

The Effect of Information Systems Infrastructure and Staff Involvement in the Integration of Knowledge Management and E- Learning Technologies in Academic Institutions

Ali Mahdi Owayid, Mr.

AlBuraimi University College

E-Mail: admin@buc.edu.om

Professor: Khalid Alrawi

University of Modern Sciences

E- Mail: Kalrawi47@hotmail.com

Professor: Khaled Shaalan

British University in Dubai

E- Mail: Khaled.shaalan@buid.ac.ae

Abstract

Recently, E-learning has emerged as modern field with in the cooperation of education and business sectors by means of information, based-Internet services, and education services that are delivered or improved. This paper is an attempt to highlight how knowledge management (KM) and E-learning (EL), specifically, can be of prominent support in the workplace.

The purpose of the paper is to develop a model that is composed of a range of components and factors that affect integration between knowledge management and e-learning. It is characterised by dynamic alignment between information systems infrastructure, staff involvement and the flows of knowledge towards the success of knowledge acquisition in academic institutions.

The developed model will contribute to offer support to the process of integrating e-learning and knowledge management. In addition, the suggested model will present certain suggestions to improve the teaching learning process and shows how KM provides successful help for educational consumers in selecting and evaluating e-learning technologies. The model is based on analysis of KM and e-learning literature and the information of this study.

Keywords: Knowledge Management, E-learning, Knowledge Management Enablers, Information Systems Infrastructure, staff involvement.

1. Introduction

Knowledge is the foundation of any organisation and competence between staff that would make advantages. Therefore, knowledge can be defined as the transfer in the movement of knowledge between its origin and the users (staff) within a specific context Reige (2005). Knowledge can be seen as a processing of information associated with obtaining and understanding of the occurred events in the contiguous environment as its main function Bratianu (2010).

The resources of knowledge within organisation can be managed to support organisation for creating competitive advantages over other competing business Mathew (2010). The capability of an organisation to recognise critical sources of knowledge and be able to utilise them in making decisions and solving problems improves staff's skills and proficiency Pillania (2007).

Therefore, knowledge management (KM) is a way of determining, discovering, creating, sharing, applying, developing, measuring, and maintaining the knowledge of the organisation. Due to the efforts and according to the recent researches on technology, not all organisations are successful in managing such knowledge initiatives Wai (2010).

The transfer of knowledge opens the door to the knowledge management. Mostly, learning is addressed by knowledge management as an element of knowledge sharing processes Mathew (2010). Schwartz (2000) defined e-learning as the use of a broad range of technologies to increase knowledge and performance. The objectives of e-learning are to entrench organisational learning and create a share- learning corporate culture.

By using technologies and Internet services or through interactive software, e-learning can offer solutions to teach and train learners remotely. E-learning refers to the use of all information and

communications forms of electronic technologies to enhance teaching and learning systems performance Jethro (2012).

E-learning has recently emerged as a more advanced strategy for learning in different places over the world, particularly in education and business sectors through the electronic technologies and Internet Alexander (2001). Consequently, new action plans and programs have been developed to be more aligned with this update system Yong (2005).

Technology is certainly a significant part of the home education solutions, and must be available and usable for all. Learners with simple and easy use of technology can keep themselves active and engaged with their education and cope with their life requirements independently Annetta (2008).

Nowadays, in a competitive environment, knowledge management is becoming very significant and valuable in many organisations. For example, Knowledge management is the function of managing processes and activities that leverage knowledge to improve organisations' competitiveness by deploying the best technology resources and creating - individual or collective - resources of knowledge Carneiro (2000). Therefore, technology can enhance useful tools and knowledge capital effectively.

Furthermore, large organisations use information technology (IT) as a tool of empowerment to improve services with the aim of gaining competitive advantages over their competitors, and radically leverage their internal operations Yeh (2006). In order to use some valuable knowledge of staff, we need to refine the knowledge and get the consent of staff to share this knowledge.

However, most centres of learning are built around the concept of team learning in the organisation to pursue individual learning, even in large groups, or the whole context. The

learning concept may be necessary for the organisation to have the necessary skills to function effectively. From the point of view of knowledge management, all learning levels are significant and up to date. However, organisations' focus has been set on team learning Bennet (2006). Therefore, organisational learning points out to the ability of the organisations to discover the required skills to sustain and compete in their environment.

This paper discusses and examines enablers or crucial success factors that determine the effectiveness of KM within organisation's e-learning process. Based on literature and researches, the effect of two vital factors - information systems infrastructure and staff involvement – is outlined and considered to be important for effective KM implementation in the e-learning process in academic institutions.

2. Objectives and the Need for the Study

This paper attempts to achieve a variety of objectives. The first objective of the paper is to show the importance of the KM and E-learning model which is supposed to create certain successful changes and support in the work place and in dimensions of the E-learning process such as , technology deployment, other infrastructure and mindset of people, systems, and processes of the organisation. The second objective is that the developed model would be implemented as necessary guidance for all stakeholders. The third objective is related to discussing some theoretical issues, beliefs, and perceptions in the literature of E-learning. The model therefore, represents developing organisations' entity overtime which might be assets of valued interest such as human being, an organisation, a technology, a product, a process etc.

The researchers endeavour to provide a model by specifying the primary variables that contribute to conducting and implementing specific technologies of KM in a setting of e-learning. The primary variables should be examined in relation to the context of the literature in order to show the relationship between the KM and e-learning Wild (2002). In doing so, the benefit of using KM tools and techniques for improving e-learning delivery will be shown clearly.

3. Research Methodology

This work mainly based on the literature review. It provides an overall scope of literature review and reconstruction work already done by researchers. The rationale of this is to detect, obtain and consult the literature available in different types of documents and other materials that may be useful for the purposes of the study, and to extract and gather relevant information and necessary relationships to our research problem. This review is elected from a variety of sources such as journal articles, books and other kinds of materials that are relevant to the topic of study. It will be important to select the relevant and the latest information. However, it must be inferred that all published materials are appropriate or reliable sources of information.

4. Knowledge management supports E-learning

Knowledge management is a system which identifies the knowledge and information that academicians' need. KM also indicates the ways of getting the appropriate knowledge i.e. the place from which knowledge can be found, and it also delivers the knowledge in a digestible form to the academicians Ramakrishnan (2012).

In recent years a number of academic institutions have shown dramatic growth and the impact of knowledge management has been considered as a core of success for any business. Strategically, knowledge management systems are precious for ensuring reliability and continuing development of different aspects like quality delivery as well as competitiveness and productivity Palaneeswaran (2004).

KM advocates sustain the idea that knowledge must be shared and serve as the basis of collaboration among the staff, and as such, the most value of the intellectual assets of the organisation is valued Karamente (2009). Achieving collaboration is not an end point due to the fact that KM would be meaningless and may be harmful without overarching education content.

Academic institutions should recognise that both KM and e-learning vendors have to accept that they will become increasingly dependent on each other, and that standards for system interoperability will become increasingly important. Universities implementing integrated KM and e-learning solutions are both seeking strategic alliances Keulartz (2004). E-learning institutions should focus on learning neither on training, therefore, the elements of e-learning are set for the capability of an e-learning scheme that supports the achievement of different educational goals.

For DePaula (2001) KM and learning functions need to integrate their activities, their systems and their perceptions to succeed. Therefore, e-learning needs to become more granular, more independent of a fixed training context. The primary need for the academics and employees in such academic environments is to become more capable of being integrated into formalised learning process and their accountability for achieving higher learning outcomes.

5. Emerging technology integration towards the benefits of KM and E-learning

With today's rapidly changing competitive environment in the education sector and even within the same sector, the easiest way to implement e-learning is technology. In this context, knowledge is more related to science, superior experience, smart people, learning ability, high quality, and interactive information Owen (2002).

Technologies and tools of KM can be effectively applied in the learning process as database technologies which are effectively used in KM learning process; strategic management and planning are also used to execute learning programs at different levels where electronic tools and techniques can be successfully exploited to meet the learnability process Islam (2011).

The best e-learning is based on or directly connected to the real repository of knowledge that is constantly renewed and updated by the learning community Allee (2000). The best organisational learning is distributed across the enterprise, this environment of continuous learning, not only face the challenges of routine, pockets of experience and new processes that are able to anticipate and respond to threats and opportunities count as significant challenges for the organisation. This means that learning must be both local and distributed, and must be continuous and episodic Bemret (2003).

However, the challenge is to align the whole organisation to a changing environment of learning and innovation. Within organisations, the creative process is not done by people who have been employed for a long time, but it is part of the corporate culture of the organisation Leezenberg (2005).

Academic institutions save the collected knowledge in centralised locations enabling academicians reach the knowledge they need. In this context, knowledge management core responsibility is making this information accessible to all users in their locations Cheng (2009).

Thus, knowledge management is regarded as an important stage between customer and the knowledge base (data base) as shown in figure (1).

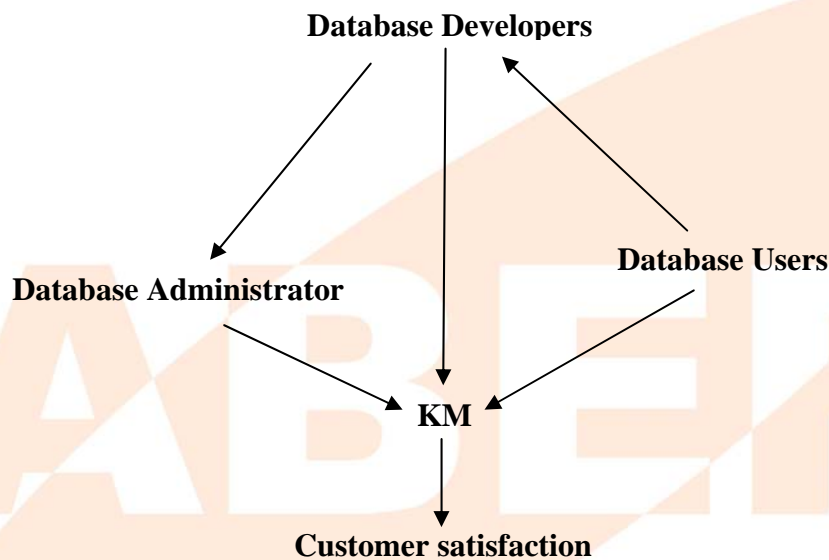


Figure (1): Implication of KM in Databases Alrawi (2011).

There are many examples of the rapprochement between knowledge management and e-learning. The pharmaceutical industry is a good example for merging KM and e-learning as a powerful engine in the educational sector Reamy (2003).

Academic institutions always ask for more IT to make the learning process easier, but when the learning process is delivered to students it can be complicated, with less system integration, poor implementation and a few benefits. Therefore, these institutions are in favour of interoperability as evidenced by their participation in the development of the teaching process Mathew (2010).

Academicians believe that e-learning should take a few tools, components and technologies for KM, which significantly improve the performance and quality of e-learning. This can be achieved through the use of e-learning KM simultaneously, or on the distribution and sharing with others Islam (2011). We believe that KM plays an important role in a system of e-learning to meet the needs of users.

The emerging technology deployed in KM and e-learning is of strategic importance and the success of e-learning or processes require better communication between academic institutions and stakeholders in order to have better access to educational information (Ehlers, 2008). The success of e-learning or processes can be difficult to be evaluated Ardito (2006) and the educational process must be re-evaluated and strategic alliances must be explored to meet the requirements in the educational system Dublin (2007).

To sum up, the primary task of such an organisation is the conversion and exchange of information as well as data into knowledge whether these information and data were inside or outside organisation; that is to say: the notions and tools of KM turn into a potential of continual significance regarded as a resource (information) Henczel (2000).

6. Integration process of knowledge management and e-learning needs staff involvement

Academic institutions – as an example of organisation – of the past depended mainly on long relationships with their stakeholders and employees who have been with the company throughout their career, therefore, these organisations were seeking to hire highly experienced staff to stay beyond competition McClymont (2006). As e-learning organisations became sophisticated,

therefore, Academic institutions needed knowledge management experts to aid them get accesses to knowledge resources and implement knowledge management successfully Albers (2009). Their success is attached to the number of users and the size of system through which they operate.

During of instantaneous communication time, the academic institutions want the academic staff to deliver traditional services in a quicker ways than before. The best resource for this is Knowledge management systems and processes which enable staff to work more effectively and efficiently in providing materials and information more rapidly than ever before Bastiaans (2002). At the same time, information technology has created wide scopes for academicians' by opening a whole new service market.

On the other hand, staff in academic institutions must understand and examine how they are going to use technology to deliver best educational services to their students Bhatt (2001). It has become common among the academic institutions to develop and manage various websites, on-line advisory and drafting tools, for helping the academic staff. Knowledge management systems and processes serve as a foundation for on-line services.

In this era of Internet, applications and other electronic information services, academicians need a multitude of information sources, and they must digest this exponentially increased amount of information Christine (2004). The communication between academic staff and their students can be used to lead to new possibilities for applications of advanced networking in e-learning environment, to work more efficiently between lecturers and students, and facilitates the opportunity to reduce obstacles in order to achieve positive outcomes and effective learning learnability Naismith (2004).

Academic institutions have inherited two major functions: knowledge creation and dissemination of knowledge. Research is the major factor for creating knowledge and teaching is the major factor for distributing knowledge. These institutions must manage the processes related to the distribution of knowledge continuously through involving their staff in knowledge creation and dissemination as well Tzeng (2010).

According to Nonaka (2000), the interaction between staff can take place without using language, for example, through observation, imitation and practice. To use some valuable knowledge of individuals in society, we need to refine the knowledge and get the consent of the people to share this knowledge Yeh (2006). In highly innovative institutions, academic staff are motivated to participate within the KM process and share information with their peers. The process of sharing information would enrich the shared knowledge and encourage team working Kearns (2007). Therefore, there is no organisational learning without individual learning Kim (2003).

Strategically thinking, data, digital format and various forms of codified knowledge are crucial elements for managerial decision-making, however these elements are known as structured knowledge, while unstructured knowledge resides in people who may make knowledge explicit, but this cannot become part of the recognisable knowledge unless people are involved in the process Goh (2004). Hence, the real value of knowledge management in a well structured organisation take place mainly through the ability to share existing knowledge at the individual level.

In summary, Successful implementing of KM makes these academic institutions leverage their human capital by developing their experience and their knowledge in the e-learning process Haslinda (2009).

7. The Suggested Model

By reviewing the available frameworks and models that have discussed in literature, Theriou (2010) outlined the five most significant and critical enablers or factors that determine the effectiveness of knowledge management within organisations. The information technology infrastructure and staff involvement (people) enablers are discussed by Theriou (2010) through reviewing the investigated researches and models of Earl (1997), Liebowitz (1999), Stankosky and Baldanza (2000), Davenport and Probst (1998) and Bixler (2002).

On the other hand, Alrawi (2012) presented a model that combines e-learning and KM into adaptable framework and discussed knowledge management technology that helps learners in selecting and evaluating e-learning media. Therefore, Theriou (2010) and Alrawi (2012) researches are inspired us to present our model.

In reviewing the literature, the researchers noted that there is a strong and significant overlap between EL and KM. Figure (2) describes the process of learning of individuals within active and interactive environment. The process of active learning is a means to vitalise thoughts of learners besides adding value to the way they adapt to the new learning environment.

The researchers believe that staff in academic institutions needs to be self-directed, able to use media and software, and able to use technologies such as intranet in order to be successful and familiar with the used technology and media in the e-learning process Alrawi (2012).

To reflect on the balance between the individuals and the organisation in the workplace is another way to use the model of learning. Organisations which are contained in certain services need to increase staff's acquisition of skills and capabilities to conduct certain tasks in marketing, purchase or communications with customers Bennet (2004). Thus learning increase staff technical and mental effectiveness. Therefore, the researchers believe that staff in academic institutions need to be self-directed, able to use media and software, and able to use technologies such as intranet, in order to be successful and familiar with the used technology and media in the e-learning process Alrawi (2012).

Although there have been constraints for implementing KM as mentioned above, but still in the educational sector and academic institutions have been able to enjoy some of the outcomes of KM where it has been properly implemented. According to Choy (2006) and from the previous discussion, the outcomes of KM implementation in e-learning could be categorised as:

1. Performance
2. Knowledge culture
3. Employee training
4. Benchmarking
5. Knowledge structure
6. Elimination of constraints

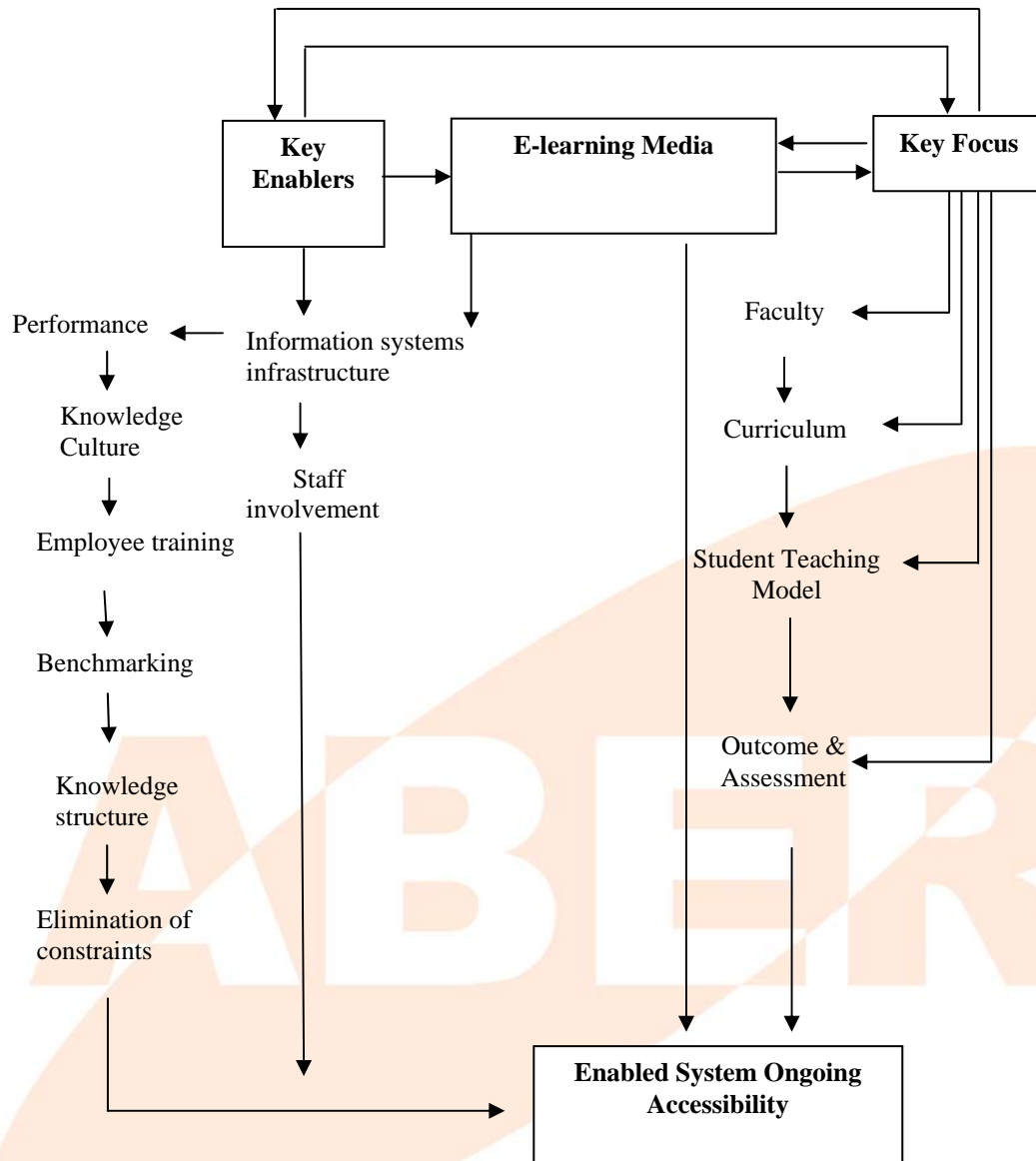


Figure (2): Integration of E-learning & KM framework Alrawi (2012)

Normally, strides of success can be achieved when the learning process is modelled to deal with internal as well as external problems and through which learners can overcome difficulties related to technical and skills capabilities Nazzari (2007). For instance, Apple Company create learning environment for staff Trevvarthen (2008).

Huge benefits can be gained and organisation's outcomes can be leveraged from interacting between the internal and external environments through a learning process Bennet (2004). The outcomes of this model represent the state of flow of knowledge between individuals or groups of learners within the organisation.

Improving information and communication technology tools will lead to develop skills of staff through sharing best practices of e-learning. Besides that, the successful implementing of KM makes academic institutions also leverage their human capital by enhancing their experience and their knowledge in the e-learning process Haslinda (2009). A successful implementation of KM also allows sharing knowledge with other organisations in the form of feedbacks.

Within the field of human resources development, informal learning is usually referred to as workplace learning, guided by the assumption that organisational and staff's learning is an ongoing process frequently taking place within the environment of the organisations and this process is more powerful than the learning that occurs in artificial courses, sessions and programs Mathew (2009).

8. Findings and Discussion

In this paper, highlighting was made on the main features of KM and e-learning. Although the interactions between KM and e-learning continues to rise and there seems to be general agreement that KM and e-learning are converging, it is important to realise that both Knowledge management and e-learning are not yet integrated in practice even though both of them possibly have the same objectives and hardly related to technologies.

Knowledge management and e-learning are mainly discussed and investigated from a technological point of view by considering standards, tools, platforms, etc. (Wai, 2010, Mathew, 2010, Allee, 2000, and Annetta, 2008). For many reasons that have been discussed before, e-learning is considered as a novel and useful technology for knowledge management in academic institutions due to its ease of use, communication, distribution and updating (Jethro, 2012, Alexander, 2001, Yong, 2005, and others)

Knowledge management can be considered as the most important dynamics of any organisation and the main driving of all skills and abilities and in order for organisations to implement knowledge management they should take into their account three dimensions; staff, management of the company, and technology. Therefore, technology alone is not enough to create trust, and personal context is necessary to achieve a true network. It is therefore, necessary to apply some KM techniques to help members in e-learning environment deal with problems more effectively.

The literature review considers the use of e-learning systems as a knowledge management tool posing an integrative framework. Therefore, academic institutions should benefit from the existing knowledge flowing and conversion among staff in order to create a new knowledge by capturing knowledge interaction existing within organisations. Capturing of the perceptions and experiences of users can be facilitated by e-learning through word processing tools, communication tools asynchronous such as email, discussion forums or mailing lists, or through synchronous communication tools such as chatting or using whiteboard, which help track the session, making tacit knowledge of one or more users documents possible.

The cornerstone to the success of knowledge management is management support, participation and involvement. Therefore, academicians must give more attention to knowledge management

as a way to reduce risks or minimize the barriers Basu (2007). Knowledge managers, therefore, adopt new practices to achieve this goal. At the same time, academicians need to be self-directed in order to be successful and familiar with the used technology and media in the e-learning process. Furthermore, academic staff should examine this technology to deliver online services to their stakeholders where knowledge systems and management processes are considered as the base of online services Elloumi (2004).

The academic institutions should further leverage the role of knowledge of staff by utilising them as value creators by setting best practice experiences and other means of sharing their knowledge Choy (2006). In essence, the actual value of knowledge management in a well structured organisation occurs mainly through the ability to share and then externalisation of tacit or implicit existing knowledge at the individual level.

In summary, it is found that the differences between the KM environment and the e-learning environment are artificial, not important and undesirable Owayid (2013). Mainly, supporters of integrating these environments consider that e- learning becomes as a part of Knowledge management and they regard knowledge management as a tool to be used in e-learning.

9. Conclusion

We may conclude from this research that academic institutions are still unfamiliar or not sure with knowledge management and how to acquire or share their knowledge. Since most of these institutions are new in adopting the e-learning programs, the relationship between the KM and e-learning is not effectively recognised.

The direct contribution of KM on media and technologies in the proposed model goes to education by identifying the benefits that could be acquired through the implementation and use of e-learning integration with KM. The obtained benefits of positive issues from using knowledge management in education sector outweigh the negative aspects. Therefore, top management in the education field must emphasise on applying knowledge management inside their organisations.

The researchers believe that the e-learning process and the effective KM contribution could be successful when the academic institutions realise the need to have a clear understanding of the benefits of the training programs offered by these institutions through employees, and the implementing of advanced technologies within the educational environments.

The purpose of this study is to show the immense power of KM in e-learning. It also determines the crucial success enablers that help this power to be identified and achieved. In spite of the fact that the transfer of ideas from technology to education might not be identical, there is certain basis through which these settings are probably common.

Since economies and businesses move towards the creation of a new world of digital information and knowledge-based work, academic institutions are facing a challenge represented by the contribution to KM solutions. Despite the high cost of KM implementation in institutions, the outcomes are greater than expenses.

The advantages of the application of knowledge in the domain of e-learning are proposed as a systematic knowledge activities, staff development and the success of the organisation. Therefore, in order to accomplish a well structured learning community, public and private sectors ought to collaborate for providing sources and helping in executing knowledge.

Eventually, corporation among researchers as well as developers of various disciplines inside organisations lead to controlling and mastering the process of the integration between Knowledge management with e-learning. Apparently, during the coming years, it is difficult to capture a final and optimal solution to fully integrate KM and e-learning because the growth of both of them is gathering pace continuously. Therefore, several new studies, research articles and issues will emerge.

10. Managerial Implications

Generally, it is hard to evaluate intangible services. Therefore, management relies on dimensions such resources, environmental influences, knowledge sharing or marketing quality. Besides, a wide variety of KM products should be offered by organisations in order to help the process of integration between knowledge management and e- learning to be accomplished and achieved.

11. Limitation of the Study

There are many limitations in this research. The first limitation is lack of history data which makes conducting a quantitative research method inaccurate. Secondly, the intangible and sometimes complicated nature of so much of KMs effects and results on organisations makes it difficult to quantify. Thirdly, other studies could emphasise on different enablers that may help in expanding and developing researches in order to study same sector and effort in many institutions. The final limitation of this research is ignoring the literature which identifies face to face recognition and not relying on information technology networks.

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