SYMPTOM OF KNOWLEDGE MANAGEMENT ABILITY FOR KM EFFICIENCY

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ABSTRACT

The results of the research suggest two main directions of KMA for KM efficiency: first, a resource-based view, which includes technology, structure and culture; second, a knowledge-based view, which includes proficiency, learning and information. The existent research regarding KMA does not display clear deduction nor show symptom of KMA in both directions. The result is a lack of direction and accuracy in developing KMA to obtain its efficiency. The symptom found would be significant data for those organizations wanting to develop KM to utilize these symptom as the study framework of their organizational development in various ways to support KM to work effectively, resulting in efficiency of the organizations in terms of efficiency of practice, having the capability of organizational flexibility, and innovativeness, which are the character organizations call for their continued existence and maintainable enlargement. This paper therefore provides clear apparition on vital guidelines of KMA whereby the various indication of their element need to be developed to recover the idea and further the advancement of KM.

KEYWORDS: Knowledge management, Knowledge procedures, Quality symptom

INTRODUCTION

Knowledge is necessary and is ability in any attempt to achieve success. Activities thus need related knowledge which may be assembled by the professionals or imported from outside, as well as the implementation of the knowledge which may be exists in people and is understandable to be integrative and limited to the background of the work of the professionals, the organizations (Petrash, 2001). Hence, the knowledge used to obtain the objectives needs a procedure in systematic knowledge management (KM). Since 1990, KM is only a discipline of organizational running, with the importance on technological and networking implementations, but a new science to which the world's leading organizations have successively provided increasingly effective KM development procedures, in order to enable professionals, including the increase in productivity and organizational changes (Cardinal et al., 2001; Darroch and MaNaughton, 2002; Pyka, 2002; Shani et al., 2003). For KM can be thriving and effective for the organizations, it is essential to deem the important doctrines, which, from the literature evaluation of Davenport and Prusak(1998); O’Dell and Grayson (1998) and Wild and Griggs (2008), can be formed into five main doctrines, as follows: (1) The organizations and all of their work force must realize the significance and value of KM: deliberate and understanding how KM is useful and is capable of assisting the organizations and the work force. These are the important roles of the managers of the organizations whose management is in KM, together with setting the visions and obvious strategy in employ KM to build up the organizations. (2) KM needs the ability of technology in creating serviceableness and supporting the approachability in knowledge obtained from within and outside the organizations, including the storage, distribution of and implementation of knowledge to the organizations to allow KM to achieve its purposes. (3) Invention of a learning culture, exchanging and sharing of knowledge are important since they will affect the invention of new knowledge for the work force and the organizations. The managers of the organizations must realize the value of their work force and emphasize the encouragement and encouragement of knowledge replaces and sharing through various activities, i.e. seminars, team work,
which need steady undertaking. (4) KM is a successive and important procedure: it is not a mission to have an ending period. Therefore, the organizational structuring, working procedures and the obligations of the work force need to be encouraging and promoting to constant learning and knowledge implementation in work practices. (5) KM must influence the expansion of work force, work and the organizations: effectual KM must be competent to increase and expand the capability of the organizations’ work force to activate best practices including increasing the competitive ability of the organizations. The main doctrines of KM, as explained above, lead to the result that for any organization to be able to handle knowledge effectively, it is necessary to emphasize the significance of, and strategies in KM procedures, including knowledge on symptom KMA which will help the organizations or the managers to effectively determine the direction of the development of KM and effectively affect KM, which is the significant objective of KM in various organizations. In assessment and searching literature as well as KM and KMA, there are no current researches on the topic. The present researchers therefore intend to do a research and present an article on the development of symptom KMA which haul out from literature and research assessment on KM, so that those who are engrossed in KM can further develop the consequences of the research.

METHODOLOGY, LITRATURE REVIEW AND CONCEPTUAL FRAMEWORK

The methodology of this research is synthesizing symptom of KMA of documentary and includes related researches in order to seek for symptom of KMA for KM efficiency. According to qualitative methodology the attributes of the symptom are evaluated by FIVE KM experts in Estes of Iran. The review of related literature affects the KMA, KM procedure and KM efficiency, as sum up in the replica of conceptual framework (Figure 1).

KNOWLEDGE MANAGEMENT ABILITY

The correct and effective implementation of knowledge will increase the spirited ability of the organizations. KM thus includes the relocating of knowledge to the poor receivers within the organizations. Whether such relocating of knowledge affects the KM efficiency of the organizations depends on KMA. Therefore, in other words, KMA is the ability to create and the implementation of knowledge by integrating various resources and activities in KM to positively affect competitive advantage, KM efficiency and organizational efficiency (Gold et al., 2001; Chuang, 2004). The literature assessment of the works of Sanchez and Mahoney (1996); Gold et al. (2001); Chuang (2004); Peachey (2006) and Yang and Chen (2007) propose that there are two views in KMA as exposed next.

RESOURCE BASED ABILITY VIEW

This approach studies the KMA resulting from different resources: organizations with different resources will have different KMA (Mata et al., 1995). Studies using the resource-based ability view initially emphasize the resources of the organizations which conclude real property assets, i.e. land, buildings and various instruments. But later studies have given significance in real property assets, i.e. organizational management structuring system and organizational culture, since they are important ingredient which make organizations different and have more maintainable competitive advantage than those factors accounting for only the real property assets (Wade et al., 2004). Recent research has studied resource-based factors which affect KMA (Gold et al., 2001) and found that factors affecting KMA include: (A) Technology which refers to essential information technological arrangement of the organization, both the hardware and software plus the database and the network system, within and outdoor the organizations (Yang and Chen, 2007) which are inter-connected and useful in the service of information knowledge. Likely indication of technology capability can affect KM efficiency through two ways. First, a proper technology has to be in place for effective KM. Second, technology can facilitate the compliment organizational structures that have been recommended to increase KM efficiency (Peachey, 2006; Orlikowski, 2000; Miles et al., 1998). Progressive technological foundations in the form of strong communications networks allow structures that are more proper for effective KM (Holsapple and Joshi, 2001). (B) Organizational structure, which refers to prepared and course structure of the organizations, both formal and informal. Besides, it includes encouragement system, work design, management support policy of the managers and rules, regulations and practices (Yang and Chen, 2007), which have an effect on the KM course of action and organizational leadership (Collison and Parcell, 2004). A proper arrangement for effective KM would be one that has a least amount of hierarchies and encourage collective
knowledge somewhat than individual deeds. Possible symptom for KM efficiency comprises the ability to cross-functional limits to get hold of knowledge, knowledge allocation, and collective behavior in the midst of employees (Peachey, 2006). (C) Organizational culture – which includes a culture of knowledge sharing, knowledge coordinating, knowledge co-operating and knowledge getting by the work force in the organizations (Chuang, 2004; Yang and Chen, 2007). A proper organizational culture may be a valid requirement for effective KM. If an organizational culture is not one that readily accepts change, the best KM program implementation may well fail (Peachey, 2006). Possible symptom for the directions of culture related to this research includes a well-known communal vision, gratitude of proficiency, attitudes, collaboration, and innovativeness (Peachey, 2006; Gold et al., 2001). While most agree with these three factors, one could argue that there is a need to add another factor – people, which refers to personal relationships. Good contact on the base of understanding of the accountability of each other in the organization is another feature affecting KM with resource-based capability view. The KMA will guarantee that the right knowledge goes to those in need of it and will result in KM efficiency of the organizations (Gold et al., 2001; Peachey, 2006). However, the people factor may extend over with the considerations of KMA with knowledge-based ability view, since knowledge-based ability view takes into account the factors affecting KM, focusing on implicit knowledge – which is subsist in the people – and clear knowledge, as in the papers (Freeze, 2006).

KNOWLEDGE BASED ABILITY VIEW

This approach studies KMA with special significance placed on in real property assets (i.e. knowledge, proficiency), KM procedure and management of different kinds of knowledge: tacit knowledge and clear knowledge. The basic concept is that knowledge is existing in the people and can be developed organizational knowledge (Nonaka and Takeuchi, 1995; Carrillo and Gaimon, 2004; Freeze, 2006) through the KM procedure, i.e. knowledge invention, knowledge obtained, knowledge exchange and implementation so that the organizations will achieve their goals or obtain their efficiency through KM efficiency (Dawson, 2000). The literature assessment on the KMA with particular emphasis on knowledge-based capability view leads to the result that there are three factors implicated in KM: (1) Proficiency ability; the first factor affecting KMA is proficiency which submits significance to the tacit knowledge – the ability of undertaking anything in a positive way as a result of having a particular kind of information which comes from knowledge, practice and collaboration (Freeze, 2006). Anybody with the proficiency or with knowledge and capability is considered to be a knowledge supporter and is of significance for organizational knowledge development. He/she will have a essential role in knowledge reposition or knowledge distribution within the organization (Hansen et al., 1999; Jones et al., 2003). The organizations should generate professional paths for those professional (Alavi and Leidner, 2001) since each professional can build a original team (Tiwana and Mclean, 2005). Besides, the experts will be the ones who always want new information from outside (Dooley et al., 2002), thus they will increase tacit knowledge (Gurteen, 1998), including the ability of knowledge relocating, which means the ability of changing knowledge from tacit knowledge to clear knowledge likely symptom in the area of work force proficiency ability for KM efficiency are the ability to observe and seek knowledge to answer the searches, the ability to build knowledge network, the capability to switch and exchange knowledge and the support to create innovativeness ( Postrel, 2002; Bassellier et al., 2004; Tiwana and Mclean, 2005; Freeze, 2006). (2) Learning ability; learning ability is lessons learning through which knowledge is obtained while one works under various circumstances. Lessons learned may be in the form of best live out or benchmarking which is good use in KM (O’Dell and Grayson, 1998; Alavi and Leidner, 2001). O’Dell and Grayson (1998) suggest that internal benchmarking is the part including the KM procedure in knowledge affecting, knowledge exchanging and knowledge implementation. According to Davenport et al. (1998), the employment of best practice or benchmarking for education learning will increase good learning and is pleasurable in knowledge obtained, knowledge invention and relocating. Besides, Pena (2002) has described in fact that interesting positions from his research revise that knowledge networks will have a say to KM. Therefore, learning from various lessons can be available both from within and outside the organizations (Freeze, 2006). Possible symptom regarding work force learning aptitude for KM effectiveness are the ability to study from lesson learned, experiences and working method (Kankanhalli et al., 2005; Freeze, 2006). (3) Information ability; the last ability in KM with the
knowledge-based skill vision is the ability to have expensive and pleasurable information, both quantitatively and qualitatively, i.e. in order on work reality – which may move toward from researches, examination or a variety of reports including data storage (Freeze, 2006). However, in this research, the researchers define information ability to cover data as well as information, although there have been attempts to explain the differences between data and information. Anyway, in reality, the distinction between data and information is not clear. It is showed that information is the product from the procedure that has data as the inputs and that when information is pleasurable used, through the analytical and synthesizing procedure, knowledge is get hold of (Davenport et al., 1998). Alexander et al. (1991) said that knowledge might mean information storage space, skills and practices. Therefore, the database is an important instrument in KM (Brown and Duguid, 2000). Sometime, having sufficient information can generate knowledge based on explanation and conversion of the meaning without having knowledge or skills (Beveren, 2002) and rare data in the data storage is considered Business Intelligence only not yet brought into use or making any profit to the business or the organizations. The information ability in this research thus includes data and information and knowledge documents which exist in the organizations. Possible symptom regarding organization information ability for KM efficiency are modernity, the approachability and the restoration, the differences, the examination and screening of the value of the information (Harigopal and Satyadas, 2001; Sambamurthi et al., 2003; Zhu, 2004; Freeze, 2006). To conclude, this study on KMA will enclose two views: resource-based ability view and knowledge-based ability view, as outlined above. They have been often deliberate as key organizational features impacting organizational competence and KM efficiency (Semler, 1997; Duffy, 2000; Gold et al., 2001; Lee and Choi, 2003; Zheng, 2005; Freeze, 2006). The researchers will use these views as its framework to develop the symptom of KMA for KM efficiency. Knowledge management procedure. Knowledge is measured an important source of organizations, which will help put up competitive advantage, therefore effective KM and knowledge execution is necessary for the organizations. As an organization is made-up of different sorts of work force who vary in their needs for knowledge and use it to achieve their purposes, strategies in KM and knowledge implementation must go after these differences and make strategies in KM reliable with strategies of the business (Davenport et al., 1998; Greiner, 2007). After clear strategies are set, work plans and activities in the KM will follow which need the understanding of KM procedure. The literature assessment of vital works on KM, for example, Probst et al. (2000), Gold et al. (2001), Bhatt (2001), Collison and Parcell (2004) and Freeze (2006) show various positions on the differentiation of KM which have different attributes; many positions classify KM procedure and activities in KM at the same level. However, after the literature review, KM procedure can be divided into four different directions, as follows: (1) Knowledge obtained. Knowledge obtained is the first procedure of KM which stress and gives special significance to individual knowledge ability in the organizations. Knowledge obtained and collection can be extracted both from internal knowledge resources, i.e. knowledge about work practices, information and documents of various data and from external information resources, i.e. environmental data, clients’ data, competitors’ data and other resources including outer benchmarking (Zack, 1999). A sufficient knowledge database available both quantitatively and qualitatively will positively affect the knowledge obtained ability (Freeze, 2006). The organizational resources that take part in supporting and making knowledge obtained and approachability effective are information technology and organizational structure, which take in leadership and the current organizational culture (Gold et al., 2001; Vouros, 2003; Peachey, 2006). (2) Knowledge invention; as knowledge invention is generative, the invention of new knowledge is thus related with encouragement, insight, proficiency and insight that appear in an individual (Gold et al., 2001; Tiwana and Mclean, 2005). That means the invention of knowledge must be built from the knowledgeable ones and from lessons learned from the joint experiences of everybody working together in the organizations. The invention of knowledge is the interaction of knowledge, between the tacit knowledge and clear information, or what is called “SECI Model” (Nonaka and Takeuchi, 1995), especially individuals who are knowledgeable and competent or have proficiency. They own tacit knowledge and are valuable as they can create the relocating of knowledge (Gurteen, 1998; Quintas et al., 1997). They also control clear knowledge, either from internal or external databases (Zack, 1999). Best live out which come from precedent experiences are all related completely to knowledge invention (Nonaka and Takeuchi, 1995; Roth, 2003; Coulson-Thomas, 2004) through activities that encourage knowledge sharing and lead to knowledge invention.
i.e. Practices, researches, and seminars, conferences and team-working (Takeuchi and Nonaka, 2000; Roth, 2003; Coulson-Thomas, 2004). Besides, the organizational reserve factor, i.e. sufficient and efficient information technology, flexible organizational structure, good policy, good motivating system, and organizational culture promoting to team working and co-operation, are positively related to the creation of knowledge-sharing behaviors (Gold et al., 2001; Collison and Parcell, 2004; Yang and Chen, 2007). (3) Knowledge storage. Knowledge to be stored up needs “refining” in order to be helpful and precious for the organization (Zack, 1999; Gold et al., 2001). Since the knowledge that will be stored and recover is both tacit knowledge that is kept inside an individual, and the clear knowledge that is kept in various media, the fact that an organization has knowledgeable and capable experts will help knowledge storage – of both of tacit and clear knowledge – be more effective in recovering and applying the knowledge (Freeze, 2006). Learning ability of the work force and the lessons learned of the organizations will affect the development of concept, and procedures of knowledge storage and restoration (Chatzkel, 2003). The presentation of knowledge to the members in the organization will make them understand and be aware of the database and knowledge that exist in the organizations (Bhatt, 2001). The data and information that are stored in the database need good structural designs and convenience in recovering. A sufficient number of databases and convenience in recovering through sufficient and effective information technology, both in terms of instruments and system, will also affect knowledge storage and restoration (Davenport and Prusak, 1998; Gold et al., 2001; Hendriks, 2001; Sambamurth et al., 2003; Peachey, 2006; Franco and Mariano, 2007). An organizational culture which stresses knowledge significance and knowledge obtained, including knowledge acceptance and implementation in the work practices, will make knowledge storage more effective. An organizational structure with an encouragement system that promotes systematic knowledge storage to be ready for the implementation in the work practices will affect knowledge storage (Gold et al., 2001; Peachey, 2006). (4) Knowledge implementation; the final procedure of KM is knowledge implementation, so that it can be of value to the organizations: it can make the organizations achieve the efficiency of KM. This also implies knowledge exchange and knowledge employment (Gold et al., 2001; Zack, 1999). Knowledge exchange can be undertaken in many ways, formally or informally, i.e. through various media, conferences, change of positions and teamwork (Marquarde, 1996). It also includes knowledge exchange, which affects knowledge distribution, and the encouragement to implement knowledge to be of value for the organizations (Gold et al., 2001; Birkinshaw and Shechan, 2002; Freeze, 2006). The work procedure and factors which will bring about efficiency in knowledge exchange and knowledge implementation are organizational information knowledge ability (Hendriks, 2001), organizational structure and organizational background (Gold et al., 2001; Collison and Parcell, 2004; Peachey, 2006; Rhodes et al., 2008). Best practices will have an effect on knowledge implementation by increasing the stage of value of the work practices (Gold et al., 2001; Zollo and Winter, 2002). In conclusion, KM procedure means activities including the employment of knowledge in the organizations and the invention of KM efficiency according to the objectives or strategies as set by the organizations. KM procedure is dynamic and has a cycle and network sights (Probst et al., 2000) including four elements: the obtained, the invention, the storage and the implementation of knowledge. However, for KM to be effective and bring about KM efficiency, what is needed are resource-based ability including technology, structure and organizational culture, and knowledge-based ability including proficiency, learning and information – both quantitative and qualitative. Knowledge management efficiency KM efficiency in this study is defined as the combined efficiency of the four KM procedures: (1) Knowledge obtained; (2) Knowledge invention; (3) Knowledge storage; and (4) Knowledge employment. However, it is tricky to estimate the KM efficiency within an organization. The strategy literature put forward a linkage to organizational performance (Gold et al., 2001). The literature evaluation of KM efficiency. As in the work of Nonaka (1991); Gold et al. (2001), Darroch and McNaughton (2002), Freeze (2006) find that most of the literature connects the success of KM efficiency with the result of organizational performance, which can be concluded into three directions: efficiency, adaptability and innovativeness. (1) Efficiency; one benefit from KM efficiency is financial efficiency in the organizations (Nonaka, 1991; Grant, 1996; O’Dell and Grayson, 1998; Davenport et al., 1998). That means it lowers expenses and increases output. If less point and effort is used up, the organization should turn out to be more effective (Gold et al., 2001). (2) Adaptability; given the continuously changing
opposition environment, i.e. swift technological change, different requirements of the consumers and increasing worldwide market (Sallis and Jones, 2002), including changes in residents, formal rules and regulations, and new expertise that have an effect on the organizations, to survive, organizations must be receptive to those changes by having the aptitude of adaptability; the ability to adapt to the attitudes, society, technology and structure of the organizations suitable to changes so that the environmental impacts will not be impediment to the development of the organizations (Levinthal and March, 1993; Kraatz, 1998). For the organizations to be able to adapt, knowledge of the changing environment and the impacts on their organizations is needed. Therefore, effective KM will encourage staff collaboration (Sveiby and Simons, 2002) and encourage the organizations to obtained change and effectively use knowledge implementation to solve the problems and prevent the impacts affecting the organizations (Freeze, 2006). With effective KM measures, the organization will have the data about the change and may create efforts to adapt to the change (Gold et al., 2001). That is, the adapt ability of the organization resulting from efficiency of KM (DeLong and Fahey, 2000). (3) Innovativeness; the literature review of efficiency of KM in creating innovation in the organizations shows multiples changes today as they have become essential factors in every organization. Innovativeness of the organizations depends on the quantity of knowledge and KMA and whether they are successful or not (Darroch and McNaughton, 2002; Pyka, 2002; Freeze, 2006; du Plessis, 2007). Powell (1998) and Parlby and Taylor (2000) state their influence that efficiency of KM will aid supporting innovation in the organizations. Therefore, innovativeness, which means manufactured goods innovation, procedure innovation, implemental innovation, essential innovation, technology or managerial innovation (Bessant and Tidd, 2007, Schilling, 2008) that occurred in the organizations are symptom of effective KM. The literature review as described in the Model (Figure 1) helps develop the conceptual framework which will be used in identifying the constitution of the construction and development of symptom of KMA for KM efficiency, which can be shown in the (Figure 2).

FINDINGS

Besides, the authors have considered the role and significance, and the connection of KM procedure as identified as the main ingredient of KM including four directions: knowledge obtained knowledge invention, knowledge storage, and knowledge implementation. The factors including KM as the sub- ingredient of the KM procedure can be classified into two limitations: resource-based ability view – including three factors: technology, structure, and culture; and knowledge-based ability view – including three factors: proficiency ability, learning ability, and information ability. Moreover, the empirical evaluation regarding the proper quality and validity of the symptom of KMA for KM efficiency by ten KM experts in Este of Iran, using Index of Item Objective Congruence (IOC) of the symptom , has found that there are altogether 42 symptom with IOC of the symptom of KMA for KM efficiency above 0.50 considered to be proper (Rovinelli and Hambleton, 1977) to be utilized as symptom which will help the organizations or the future researchers to estimate KM efficiency. The conclusion of each of the ingredient is shown in Tables IV.

CONCLUSION

The result of the research through literature review relating to KM efficiency is qualitative in nature and relies on the synthesis and explanation of the authors and KM experts in Este of Iran on the background and symptom of KMA for KM efficiency. The results show that KMA, both resource-based ability view and knowledge-based ability view which will make the organizations achieve the KM efficiency include 42 symptom , divided into symptom on KM procedure: 11 symptom on knowledge obtained, 10 symptom on knowledge invention, 10 symptom on knowledge storage, and 11 symptom on knowledge implementation. The symptom found would be significant data for those organizations wanting to develop KM to utilize these symptom as the study framework of their organizational development in various ways to support KM to work effectively, resulting in efficiency of the organizations in terms of efficiency of practice, having the capability of organizational flexibility, and innovativeness, which are the traits organizations call for their continued existence and maintainable growth. However, the symptom is limited to revising prior studies and the views of the authors.
Table I. Ingredient variables of knowledge obtained

<table>
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<th>ability</th>
<th>symptoms</th>
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<tr>
<td>Expertise (Birkinshaw and Shechan, 2002; Dooley et al., 2002; Freeze, 2006)</td>
<td>The work force has clear knowledge of the objectives of the work in need of obtained. The work force has the ability in observing and is interested in continuously obtained knowledge to answer the pending-questions. The work force has the ability in obtained specific knowledge from other experts from within and outside the organizations. The work force has the skills in utilizing information technology of the organizations to effectively obtained knowledge.</td>
</tr>
<tr>
<td>Learning (Davenport et al., 1998; Freeze, 2006; Peachey, 2006)</td>
<td>The work force are interested in and want to learn about business Knowledge. The work force is interested in and feel challenged about the organizational business. The work force has the experiences in knowledge obtained from different knowledge resources.</td>
</tr>
<tr>
<td>Information (Freeze, 2006; Jennex and Olfman, 2006; Wild and Griggs, 2008)</td>
<td>The data and information documents in the organization have been collected in many forms i.e. work reports, articles. Systematic storages are available, offering easy access to approachability and for knowledge obtained. The existing database and information in the organizations are related to the needs of the work force to effectively utilize in the work practice, qualitatively and quantitatively.</td>
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<tr>
<td>Technology (Gold et al., 2001; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations have information technology for knowledge obtained and can access new knowledge at any time, any Place. The organizations have information technology to access knowledge resources specific to the needs of their work force. The organizations have information with highly effective and modern technology, both in terms of instruments and system</td>
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<tr>
<td>Structure (Gold et al., 2001; Zheng, 2005; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations set up work force responsible for needed advice and support in knowledge approachability. The organizations have supporting system for their work force to access knowledge resources comfortable. The organizations build knowledge networks and support their work force to obtained knowledge from the networks.</td>
</tr>
<tr>
<td>Culture (Gold et al., 2001; Zheng, 2005; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The work force understands the importance of knowledge that will help the organizations attain their success. The work force is aware of and understands the goals of the organizations. The work force are continuously interested in knowledge obtained for the work practices, both from within and outside the organizations.</td>
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Table II. Ingredient variables of knowledge invention

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<tr>
<td>Expertise (Gurteen, 1998; Tiwana and Mclean, 2005; Freeze, 2006)</td>
<td>The work force work in line with their specialties. The work force are able to continuously present their thoughts and new knowledge beneficial to the work of the organizations. The work force have the capability and competency in knowledge exchanges with those experts or specialists within and outside the organizations.</td>
</tr>
<tr>
<td>Learning (Takeuchi and Nonaka, 2000; Freeze, 2006)</td>
<td>The work force is able to present the new knowledge learned from success of the people in the organizations or the other organizations. The work force are interested in studying knowledge of other units both within and outside the organizations. The work force like team-working and participation in the</td>
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activities of the organizations as they can create new knowledge

<table>
<thead>
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<th>Organization</th>
<th>Description</th>
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<tr>
<td>Information (Freeze, 2006; Jennex and Olfman, 2006; Wild and Griggs, 2008)</td>
<td>The organizations have database of variety of knowledge and apply it to work practice. The existing organizational knowledge database is able to be applied to effectively improve and develop the work of the organizations. The organizational knowledge database is improved and changed for additional and up-to-date knowledge for work practices.</td>
</tr>
<tr>
<td>Technology (Gold et al., 2001; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations have information technology in knowledge exchanges with the work force and agencies outside the organizations. The organizations have information technology supporting knowledge exchanges unlimited of place and time.</td>
</tr>
<tr>
<td>Structure (Gold et al., 2001; Zheng, 2005 Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations support and encourage their work force in lessons-learning exchanges of their interest. The organizations motivate knowledge exchanges of work practices among the work force. The organizations hold activities on knowledge invention, i.e. conferences, seminars.</td>
</tr>
<tr>
<td>Culture (Gold et al., 2001; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The work force work in real practices. The work force sees the significance of knowledge exchanges and sharing with others in the organizations with the same purposes. The work force has high regard for the experts in the organizations. The work force hold the value of courage in undertaking innovations without being afraid of the failures.</td>
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Table III Ingredient variables of knowledge storage

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<th>Ability</th>
<th>Symptoms</th>
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<tr>
<td>Expertise (Hansen et al., 1999; Dooley et al., 2002; Freeze, 2006)</td>
<td>The work force takes part in the definition which knowledge is worth storing. The work force is capable and skillful in designing and systematically storing knowledge by themselves. The work force are able to improve and change the stored knowledge to make it in constant up-to-date state and correct.</td>
</tr>
<tr>
<td>Learning (Chatzkel, 2003; Freeze, 2006; Calabrese and Orlando, 2006)</td>
<td>There are factors affecting success or failures to create lessons after the work practices before storing them as organizational Knowledge. The work force spread knowledge from best practices for joint knowledge learning.</td>
</tr>
<tr>
<td>Information (Bhatt, 2001; Freeze, 2006; Jennex and Olfman, 2006; Wild and Griggs, 2008)</td>
<td>The information storage has a systematic order and structural design for good storage and comfortable retrieval. All information must be examined and filtered for the degree of its value.</td>
</tr>
<tr>
<td>Technology (Gold et al., 2001; Hendriks, 2001; Sambamurth et al., 2003; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations have information technology in recovering knowledge on markets and competitors of the organizations. The organizations have information technology that keeps the knowledge storage safe and systematically operated. The organizations have information technology with specific designs for knowledge storing and implementation. The organizations have information technology indicating the preference of their work force in proper knowledge employment.</td>
</tr>
<tr>
<td>Structure (Gold et al., 2001; Zheng, 2005; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The organizations indicate significant characteristics of knowledge that should be stored. The organizations provide work force responsible for safe knowledge storing and keeping. The organizations build networks in knowledge storing and recovering for beneficial employment.</td>
</tr>
<tr>
<td>Culture (Gold et al., 2001; Peachey, 2006; Yang and Chen, 2007)</td>
<td>The work force gives importance and calculates the value of the stored knowledge to be beneficial to the organizations. The work force improve the stored knowledge to make it in a constant up-dated state.</td>
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Table IV. Ingredient variables of knowledge implementation

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<th>ability</th>
<th>symptoms</th>
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<tr>
<td>Expertise (Gold et al., 2001; Birkinshaw and Shechan, 2002; Dooley et al., 2002; Freeze, 2006)</td>
<td>The work force is capable in knowledge implementation to create innovations. The work force is capable in knowledge implementation to successfully improve or solve problems in their workplace according to the organizations’ objectives. The work force are capable in knowledge exchange or continuously giving advice to other work force in the organizations</td>
</tr>
<tr>
<td>Learning (Gold et al., 2001; Freeze, 2006; Calabrese and Orlando, 2006)</td>
<td>The work force applies the lessons learned to develop their work or create successful innovations. The work force applies the lessons learned or best practices to their ordinary work. The work force can learn through past lessons and defects, and use them to develop and improve their work successfully</td>
</tr>
<tr>
<td>Information (Gold et al., 2001; Freeze, 2006; Jennex and Olfman, 2006; Wild and Griggs, 2008)</td>
<td>The information database in the organizations is easily accessible and comfortable to utilize. The information database in the organization is up-to-date. The information database in the organizations is classified with details and significant conclusions useful for the implementation</td>
</tr>
<tr>
<td>Technology (Gold et al., 2001; Hendriks, 2001; Peachey, 2006; Yang and Chen, 2007; Rhodes et al., 2008)</td>
<td>The organizations have information technology for approachability and implementation of knowledge on organizational markets and clients. The organizations have information technology promoting effective knowledge exchange between organizations work force. The organizations have preventive systems to guard against in effective and in proper knowledge implementation</td>
</tr>
<tr>
<td>Structure (Gold et al., 2001; Collison and Parcell, 2004; Peachey, 2006; Yang and Chen, 2007; Rhodes et al., 2008)</td>
<td>The organizations have systems supporting new knowledge exchange to other agencies without discrimination. The organizations have supporting process for data collection to utilize in the work practices rather than depending on individual judgment. The organizations have the systems of esteem by which rewards are given to the work force who can utilize knowledge implementation to develop products or new work process that are beneficial to the organization.</td>
</tr>
<tr>
<td>Culture (Gold et al., 2001; Collison and Parcell, 2004; Peachey, 2006; Yang and Chen, 2007; Rhodes et al., 2008)</td>
<td>The organizational work force are likely to think of utilizing knowledge in problem-solving. The work force holds the value of knowledge exchange and joint knowledge implementation among organizational units. The work force holds the value of knowledge exchange and joint knowledge implementation between individuals informally.</td>
</tr>
</tbody>
</table>

Figure 1. Model of literature review to synthesize symptoms of KMA for KM efficiency
Figure 2.
Model of conceptual framework of the development of symptoms of KMA for KM efficiency

KMA

Knowledge based view proficiency - Learning - Information

KM procedure obtained Invention Implementation Storage

KM efficiency

Resource based View Technology - structure - culture

References


