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# KNOWLEDGE MANAGEMENT AND SOCIAL LEARNING INTEGRATION: A CONCEPTUAL MODEL FOR HIGHER EDUCATION

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## Abstract

Social media has changed the business process of organization radically, not only from industry sector but also in education. Higher education as a place to educate and share knowledge has to realize these phenomena. With social media, organization supports the knowledge sharing process within organization. Then it changes learning mechanism from e-learning into social learning environment. According to this fact, this research will combine the concepts of knowledge management and social learning as a model framework's component by identifying the significant factors and its relationship with social media. A systematic and relevant literature review from journals and textbooks was conducted to support the development of component framework model. As the result, we propose an integrated model of knowledge management with social learning for higher education.


## Introduction

Nowadays, the rapid penetration of communication technology has introduced social media as a new channel for enormous communication. With social media, users are allowed to post everything (image, quote, link, video, etc.) and to share and comment about those posts. This is how people interact with one another in Web 2.0 environment. At the organization level, social media enables people to interact, share information, and collaborate in all business processes. Furthermore, social media eliminated barriers in communication, which helped individuals keep contact with his/her friends (Ngai et al. [22]).

Simultaneously, many studies have emphasized the influence of social media to change the communication channel, including in higher education as a place for student learning. The traditional learning process has radically changed. Besides interaction between students in the classroom, use of email, mailing list and telephone are predominant. Even beyond that, the social media became a new channel for their communication. Obviously, this

paradigm has changed the education era from e-learning to social learning concept.

Meanwhile, knowledge management as a concept that can support organizational learning can be a systematic approach for organization to collaborate between learning process and social media. Based on this background, we will investigate the core components between social learning and knowledge management system to support higher education. The major aim of this study is to identify a model which can show how social learning can be integrated into knowledge management model to develop student's competency. Moreover, this research discusses the prior studies about e-learning and knowledge management to elaborate suitable framework that can be appropriated for the social learning concept in higher education.

## Theoretical Background

### E-learning

Basically, e-learning is a web-based system that makes information of knowledge available to learners with no binding on time and space using telecommunication technology to deliver information from instructor to learner or learner to learner (Sun et al. [35]). Since the aim of this study was to investigate significant factors between social learning (e-learning 2.0) and knowledge management in enhancing learning process, there are some frameworks of e-learning founded from the study of literature. One of the famous applicable frameworks of e-learning according to Khan model contains eight dimensions (Khan [19): institutional, pedagogical, technological, interface, evaluation, management, resource support and ethical.


**Figure 1.** E-learning framework (Khan [19]).

**Social media**

The new generations of Web 2.0 and Web 3.0 have more enthusiasm to spend many hours on Internet, especially using social media (Elkaseh et al. [13]). With social media, everyone can ask or find anything which they need easily. Social media is defined as Internet based applications that are built on technological platform of Web 2.0 (Zhang et al. [38]).

All users in social media act as content contributor and the contribution is made based on trust and collaboration with each other (Rodriguez et al. [27]). The functionality and the usage of social media have spread into seven aspects, as described in honeycomb framework proposed by Kietzmann. This framework shows the seven building blocks of social media functionality whose each part allows us to examine user experience and its implications for organizations (Falahah and Rosmala [14]).

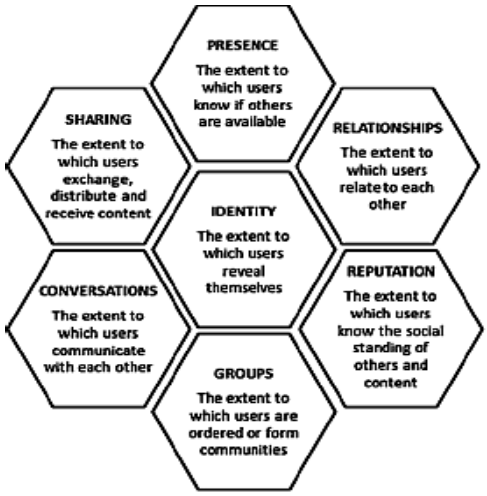


**Figure 2.** Social media functionality framework (Falahah and Rosmala [14]).

**Social learning**

The precise interaction related to the learning process can be provided using social media as media to accommodate every interaction in a web-based learning process. When the learning environment needs interaction with other people (classmates, experts, outside authority), it is a social learning concept (Horton [17]). For this research, the concept of social learning involves the procedures that organize a systematic posting cycle, different time and work situations and the procedures that support generative learning that enhances the enterprise's ability. Since construction of knowledge is an integral part of learning, social learning within an organization is a part of knowledge management (Warne et al. [20]).

**Knowledge management systems**

Knowledge management has increased as a management tool within business organizations to leverage knowledge both within their organization and externally to their shareholders (Rubenstein-Montano et al. [28]). The concept of knowledge management refers to process that concerned with capturing, storing, transforming, and sharing the organizational knowledge (Bhusry and Ranjan [6]). The implementation of knowledge management can increase the value of an organization's intellectual across diverse

division and locations (Dalkir [11]). However, today almost all knowledge management systems in organizations are based on information technologies (Pinto [24]). Despite this fact, there are a lot of approaches to knowledge management system getting implemented across organizations to fully realize its potential for increasing organization performance.

## Methodology

In order to identify the most significant factor to integrate social learning and knowledge management, this research consists of several steps. First step, it was conducted by capturing and synthesizing information and research about the correlation between e-learning, social media, and knowledge management concept from any literatures, such as text books, journals, and experts' opinion. In the second step, we analyze e-learning framework, social media framework functionality, and knowledge management components from journals and articles that are already applicable in industry. In the last step, we integrate each component towards a collaboration social learning and knowledge management model.

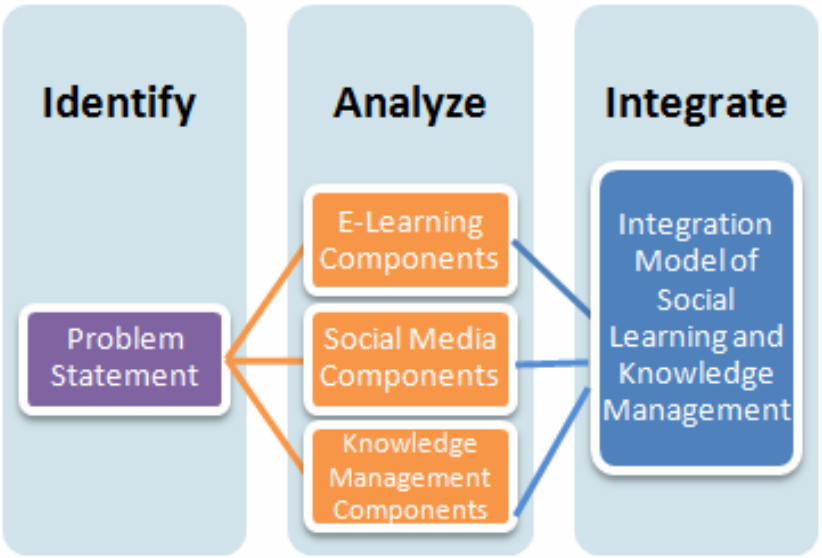


**Figure 3.** Research model.

The correlation of knowledge management and social learning is conceptualized in various ways. By supporting the creation, dissemination, and application of knowledge, knowledge management initiatives payoff by helping higher institutions collaborate knowledge into social learning process so that it improves learning experience.

## Result and Discussion

The e-learning and knowledge management are contributions to conduct shared knowledge in the social life. Many organizations discovered that e-learning has many of the same attributes as basic knowledge management processes and thus can be used as a tool for knowledge management (Wild et al. [37]).

The concept of knowledge management takes a perspective on learning and sharing knowledge among users, whereas e-learning system is a revolutionary channel to help acquire, shared, distributed, and collaborative learning process. Therefore, knowledge management can be a basic foundation to enhance e-learning system in order to support the development of consciousness about knowledge and the multiple ways knowledge can be used, from novice to master level (Strunga [34]). To develop a suitable knowledge management framework for higher education, this research identifies a component of knowledge management from previous research. Investigations from the literature from 2004 until 2015, provided 8 (eight) component variables that have impact to the implementation of knowledge management. These are: technology, intellectual asset, organization learning, process, philosophical, leadership, culture and people.

**Table 1.** The elements of knowledge management

| Paper No. | Technological | Intellectual asset | Organization learning | Process | Philosophical | Leadership | Culture | People |
|---|---|---|---|---|---|---|---|---|
| 1. (Shin [30]) | √ | √ | √ | √ | √ | | | |
| 2. (Cranfield and Taylor [10]) | √ | | √ | | | √ | | |
| 3. (Bures et al. [8]) | √ | | √ | √ | √ | √ | √ | |
| 4. (Hsia et al. [18]) | √ | | | | | | | |
| 5. (Chan et al. [9]) | √ | √ | | | | √ | | |
| 6. (Drus et al. [12]) | √ | | √ | √ | | | √ | √ |
| 7. (Lin and Ha [21]) | √ | | √ | | | | | √ |
| 8. (Smuts et al. [31]) | √ | | √ | | | √ | √ | |
| 9. (Bhusry and Ranjan [6]) | √ | | | | | | √ | √ |
| 10. (Ajuhary [2]) | √ | | √ | | | √ | | √ |
| 11. (Pancholi and Pancholi [23]) | | | | √ | | | √ | |
| Total | 10 | 2 | 7 | 4 | 2 | 5 | 5 | 4 |

**Table 2.** The elements of e-learning

| Paper No. | Social | Structure and layout | Communication | Process | Evaluation | Cooperative learning community | Learning resources | Technology | Pedagogy | Hypermediality | Ethical |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 (Alias et al. [3]) | √ | √ | √ | | | | | | | | |
| 2 (Ramakrisnan et al. [25]) | | √ | | | √ | √ | √ | √ | √ | | √ |
| 3 (Songkram et al. [33]) | | | | √ | √ | | | | | | |
| 4 (Songkram [32]) | | √ | | √ | | | | | | | |
| 5 (Amornsinlaphachai [5]) | √ | | | | √ | √ | √ | | | | |
| 6 (Salmon [29]) | | | | | | | | √ | √ | | |
| 7 (Alsobhi et al. [4]) | | √ | | | | | | | | √ | |
| 8 (Grigoras et al. [15]) | √ | √ | √ | | | | | | | √ | |
| 9 (Zheng and Yano [39]) | √ | | | | | | | √ | √ | | |
| 10 (Redmond and Lock [26]) | √ | | | | | √ | | | √ | | |
| 11 (Boud and Prosser [7]) | √ | √ | | √ | √ | | | | | | |
| 12 (Hardman and Ceceres [16]) | | | | | | | | | | | |
| 13 (Wan et al. [36]) | | | | | √ | | √ | √ | | | |
| 14 (Abbas et al. [1]) | | √ | | | | | | √ | | | |
| Total | 6 | 7 | 2 | 3 | 5 | 3 | 3 | 5 | 4 | 2 | 1 |

According to the mapping element above, the result shows that there are four elements most used in industry as a component of knowledge management system. These are: technology, organization learning, leadership and culture. Therefore, these variables work as a framework to collaborate with social media functionality and e-learning component framework.

This research also checks the component for e-learning that focused on practitioner organizations from 2002 until 2015. These consist of social, structure and layout, communication, process, evaluation, cooperative learning community, learning resources, pedagogy, hypermediality and ethical.

According to every element already defined by practitioners, this research tries to collaborate each element into new conceptual model that integrate the significant component of knowledge management framework and social learning framework described below:

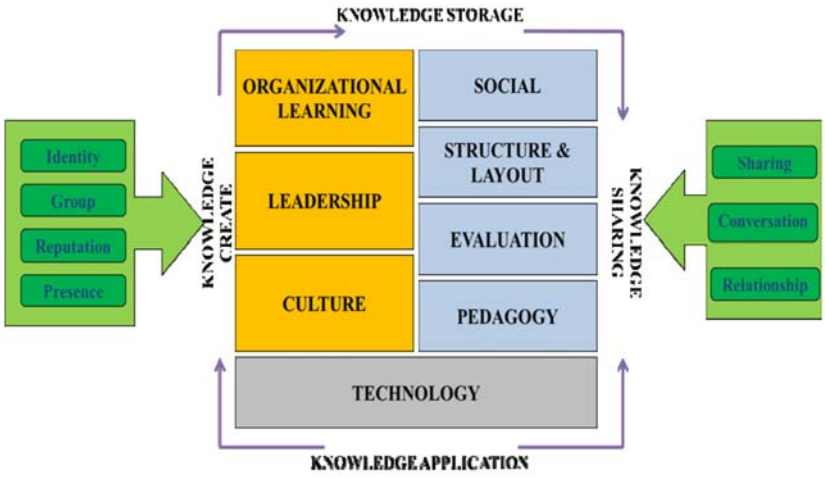


**Figure 4.** The integration KM and social learning model.

The proposed conceptual model defines relevant objects and coherences that are to be considered for higher institutions. The model collaborates social media functionality framework, e-learning element, and knowledge management components. Every element elaborates to accommodate social

learning process in higher education. The components of e-learning (technology, pedagogical, evaluation, structure and layout, social) as presented in Figure 4, are to be compatible with knowledge management pillars (leadership, technology, culture, and organizational learning). Then social media functionality can sustain knowledge created and knowledge sharing in higher institutions. Knowledge management (create, storage, sharing and application) connects with e-learning regarding the subject matter and social media connects with e-learning in terms of supporting the notion of creating, sharing, and disseminating knowledge within the organization.

## Conclusion

This study provided insight for higher education to define knowledge management framework components and significant social learning components to accommodate the integration of these two concepts. The main components of the integration are depicted in Figure 4. The components mentioned are based on study literature from the results of good practices. Knowledge management and social learning are elaborated to support learning process in higher education. Integration of the knowledge management concept to enhance social learning system will give more flexibility and functionality which can increase the good learning experience and learning outcome. The outcome of the effective learning process is good if the orientation is not only for knowing facts but also for having practical skill and developing competency to interact with other in the given learning environment.

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## References

[1] Z. Abbas, M. Umer, M. Odeh, R. McClatchey, A. Ali and F. Ahmad, A semantic grid-based e-learning framework (SELF), The Semantic Grid in E-learning, 2010.

[2] S. A. Ajuhary, Knowledge management: from strategy to framework (a case study in research institute), The 3rd National Graduate Conference (NatGrad2015), Univerisiti Tenaga Nasional, 2015, pp. 8-9.

[3] N. Alias, Z. Zakariah, N. Z. Ismail and M. N. A. Aziz, E-learning successful elements for higher learning institution in Malaysia, Procedia - Social and Behavioral Sciences 67 (2011), 484-489. http://doi.org/10.1016/j.sbspro.2012.11.353.

[4] A. Y. Alsobhi, N. Khan and H. Rahanu, DAEL framework: a new adaptive e-learning framework for students with Dyslexia, International Conference on Computational Science, ICCS 2015 - Computational Science at the Gates of Nature, Vol. 51, 2015, pp. 1947-1956. http://doi.org/10.1016/j.procs.2015.05.459.

[5] P. Amornsinlaphachai, The design of a framework for cooperative learning through web utilizing data mining technique to group learners, Procedia - Social and Behavioral Sciences 174 (2015), 27-33. http://doi.org/10.1016/j.sbspro.2015.01.622.

[6] M. Bhusry and J. Ranjan, Implementing knowledge management in higher educational institutions in India: a conceptual framework, International Journal of Computer Application 29(1) (2011), 34-46. http://doi.org/10.5120/3527-4805.

[7] D. Boud and M. Prosser, Appraising new technologies for learning: a framework for development, Educational Media International 39(3-4) (2002), 237-245. http://doi.org/10.1080/09523980210166026.

[8] V. Bures, D. Griffin, D. Hackett, P. Kročitý and E. Kubička, Rethinking of Knowledge Management Introduction At Teaching Universities: the Problems of Education in the 21st Century, 2011.

[9] E. W. L. Chan, D. H. T. Walker and A. Mills, Using a KM framework to evaluate an ERP system implementation. Journal of Knowledge Management 13(2) (2009), 93-109. http://doi.org/10.1108/13673270910942727.

[10] D. J. Cranfield and J. Taylor, Knowledge management and higher education: a UK case study, The Electronic Journal of Knowledge Management 6(2) (2008), 85-100.

[11] K. Dalkir, Knowledge Management in Theory and Practice, The MIT Press, London, 2011.

[12] Z. A. M. Drus, D. Singh and R. Mokhtar, A review: knowledge management framework for drug rehabilitation centre, Research Journal of Applied Sciences, Engineering and Technologhy 5(1) (2013), 292-295.

[13] A. M. Elkaseh, K. W. Wong and C. C. Fung, Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: a structural equation modeling analysis, International Journal of Information and Education Technology 6(3) (2015), 192-199. http://doi.org/10.7763/IJIET.2016.V6.683.

[14] Falahah and D. Rosmala, Study of social networking usage in higher education environment, Procedia - Social and Behavioral Sciences 67 (2012), 156-166. http://doi.org/10.1016/j.sbspro.2012.11.316.

[15] G. Grigoraş, D. Dănciulescu and C. Sitnikov, Assessment criteria of e-learning environments quality, Procedia Economics and Finance 16 (2014), 40-46. http://doi.org/10.1016/S2212-5671(14)00772-2.

[16] J. Hardman and A. P. Ceceres, A soft systems methodology (SSM) based framework for evaluating managed learning environments, Systemic Practice and Action Research 24 (2011), 165-185.

[17] W. Horton, E-learning by Design, John Wiley and Sons, San Fransisco, 2012.

[18] T. Hsia, L. Lin, J. Wu and H. Tsai, A framework for designing nursing knowledge management systems, Interdisciplinary Journal of Information, Knowledge, and Management (2006), 1.

[19] B. H. Khan, Managing e-learning: Design, Delivery, Implementation, and Evaluation, Information Science Publishing, 2005.

[20] L. Warne, C. Pascoe, I. Ali, K. Agostino and R. Gori, Social learning and knowledge management in the australian defense organization, 1st International Conference on Systems Thinking in Management, 2000, pp. 631-637.

[21] Y. C. Lin and N. Ha, The framework for KM implementation in product and service oriented SMEs: evidence from field studies in Taiwan, Sustainability 7 (2015), 2980-3000.

[22] E. W. T. Ngai, S. S. C. Tao and K. K. L. Moon, Social media research: theories, constructs, and conceptual frameworks, International Journal of Information Management 35(1) (2015), 33-44. http://doi.org/10.1016/j.ijinfomgt.2014.09.004.

[23] N. Pancholi and A. Pancholi, Designing a conceptual framework of knowledge management process in banks, IOSR-Journal of Business and Management (IOSR-JBM) 16(7) (2014), 114-126.

[24] M. Pinto, A framework for knowledge managemt systems implementation in higher education, Advanced Research in Scientific Areas, 2012, pp. 2078-2081.

[25] P. Ramakrisnan, Y. B. Yahya, M. N. H. Hasrol and A. A. Aziz, Blended learning: a suitable framework for e-learning in higher education, Procedia - Social and Behavioral Sciences 67 (2012), 513-526. http://doi.org/10.1016/j.sbspro.2012.11.356.

[26] P. Redmond and J. V. Lock, A flexible framework for online collaborative learning, The Internet and Higher Education 9(4) (2006), 267-276. http://doi.org/10.1016/j.iheduc.2006.08.003.

[27] J. E. Rodriguez, J. Liebowitz, J. Buchwalter, D. McCaw, B. Newman and K. Rebeck, Social media use in higher education: key areas to consider for educators, Journal of Online Learning and Teaching 7(4) (2011), 539-550.

[28] B. Rubenstein-Montano, J. Liebowitz, J. Buchwalter, D. McCaw, B. Newman and K. Rebeck, A systems thinking framework for knowledge management, Decision Support Systems 31(1) (2001), 5-16. http://doi.org/10.1016/S0167-9236(00)00116-0.

[29] G. Salmon, Flying not flapping: a strategic framework for e-learning and pedagogical innovation in higher education institutions. Alt-J, Research in Learning Technology 13(3) (2005), 201-218. http://doi.org/10.1080/09687760500376439.

[30] M. Shin, A framework for evaluating economics of knowledge management systems, Information and Management 42 (2004), 179-196. http://doi.org/10.1016/j.im.2003.06.006.

[31] H. Smuts, A. Van Der Merwe, M. Loock and P. Kotzé, A Framework and Methodology For Knowledge, 2004.

[32] N. Songkram, E-learning system in virtual learning environment to develop creative thinking for learners in higher education, Procedia - Social and Behavioral Sciences 174 (2015), 674-679. http://doi.org/10.1016/j.sbspro.2015.01.600.

[33] N. Songkram, J. Khlaisang, B. Puthaseranee and M. Likhitdamrongkiat, E-learning system to enhance cognitive skills for learners in higher education. Procedia - Social and Behavioral Sciences 174 (2015), 667-673. http://doi.org/10.1016/j.sbspro.2015.01.599

[34] A. Strunga, The integration of virtual learning communities into universities' knowledge management models, Procedia - Social and Behavioral Sciences 197 (2015), 2430-2434. http://doi.org/10.1016/j.sbspro.2015.07.306.

[35] P.-C. Sun, R. J. Tsai, G. Finger, Y.-Y. Chen and D. Yeh, What drives a successful e-learning? An empirical investigation of the critical factors influencing learner satisfaction, Computers and Education 50(4) (2008), 1183-1202. http://doi.org/10.1016/j.compedu.2006.11.007.

[36] Z. Wan, Y. Wang and N. Haggerty, Why people benefit from e-learning differently: the effects of psychological processes on e-learning outcomes, Information and Management 45(8) (2008), 513-521. http://doi.org/10.1016/j.im.2008.08.003.

[37] R. H. Wild, K. A. Griggs and T. Downing, A framework for e-learning as a tool for knowledge management, Industrial Management and Data Systems 102(7) (2002), 371-380. http://doi.org/10.1108/02635570210439463.

[38] X. Zhang, Y. Gao, X. Yan, P. O. de Pablos, Y. Sun and X. Cao, From e-learning to social-learning: mapping development of studies on social media-supported knowledge management, Computers in Human Behavior 51 (2015), 803-811. http://doi.org/10.1016/j.chb.2014.11.084.

[39] Y. Zheng and Y. Yano, A framework of context-awareness support for peer recommendation in the e-learning context, British Journal of Educational Technology 38 (2007), 197-210. http://doi.org/10.1111/j.1467-8535.2006.00584.x.