make knowledge play it's best overall performance by promoting all external scattered knowledge, old and new knowledge, explicit knowledge and tacit knowledge, to improve the efficiency of knowledge learning and creation. Knowledge combination should never been defined as a simple process that puts all knowledge together and divides it into different sorts, it's promoting enterprises' internal network optimization dynamically, seen from this, knowledge combination is a practical process. The value of knowledge combination is to update and optimize the original knowledge network by recognizing, judging, abandoning and combining the units and units network in it.

3.   The INTERNALIZATION OF EXTERNAL KNOWLEDGE MECHANISM

Internalization is a psychological process, it means accept other people's opinions from the deep-hearted and do things guided by them, and it can also be understood as a theoretical method applied to practical work. In order to internalize external knowledge, enterprises should establish corresponded internalization of external knowledge mechanism. Limited by the ability of the staff and their busy work, staff may not able to learn some theory systematically and comprehensively. Under this condition, enterprises should adopt the way of introducing brains, intelligence and so on, typically strengthen the training of staff. Because training, especially small scale training is the best way to learn knowledge and operation skills. So, enterprises can invite relevant experts or experienced co-workers to give lectures, train the latest business skills, management skills or operation thoughts regularly, also clear up the knowledge experts lectured into formal document, update regularly and make them available to share among faculty. Thus, the external knowledge enterprises got can be programmed on the one hand, and also can benefit permanently and comprehensively with one time investment on the other hand.

4.   CONCLUSIONS

What needs to be pointed out is that when core enterprises creating external knowledge network, they can

build different nodes according to different connections, and take in different affiliated institutions to external knowledge network. But when creating their own external knowledge network, enterprises should focus on one core, it's the core competitiveness. Enterprises should guarantee these connections are serving to improve the core competitiveness by knowledge network. So, when core enterprises are choosing affiliated institutions to build external knowledge network, they should see whether they can improve their core competitiveness as the standard, building allied connection with other enterprises by using what they are good at, focusing on their expertise and use them to cooperate with other enterprises and be dominant in knowledge communication.

In fact, internal, external knowledge network are not isolated, the boundary is fuzzy, and they are interconnected, inter-promoted. Enterprises will turn to search related new knowledge from external when their demand cannot get satisfied through internal existed knowledge, internalize new knowledge to their knowledge database, and use them to solve problems; when new knowledge learned from external cannot work out either because of the particularity and uniqueness of the problems, regularly it will mix the existed knowledge with the new knowledge to create fully new knowledge. This is the external knowledge network's updating function for internal knowledge network. Similarly, when enterprises' internal knowledge is extremely rich, it can benefit other enterprises or institutions by knowledge sharing and communication.

REFERENCES

[1] Goh S C. Toward a learning organization: The strategic building block, Sam Advanced Management Journal,1998,(3): 15-22.

[2] Guoquan Chen, Meng Ma. Model research on institution's learning process[J].Journal of Management Sciences in China, 2000,(3):15~23(in Chinese).

[3] Xiang Cai, Zongguang Yan, Haiqiang Yi.Discussion on knowledge supplement[J].Research and development management,2000, (6): 26~32(in Chinese).

[4] Dan Li, Zhuchao Yu, Zhiping Fan.Analysis on construction process of knowledge network[J].scientific research,2002,(12): 620~623(in Chinese).

[5] Jinghua Xia , Xin Jin. Knowledge management [M].Beijing: China Machine Press,2003(in Chinese).

[6] Oztemel,E. & S.Arslankaya. Enterprise knowledge management model (EKMM) in strategic enterprise resource management (SERM)[J]. Procedia - Social and Behavioral Sciences, 2011, 24:870-879.

[7] Small,C.T. & A.P.Sage. A Complex Adaptive Systems-Based Enterprise Knowledge Sharing Model [J]. International Journal of Enterprise Information Systems (IJEIS),2009,5(2):18-36.