The Critical Success Factors of Knowledge Repository: A Summary for Future Extension

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Abstract
Knowledge repository is a computerized system that maintains various digital resources to be accessed by the users electronically. Critical success factors on the other hand is defined as the crucial elements that contribute to the success of an event or organization. This paper reviews the literatures on the contributing factors of knowledge repository implementation among the users which specifically focus on the content coverage, technological function and promotion of knowledge repository. This review is significant to the top management and employees of an organization for improving the knowledge repository service in the organization which may act as an effective tool towards the enhancement of the organization performance.
Keywords: Content Coverage, Critical Success Factors, Knowledge Repository, Promotion, Technological Function.

Introduction
Due to the rapid advancement of sophisticated technology in the world nowadays, people tend to maximise or fully make use of the technology as an effective tool in facilitating their tasks efficiently. So do the implementation or utilization of knowledge repository which enables the users to work not only easier but also faster in terms of helping them in retrieving their needed resources systematically. In order to cope with the recent and rapid advancement of technology today so that people will not left behind the others, the implementation or utilization of knowledge repository especially among the academicians and practitioners is actually crucial in assisting their tasks efficiently. This is because the knowledge repository acts as a tool to preserve the organization's academic output for long period of time (Prosser, 2003, cited in Westell, 2006, p. 211). This is where a vital transformation from a traditional practice of printed or physical materials to the electronic or digital materials becomes such an imperative issue to be really take into a consideration in any organization. This is because the printed or physical resources cannot serve the people with greater benefits that the electronic or digital resources can do such as enable for faster and multiple access of the needed materials at any time.

Knowledge repository is indeed one of many effective knowledge management tools that help a lot in engaging people with valuable resources by easily and promptly exposing and serving them to variety of reliable knowledge through various provision of digital resources which are available for anytime of access. Therefore, what is actually knowledge repository? Knowledge or institutional repository is as a digital scholarly work collection that reflect the institution or university intellectual asset and available to be accessed electronically (Westell, 2006). Due to all of these benefits that the knowledge repository can ever offer, it is important to encourage the utilization of it among the communities in order to facilitate their research or even their daily routine tasks.

The shifting of knowledge sharing culture from traditional mean which is through face to face interaction to electronic mean through knowledge repository implementation is definitely not an easy task (Westell, 2006). This is then where the importance of this literature review takes place in identifying the critical success factors of knowledge repository implementation and how imperative or success those factors affect the implementation of the knowledge repository.

The remainder of this paper is organized as follows. Section 2 discusses on knowledge repository. Section 3 discusses on the critical success factor. Section 4 is content coverage. Section 5 is technological function and Section 6 discusses on functions of knowledge repository. The final section contains some concluding remarks.

Knowledge Repository

Institutional repository is such a crucial mechanism for scholarly communication as it portrays the vital source of knowledge management and institutional visibility (Lagzian, Abrizah & Wee, 2015). Similarly, institutional repository is also a platform that assemble the institution digital contents to facilitate the knowledge retrieval process of its communities as well as facilitates the knowledge sharing in organization as it codified the valuable knowledge into explicit form (Ida, Tjakraatmadja & Firman, 2015). Likewise, institutional repository includes the process of managing, preserving, maintaining and disseminating the institution digital intellectual capital (Drake, 2004; Lynch, 2003, cited in Ida, Tjakraatmadja & Firman, 2015, p. 169).

Besides that, institutional repository is an effective knowledge management (KM) tool in higher education (HE) (McCord, 2003, cited in Ida, Tjakraatmadja & Firman, 2015, p. 171). This is because institutional repository allows for management of various scholarly digital works by the university communities in which facilitate the knowledge sharing process as institutional repository is a single consolidated integrated system that enable easy retrieval (Branin, 2005, cited in Ida, Tjakraatmadja & Firman, 2015, p. 171). "Institutional repositories" also being described in Library Journal, ARL and DLib Magazine as a medium that make available institutional research through Internet (Tennant, 2006, cited in Bevan, 2007, p. 172). At the same time, institutional repository as well being highlighted as a preservation and transmission of digital materials service provided to the university communities (Lynch, 2003, cited in Bevan, 2007, p. 170). Institutional repository too defined as a scholarly work collection that reflects the university intellectual asset and available to be accessed (Westell, 2006). Similarly, the intellectual asset preserved in the digital archive are being produced by the faculty, researchers and even the students and it can be retrieved by both within and outside institution communities (Johnson, 2002, cited in Westell, 2006, p. 213). On the other hand, digital repository also being described as a platform for preserving valuable contents of digital

materials that can enhance not only administration process but learning and research as well (Md, 2010).

Another definition includes institutional repository is the codified and preserved institutional memory that can be exploited (Yeates, 2003). In addition, knowledge repository concerns on the methods of capturing individual knowledge and codified it in way that allow for the easy access of others (Wang, Means & Wedman, 2003).

In general, knowledge repository is a computerized system that maintains various digital resources to be accessed by the users electronically. Usually, in each organization either company or even academic institution, there will be at least one electronic or digital system been developed in order to facilitate the communication and tasks within the organization. In this way, the dissemination and exchange of knowledge among the communities will be easier and faster as knowledge repository allows its communities to interact through a single integrated system at anytime and anywhere.

Critical Success Factors (CSF)

Critical success factors (CSFs) are being indicated as the "factors" that are "critical" to the "success" of the institution (Caralli, 2004, cited in Lagzian, Abrizah & Wee, 2015, p. 197). On the other hand, CSF in knowledge management can also however act as a significant barrier for successful knowledge management approach in organization (Ajmal, Helo & Kekale, 2010, cited in Cahyaningsih, Sensuse & Sari, 2015, p. 2). There is also research identifies CSF helps in succeed in knowledge management implementation but can also be the common failed factors of KM that can or should be improved (Fernandez, Conzalez & Sabherwal, 2004, cited in Altaher, 2010, p. 341).

Apart from that, CSF of knowledge management basically aims to improve the organizational performance (Al-Hakim & Hassan, 2012). Similarly, CSF is usually defined as the set of factors that are considered critical to the success of an organization (Avison & Fitzgerald, 2006, cited in Anggia et al., 2013, p. 83). Likewise, critical success factors (CSF) approach encourages managers to figure out the vital elements that are crucial for the enhancement of organization performance which also act as good indicators of performance in order to ensure the organization to keep surviving and continue to success (Altaher, 2010).

In addition, CSFs as well being defined as satisfactory results that act as organization competitive advantages and will lead to the success of organization performance. For decades, western scholars began to pay attention to implement CSFs on knowledge management (Rockart, 1979, cited in Gai & Xu, 2009, p. 561). Therefore, the organization should come out with a proper knowledge management system integrated with certain technologies tools such as knowledge base, collaboration, content and document, search and e-learning. The system should be simple, convenient and suitable to users' needs (Gai & Xu, 2009).

Basically, critical success factors (CSF) are the crucial elements that contribute to the success of an event or organization. These elements are such a must or mandatory to be considered when conducting an event or else the event may not goes really well. CSF also important in helping the event or organization to improve its performance by playing their role as the connector between the event itself and the communities. CSF is such an enabler for ensuring the success of an event.

Content Coverage

Content considered as the critical factor that contributes to the utilization of repository (Russell & Day, 2010, cited in Lagzian, Abrizah & Wee, 2015, p. 198). Some academic libraries have even developed Open Access Institutional Repositories (OAIRs) which enable the worldwide users to retrieve the resources in full text format. In order for the institutional repository to be easy access and facilitate the knowledge sharing in organization, the contents should be organized in terms of its structure and arrangement. When the users face a hard time during accessing to the needed resources, the effectiveness of institutional repository will not be achieved (Ida, Tjakraatmadja & Firman, 2015). Furthermore, repository will act as the digital archive that deposits the digital contents into cumulative and perpetual therefore the repository contents should be authentic, reliable and integrated to ensure an effective retrieval whenever it is being needed (Hockx-Yu, 2006, cited in Alayon et al., 2013, p. 386).

On the other hand, the users should perceived that the knowledge repository will significantly improve their work performances in order for them to utilize it. Therefore, the reliable contents are crucial for the repository success (Sharma & Bock, 2005, cited in Aggestam & Persson, 2010, p. 1). However, content policies development, copyright clearance and cultural change that is required to encourage the repository service are among the issues that need to be take into consideration for a successful utilization of knowledge repository (Greig & Nixon, 2007). Moreover, there are some standards or guidelines that need to be followed in order to ensure that the contents in repository not only can be searched but also can be retrieved by users for multipurpose. The repository may include the following resources which are "preprint or postprint publications, bibliographic references, books and chapters, conference and workshop papers, theses and dissertations, unpublished reports and working papers, datasets, learning objects, multimedia and audio-visual materials, software, patents as well as special items" (Md, 2010).

The repository contents in higher education normally consist of "research articles, theses and dissertations, unpublished reports, conference papers, teaching and learning materials as well as administrative data" in digital form. An effective repository should be the one that not only organized in terms of its digital contents, but also can be accessed and disseminated widely to worldwide users (Jones et al., 2006, cited in Ida, Tjakraatmadja & Firman, 2015, p. 172; Md, 2010, p. 198). Besides, the contents of knowledge repository may also consist of "pre-prints and other works-in-progress, peer-reviewed articles, monographs, enduring teaching materials, data sets and other ancillary research material, conference papers, electronic theses and dissertations and gray literature" (Johnson, 2001, cited in Westell, 2006, p. 216).

At the same time, self-archiving in institutional repository is important too since it may enhance the knowledge sharing process in which the users are able to deposit the reliable contents into institutional repository by their own (Md, 2010; Westell, 2006). It should also be emphasized that the effectiveness of the institutional repository will greatly relies on the content or input activity, the resource usage as well as the citation analysis. All of these generated data on the repository effectiveness can be a good benchmark in applying for a fund (Westell, 2006).

Content coverage does affect and contribute for the success of knowledge repository implementation among the communities. However, the quality of the contents being deposited into the repository should be really take seriously in ensuring for effective dissemination and retrieval of knowledge among the communities. To do this, a firm policy should be constructed as a guideline for the communities when utilizing the repository so that

they will be more understand regarding the system. The better the quality of the content, the better the performance of the organization.

Technological Function

Institutional repository is primarily driven by information technology as it is indeed an effective tool to contribute for knowledge sharing in organization. Technology too can facilitate the user queries and encourage them to deposit their works into the system through self-archiving (Ida, Tjakraatmadja & Firman, 2015). agreed that this can be done when the repository interface is ease of use and there is usage statistic available in order to motivate the users to participate and contribute their works into the system. In order for the institutional repository to work interoperability with the other systems, it thus needs to be supported by the technology (Foster & Gibbons, 2005; Lam & Chan, 2007, cited in Ida, Tjakraatmadja & Firman, 2015, p. 177).

At the same time, the usage of repository either it is being used or not defines the success of an IT-supported Knowledge Repository (Aggestam & Persson, 2010). Similarly, as cited by Lagzian, Abrizah & Wee (2013), the vigorous technological infrastructure (Lee, 2002) is the crucial contributor for a successful knowledge repository utilization besides funding, long-term viability (Westell, 2006), user driven (Gibbons, 2004), self-archiving (Xia & Sun, 2007), ease of use (Zuccala et al., 2008), security (Lampert & Vaughn, 2009) and organizational support (Westell, 2006). This is due to long term preservation of digital and electronic documents can be done through the implementation of Portable Document Format (PDF/A) file format that also enables for easy sharing and promotion of the content in social network (Alayon et al., 2013).

There is always a correlation between digitization project and institutional repository in which the digitization centre allows for a more prompt contents that can contribute for effective usage of repository by the researchers. The institutional repository allows for multiple access, long term content preservation, ease of content depository and easy content retrieval too. However, the sustainability of the contents in institutional repository depends on digital preservation strategy (Westell, 2006). Unfortunately, due to low-rated features, authorization issue and non-standard persistent URL of Greenstone, DSpace has been widely used by various organization in developing institutional repository. In fact, DSpace and Eprints are the two software which commonly being used to develop institutional repositories in Southeast Asia. This can be proved when DSpace at International Rice Research Institute (IRRI) is at 742nd rank in the web repositories world ranking with the largest items being deposited (Alayon et al., 2013).

On top of that, DSpace has been described as the top preferred open source digital repository software in providing permanent access to digital contents. The application can be download and customize within the needs as DSpace is a free open source. In Repository List (200), 700 organizations in 70 countries include academic institutions such as college, university and research libraries were using DSpace (Md, 2010). Plus, Philips et al. (2008) as also cited by Md (2010) highlighted that DSpace organized the contents in hierarchical structure that facilitate its functionalities besides it provides a user friendly interface (Barwick, 2007) that easily managed various file formats.

Generally, technology can be considered as the enabler of knowledge repository as it is a single consolidate integrated system that allow not only for the depository of valuable resources but also for the dissemination and exchange of useful knowledge among its communities. To achieve this objective, technology plays an imperative role in preparing the

knowledge repository by providing a medium of ease of use and secured for its communities that can facilitate and enhance their tasks and fulfil their needs. After all, DSpace and Eprints are among the two most convenient repository software that provides people with user friendly features.

Promotion

In order for the institutional repository to be success, the usage of valuable information resources should be publicized and promoted to the patrons by the library managers besides ensuring the contents deposited or available in the repositories (Dorner & Revell, 2012).It is vital and crucial for the librarians to tirelessly promote the repository within the faculty eventhough it is quite hard to change the scholarly communication culture. However, this can be done by attracting the early adopters with adequate and efficient infrastructure that will meet their needs (Westell, 2006).

In a study of web-linked citations in scholarly articles, there are for about two third do not anymore consider on the citation of information. This is where the important of depositing the materials into the institutional repository appeared. The researchers that are expert in the utilization of institutional repository should promote the important of this issue (Carlson, 2005). Indirectly, with this encouragement together with institutional mandate, it will motivate the scholars to deposit their work (Westell, 2006).

The promotion of institutional repository can be effectively done through comprehensive publicity through mandate, organizational website and brochures (Westell, 2006) on the advantages and significances of institutional repository (Lagzian, Abrizah & Wee, 2015) which include the provision of publication on international peer-reviewed journals with higher citations (Alayon et al., 2013).

It is also highlighted that the academicians should be convinced to deposit their researches into institutional repository (Lynch, 2003; Mercer et al., 2007; Phillips et al., 2005, cited in Dorner & Revell, 2012, p. 263). As cited by Dorner & Revell (2012), the authors emphasized on librarians' role in promoting the institutional repository usage and assisting the academicians in depositing their works into the system (Rodwell & Fairbairn, 2008) which are most of them are reluctant to do so because they do not know the advantages of the repositories (Cullen & Chawner, 2008). On top of that, the institutional repository developers who are satisfied with the contents should promote its usage to the users as well (Lynch, 2003, cited in Dorner & Revell, 2012, p. 264).

Moreover, although it is quite a challenge to promote the institutional repository advantages among people, but it is vital to do so in ensuring the successful utilization of institutional repository (Jain, 2011). After all, the real challenge is indeed the change in culture of information management of the people (Chan et al., 2005, cited in Jain, 2011, p. 132).

For the conclusion, a good repository system should be promoted or publicized to the communities through various forms either printed or digital medium in order to encourage them to fully utilize and make used of it. People should be informed and educate regarding the massive advantages that the repository can ever offer or serve them especially in their works. Among the vital roles to promote and publicize this usage include the librarians themselves and also the developer of the repository that are considered as the expert and know almost everything about the system. This promotion or publicity is important as many people are still not aware of the current technology that can contribute very much in their works.

Conclusion

Living in the 21st century, people really have to cope with the rapid advancement of sophisticated technology nowadays so that they will not left behind the others. It is very vital for them to quickly adapt with the recent invention in order to not only improve themselves but also to enhance the organization performance in which they work. Knowledge repository is indeed one of many effective knowledge management tools that helps a lot in engaging people with valuable resources by easily and promptly exposing and serving them to variety of reliable knowledge through various provision of digital resources which are available for anytime of access. This is because knowledge repository acts as a tool to preserve the organization's academic output for long period of time (Prosser, 2003, cited in Westell, 2006, p. 211). This is where the importance of determining the factors that are critically contribute to the success of knowledge repository implementation take place.

Generally, this paper has been structured into several sections. The first section is basically the background of the study that reflects on the importance of the topic. The second section is the literature review on the topic of related variables which specifically focus on the knowledge repository, critical success factors, content coverage, technological function as well as promotion of knowledge repository. The last section or part of this paper will be the summary of the topic based on the review as a whole.

It can be concluded that knowledge repository is such an effective tool in helping people perform more effectively and efficiently in their tasks. The content coverage, technological function and promotion on the other hand are the three vital factors that will influence or convince people to utilize the knowledge repository.

References

Aggestam, L., & Persson, A. (2010). Increasing the quality in IT-supported knowledge repositories: Critical success factors for identifying knowledge. *Hawaii International Conference on System Sciences*, 43, 1-9.

Alayon, S. B., Nemiz, E. S., Superio, D. L., Garvilles, J., & Pacino, L. G. (2013). The development of an institutional repository at the Aquaculture Department of the Southeast Asian Fisheries Development Center, Philippines. *Program: electronic library and information systems*, 47(4), 384-398.

Altaher, A. M. (2010). Critical success factors of implementation knowledge management process. 340-348.

Anggia, P., Sensuse, D. I., Sucahyo, Y. G., & Rohajawati, S. (2013). *Identifying critical success factors for knowledge management implementation in organization: A survey paper.* ICACSIS.

Armstrong, M. (2014). Institutional repository management models that support faculty research dissemination. *OCLC Systems & Services*, 30(1), 43-51.

Barwick, J. (2007). Building an institutional repository at Loughborough University: some experiences. *Program: electronic library and information systems*, 41(2), 113-123.

Bevan, S. J. (2007). Developing an institutional repository: Cranfield QUEprints – a case study. *OCLC Systems & Services: International digital library perspectives*, 23(2), 170-182.

Cahyaningsih, E., Sensuse, D. I., & Sari, W. P. (2015). *Critical success factor of knowledge management implementation in government human capital management: A mixed method.* Bandung: ICITSI.

Dorner, G., & Revell, J. (2012). Subject librarians' perceptions of institutional repositories as an information resource. *Online Information Review*, 36(2), 261-277.

Gai, S., & Xu, C. (2009). Research of critical success factors for implementing knowledge management in China. *International Conference on Information Management, Innovation Management and Industrial Engineering*, 561-564.

Greig, M., & Nixon, W. J. (2007). On the road to enlighten-ment: Establishing an institutional repository service for the University of Glasgow. *OCLC Systems & Services: International digital library perspectives*, 23(3), 297-309.

Ida Farida, Tjakraatmadja, J. H., & Firman, A. (2015). A conceptual model of open access institutional repository in Indonesia academic libraries: Viewed from knowledge management perspective. *Library Management*, 36(1/2), 168-181.

Jain, P. (2011). New trends and future applications/directions of institutional repositories in academic institutions. *Library Review*, 60(2), 125-141.

Lagzian, F., Abrizah, A., & Wee, M. C. (2015). Critical success factors for institutional repositories implementation. *The Electronic Library*, 33(2), 196-209.

Lagzian, F., Abrizah, A., & Wee, M. C. (2013). An identification of a model for digital library critical success factors. *The Electronic Library*, 31(1), 5-23.

Lam, K. T., & Chan, D. L. H. (2007). Building an institutional repository: sharing experiences at the HKUST Library. *OCLC Systems & Services: International digital library perspectives*, 23(3), 310-323.

Shoeb. M.Z.H. (2010). Developing an institutional repository at a private   university   in Bangladesh. *OCLC Systems & Services: International digital libraryperspectives*, 26(3), 198-213.

Westell, M. (2006). Institutional repositories: proposed indicators of success. *Library Hi Tech*, 24(2), 211-226.

Yeates, R. (2003). Institutional repositories. *VINE: The Journal of Information and Knowledge Management Systems*, 33(2), 96-100.