

ELEARNING ENVIRONMENT AS A FACILITATOR FOR KNOWLEDGE CREATION USING SECI MODEL IN THE CONTEXT OF BA

¹SALEH KASEM, ²SAMIR HAMMAMI, ³MANSOUR NASER ALRAJA

¹Asstt Prof., Libyan Mediterranean University, Istanbul, Turkey

^{2,3}Asstt Prof., Department of Management Information Systems, Dhofar University

Email: 1kassemaleh@hotmail.com, ²samir@du.edu.om, ³malraja@du.edu.om

ABSTRACT

Using eLearning technology today in education is changing the way in which knowledge is introduced, stored and distributed, accordingly; knowledge management technologies is used to rapidly capture, organize and deliver large amounts of new knowledge.

BA as a shared context in eLearning environment requires students to share, construct and utilize knowledge through knowledge creation processes as proposed in Nonaka's model of knowledge creation (SECI).

This research aims to introduce and prove that eLearning environments supports the knowledge processes and creates conditions which are consistent with Nonaka's model of knowledge creation (SECI) and the concept of BA as a shared context for knowledge creation processes and activities, a research model was built and hypotheses were formed to reflect it, then a survey was distributed between the students of Syrian Virtual University (SVU) to collect the primary data to discover the strength of relationships between the model variables, The results demonstrates that BA as a shared context affects positively knowledge creation model (SECI) in the mediation of eLearning environment.

This research is a consolidated contribution to field of eLearning by engaging knowledge management concepts in the whole process of it.

Keywords: *Knowledge, SECI, Context, BA, eLearning, SVU.*

1. INTRODUCTION

The recent advancement in computing power and network technologies have given new feature to increasing access to educational resources. Internet, as a global network of networks, connecting hundreds millions of computers and users inexpensively, systematically and conveniently [15] [16] eLearning creates an increasingly store for knowledge that will continuously deliver to students just what they need to know at any time, and in a style that each individual can understand, and this will justify the need of knowledge creation as an indivisible part of eLearning. BA as a shared context in eLearning environment required students to share, create and utilize knowledge through knowledge creation processes and Nonaka's SECI Model, the literature review goes through details of the theoretical base of the research, then the detailed model is introduced and tested statistically followed by a discussion for each hypothesis.

2. LITERATURE REVIEW

2.1. Knowledge Concept

[7] Explained the concept of Knowledge using a simple world "understanding" which gives origin to reality that humans build in their minds as a result of experiences and performance.

[14] stated comprehensively the concept of knowledge as a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates in and it is applied in the minds of knower's, in addition, knowledge assets can be thought of as a subset of dispositions to act, or potential for action [5] embedded in individuals, groups, or sociophysical systems with future prospects of value creation.

2.2. Concept of BA

The concept of BA was primarily submitted by Japanese philosopher Kitaro Nishida and then developed by Shimizu. [10] adapted this concept for the purpose of examining SECI model of knowledge creation, so they stated that BA can be physical, virtual and mental or any collection of them.

[13] also proposed a specific type of BA for each of the key processes in the SECI model. These types are originating BA, dialoguing BA, systemizing BA and exercising BA, which are defined by two dimensions of interactions as illustrated in figure 1, the first dimension is the type of interaction which takes place individually or collectively and the second one is the media used in such interactions, that is, whether the interaction is through face-to-face contact or virtual media such as books, manuals, memos, e-mails or teleconferences.

		Type of Interaction	
		Individual	Collective
Media	Face to Face	Originating BA	Dialoguing BA
	Virtual	Systemizing BA	Exercising BA

Figure 1: Four Types Of BA: Adapted By [11]

Each type of BA offers a context for a specific step in the knowledge-creating process, though the respective relationships between each single BA and conversion modes are by no means exclusive.

2.3. Knowledge Creation (SECI Model)

Knowledge creation has been explained by the SECI model which is developed by [12] and later improved by adding new and interesting suggestions like the concept of BA [10] and the notion of knowledge assets [11], SECI model describes the knowledge transformation processes according to the knowledge epistemological dimension [6], Nonaka's introduces and examines four modes of knowledge conversion:

2.3.1 Socialization Mode

This mode of knowledge conversion is the knowledge-creating mode of converting tacit knowledge to tacit knowledge (Figure 2). Nonaka assumed that there are two dimensions of tacit knowledge; namely, cognitive and technical, which cause to rise to two types of socialization modes of knowledge conversion.

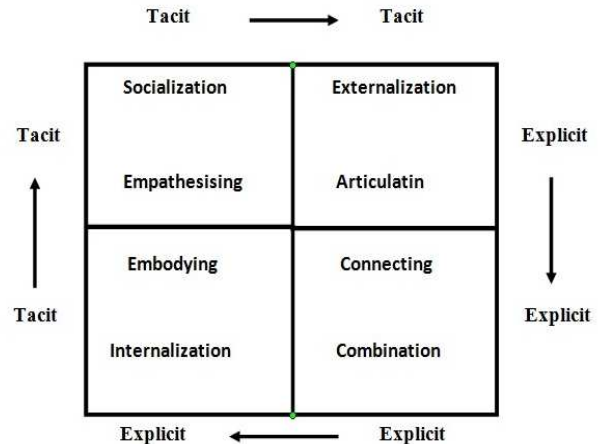


Figure 2: Engine Of Knowledge Creation, Model Exhibiting Categorical Dimension Of KM Adopted From [11] Applied By [5]

2.3.2. Externalization Mode

Nonaka discussed externalization mode as a process of making tacit knowledge explicit (Figure 2). This is characterized by the concept of knowledge creation, which is an activity that generates an abstract principle, for example, for making a new product or service. Nonaka claimed that this is an essential process business advancement.

SECI dimension illustrated in (Figure 2) serves as a useful starting point in understanding this dimension of KM and how knowledge creation occurs as a flow from tacit to explicit knowledge and a combination of knowledge push and pull [11]

2.3.3. Combination Mode

The combination mode of knowledge conversion is a process of assembling new and existing explicit knowledge held by individuals into a knowledge system (Figure2). It is also a process of exchanging, ranging, adding, distribution, sharing, this lead to building different bodies of explicit knowledge among the organizational members through



documents, meetings, telephone conversations, computerized communication methods.

2.3.4. Internalization Mode

The internalization mode of knowledge conversion as defined by Nonaka; is a process of embodying explicit knowledge into tacit knowledge (Figure 2) which includes know-how, how to know and technical skills. [12] proposed that documentation and manuals are the essential tools of internalization mode to enable other people to indirectly embody what the members of a project experienced. Any other kinds of explicit knowledge such as text, sound, video formats, or oral stories can facilitate the internalization process [6].

2.4. ELearning

[16] defined eLearning as the use of information and communication technology for knowledge interchanges within teaching and learning, additionally; [17] argued that eLearning is the ability of an electronic system to transfer, manage, support and supervise learning and learning materials by using platforms and web-based applications popularly, to allow users to access information directly via internet, moreover [8] demonstrated that eLearning can relieve the restrictions of time and space compared with traditional face-to-face education to enable learners to learn at any time if a computer and internet are available. Learners can also control the time and speed of their learning, and study a particular part of the learning content repeatedly and interact more actively with it.

ELearning definitions mentioned above encompass several forms and types which could be identified according to [3] to:

- 1) A means of communication: The common features of these applications enable students to develop new ways of doing old things, and find meaning in relating previous experiences with communication to new experiences with communication.
- 2) ELearning used as a general resource. This is the use of computers and internet Based resources and services to enable students for instance learning through interactive eLearning units and rich media sources, using speech, video or interactive sequences or instructions.
- 3) ELearning used as Learning Management Systems (LMS) which is a software with a flexible architecture to deploy, manage, track and report on interactions between learner and

content and between the learner and the instructor [5]

These forms are influencing the nature of how people learn. Moreover, [1] assumed that most effective eLearning environmental averages self-learning through appropriate coaching because it encourages more individuals to learn “how to learn” and to only learn what they really have to learn.

3. RESEARCH MODEL AND HYPOTHESES

The proposed model provides a conceptual relation between BA (as a shared context), eLearning environment, and SECI model as shown in (Figure 3). This model suggests that eLearning environment is encouraging processes and conditions which are consistent with Nonaka's model of knowledge creation (SECI) and the concept of BA.

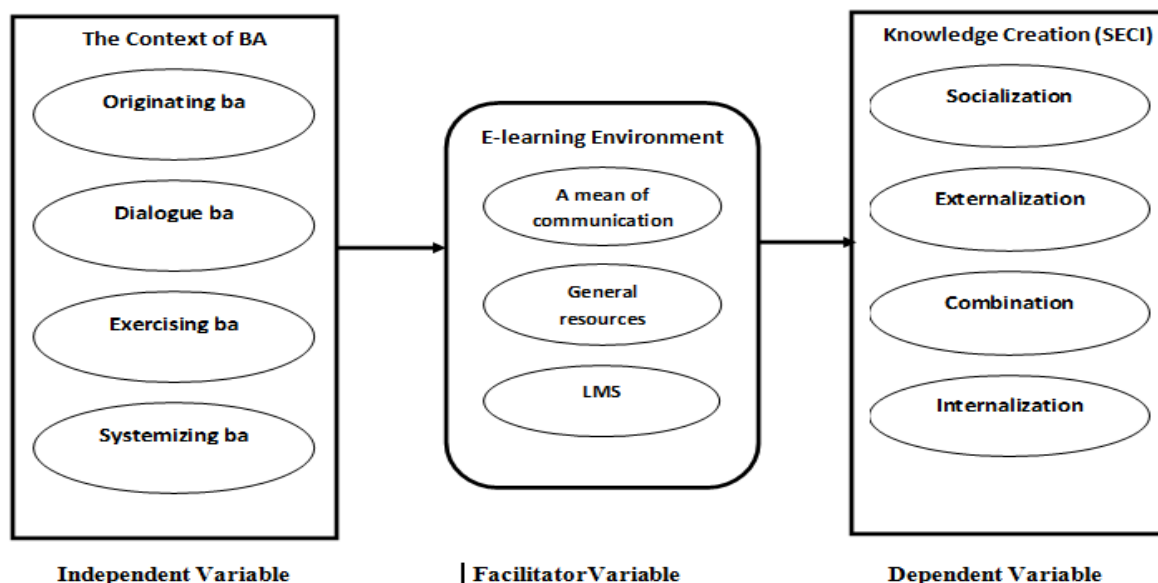


Figure 3: The Proposed Study Model

The proposed model shown in figure (3) contains three types of variables:

1. Independent variables: BA (as a shared context), which consists of four sub variables (Originating BA, Interacting BA, Systemic BA, Exercising BA).
2. Mediator variables: eLearning variables, which consists of three variables (Means of communication, General resource, Learning Management Systems (LMS)).
3. Dependent variables: Knowledge creation, which consist of four variables (Socialization, Externalization, Internalization, Combination).

Several hypotheses were built according to the proposed model and literature which are listed below:

H₁: There is a significant relationship between BA and SECI model.

H_{1,1}: There is a significant relationship between originating BA and SECI model.

H_{1,2}: There is a significant relationship between dialogue BA and SECI model.

H_{1,3}: There is a significant relationship between exercising BA and SECI model.

H_{1,4}: There is a significant relationship between systemizing BA and SECI model.

H₂: There is significant relationship between BA and eLearning environment.

H_{2,1}: There is a significant relationship between originating BA and eLearning environment.

H_{2,2}: There is a significant relationship between dialogue BA and eLearning environment.

H_{2,3}: There is a significant relationship between exercising BA and eLearning environment.

H_{2,4}: There is a significant relationship between systemizing BA and eLearning environment.

H₃: there is a significant relationship between eLearning environment and SECI model.

H_{3,1}: there is a significant relationship between a mean of communication and SECI model.

H_{3,2}: there is a significant relationship between general resource and SECI model.

H_{3,3}: there is a significant relationship between LMS and SECI model.

H₄: There is a significant relationship between BA and SECI model as mediated by eLearning environment.

4. RESEARCH METHODOLOGY AND MEASUREMENT MODEL

In order to validate the research model a survey method was adopted as a primary tool for data collection, the target were Syrian Virtual University students in (Damascus, Aleppo, and Lattakia) branches.

Data was collected in order to determine the correlation degree between the current study variables. The questionnaire was developed and administered to investigate how an eLearning environment can provide a context (depending on the concept of BA) that can stimulate or enhance knowledge creation of (Nonaka's model SECI) which is the main purpose of the research, 400 questionnaires were distributed to the students of (SVU); the numbers of received questionnaire were (330), which means a response rate was (82.25%).



The researchers adopted multiple regression analysis to test the relationship between dependent and independent variables, and two stage least square in order to test the mediation relationship, in addition; factor Analysis also was used to measure the research constructs. Internal consistency reliability test is used to know whether the instruments are consistent, this reliability is tested for instrument after the factor analysis test. Cronbach's Alpha (α) is the most common method in testing the internal consistency.

The proposed model was evaluated, hypotheses were tested, and the results summarized in table 1. Assessment was done first by Factor analysis in order to measure proposed model construct, The final factor analysis showed right discriminate validity for the eLearning environment and SECI Model, which load five factors range from (0.368-

0.828) for the context of BA , load five factors range from (0.528-0.871) for eLearning , and load five factors range from (0.422-0.827) for SECI Model, in addition, [2] proposed guidelines for identifying the significant factor loading, so (0.30) was accepted as the out-off point for the interpretation purpose.

The second assessment was done by measuring the reliability construct for the context of BA, eLearning environment and SECI were tested by calculated Cronbach's Alpha. The results showed that Cronbach's Alpha was (0.754)for the first construct the context of BA,(0.798) for eLearning environment construct and (0.809) was for SECI model construct, which shows a reasonable reliability for these constructs.

Table 1: Results Summary Based On Factor Analysis And Cronbach's Alpha

Construct No.	Sub Construct	No. of Items	Loading	Cronbach's Alpha
1.	The Context of Ba			
1.1	Originating BA	5	0.537-0.799	0.754
1.2	Dialogue BA	5	0.603-0.794	
1.3	Systemizing BA	4	0.423-0.828	
1.4	Exercising BA	5	0.368-0.814	
2.	eLearning Environment			
2.1	A Mean Of Communication	4	0.608-0.824	0.798
2.2	A General Resources	5	0.528-0.788	
2.3	LMS	5	0.624-0.871	
3.	SECI Model			
3.1	Socialization	5	0.505-0.827	0.809
3.2	Externalization	5	0.422-0.768	
3.3	Combination	4	0.609-0.826	
3.4	Internalization	5	0.690-0.827	

Finally; the hypotheses were tested by using multiple regression and two stage level.

Table (2) illustrates the multiple regression analysis results of the (the context of BA) as independent variables on the (SECI Model) as dependent

Table 2: Multiple Regression Between (Originating BA, Dialogue BA, Exercising BA, Systemizing BA And SECI Model)

Variables	Beta	T		R ²	F		Results
		Value	Sig.		Value	Sig.	
Originating BA	0.279	4.562	0.000	0.555	92.421	0.000	Accepted
Dialogue BA	0.429	6.952	0.000				Accepted
Exercising BA	0.073	1.642	0.102				Rejected
Systemizing BA	0.084	1.918	0.056				Rejected

variable. Table (2) shows that (F=92.422), which is considered to be significant at (0.000). These findings indicate that the model that relates independent variables with dependent variable is significant model.

Table (2) also indicates that R square is (0.555) at (0.000) as a significance level, multiple regression findings indicated that there is a significant and positive relationship between the context of BA and knowledge creation which presented by SECI model.

These findings provide empirical support for accepting hypothesis $H_{1,1}$, $H_{1,2}$, $H_{1,3}$, and $H_{1,4}$.

Table (3) illustrates the multiple regression analysis results of the (the context of BA) as an independent variable on eLearning environment as dependent variable. Table (2) shows that ($F=136.446$), which is considered to be significant at (0.000). These findings indicate that the model that relates independent variables with dependent variable is significant model.

Table 3: Multiple Regression Between (Originating BA, Dialogue BA, Exercising BA, Systemizing BA And Elearning Environment)

Variables	Beta	T		R ²	F		Results
		Value	Sig.		Value	Sig.	
Originating BA	0.369	6.792	0.000	0.643	136.446	0.000	Accepted
Dialogue BA	0.297	5.411	0.000				Accepted
Exercising BA	0.153	3.869	0.000				Accepted
Systemizing BA	0.175	4.508	0.000				Accepted

Table (3) indicates that R square is (0.643), which is considered to be significant at (0.000). Table (3) also shows that (64.3%) of the variation in (eLearning Environment) is explained by (Originating BA and Dialogue BA, Exercising BA, Systemizing BA). That result means that the context of BA has greater effect on (eLearning Environment), these findings provide empirical

support for accepting hypothesis $H_{2,1}$, $H_{2,2}$, $H_{1,3}$, and $H_{1,4}$.

Table (4) illustrates the multiple regression analysis results of the (a mean of communication, general resource, LMS) as independent variables on the (SECI) as dependent variable. Table (6.25) shows that ($F=144.993$), which is considered to be significant at (0.000).

Table 4: Multiple Regression Between (Mean Of Communication, General Resource, LMS, And Elearning Environment)

Variables	Beta	T		R ²	F		Results
		Value	Sig.		Value	Sig.	
A Mean of Communication	0.185	4.197	0.000	0.593	144.993	0.000	Accepted
General Resource	0.513	10.381	0.000				Accepted
LMS	0.201	4.265	0.000				Accepted

Table (4) indicates that R square is (0.593), which is considered to be significant at (0.000). Table (4) shows that (59.3%) of the variation in (SECI) is explained by (a mean of communication, general resource, LMS) that result means that (a mean of communication, general resource, LMS) has greater effect on (SECI), these findings provide empirical

support for accepting hypothesis $H_{3,1}$, $H_{3,2}$, $H_{3,3}$, and $H_{3,4}$.

Table (5) illustrates the Two-stage Least Squares Analysis between (BA) as independent variables on (SECI) as dependent variable which is mediated by eLearning environment. Table (5) shows that ($F=380.920$), which is considered to be significant at (0.000).

Table 5: Two-Stage Least Squares Analysis Between (BA And SECI Model Mediated By Elearning Environment)

Variables	Dependent Variable	Beta	T		R ²	F		Results
			Value	Sig.		Value	Sig.	
BA	eLearning environment	0.913	19.51	0.000	0.559	380.920	0.000	Accepted

Table (5) indicates that R square is (.559), which is considered to be significant at (0.000). Table (5) shows that (55.9%) of the variation in (SECI) is explained by (BA) when mediated by (eLearning environment), these findings provide empirical support for accepting hypothesis H₄.

5. DISCUSSION

5.1. Discussion Of Hypothesis One

The statistical results of hypothesis one and its sub-hypotheses (H₁, H_{1.1}, H_{1.2}, H_{1.3}, and H_{1.4}) answer the question of how can BA as a shared context affect knowledge creation model (SECI).

The results of the statistical analysis show a positive significant relationship between the context of BA and knowledge creation model (SECI). The results show that the context of BA interprets (55.5%) of the variation in (SECI model) between Syrian Virtual University (SVU) students which conforms to the concept of [11]

Moreover; [10]determined that knowledge needs a context to be created, and BA can be a mental or virtual place as well as a physical place and it does not have to be bound to a certain space and time.

The sample answers were positive about the (Originating BA, Dialogue BA). The average mean was (3.92) and (4.29) respectively. The Originating BA, dialogue BA has a significant relationship with knowledge creation model (SECI) at SVU.

The surprised findings were the results of exercising BA and systemizing BA in this contrast as was illustrated in [10]and [11], because there is no significant relationship Between BA and knowledge creation model (SECI) in the sampled population at SVU, which indicates that Syrian Virtual University (SVU) may doesn't concern enough about the factors related to exercising BA and systemizing BA which are affecting knowledge creation between students.

5.2. Discussion Of Hypothesis Two

The statistical results of hypothesis two and its sub-hypotheses (H₂, H_{2.1}, H_{2.2}, H_{2.3}, and H_{2.4}) answer the question of how can BA as a shared context affects eLearning environment.

The researchers hypothesized that there is a significant statistical relationship between context of BA and eLearning environment. The results show a significant and positive relationship between the context of BA and eLearning environment, where the context of BA interprets (64.3%) of the variation in the eLearning environment.

These results support the researchers' assumption, which is; the capacity of eLearning environment will create conditions consistent with the concept of BA (as a shared context) which is approved by [5] Multiple regression analysis also used in order to test the relationship between the context of BA, and its dimensions (Originating BA, Dialogue BA, Exercising BA, Systemizing BA), and eLearning environment.

Results indicated positively about the context of BA and all related answers were positive. Specifically the results of testing the context of BA dimensions which were:

1. The direction of respondents' answers was generally positive about originating BA, the average was (3.92).
2. The direction of respondents' answers was generally positive about dialogue BA, the average was (3.96).
3. The direction of respondents' answers was generally positive about exercising BA, the average was (3.94).
4. The direction of respondents' answers was generally positive about systemizing BA, the average was (4.10).

So it is concluded that Syrian Virtual University (SVU) provides its students a suitable environment and implicit opportunities which allow students to share divergent ways of thinking and personal experiences by developing ways of communicating among them.

5.3. Discussion Of Hypothesis Three

The statistical results of hypothesis three and its sub-hypotheses (H₃, H_{3.1}, H_{3.2}, and H_{3.3}) explored the effect of eLearning environment on knowledge creation model (SECI).

The results show a positive significant relationship between eLearning environment and knowledge creation model (SECI), and eLearning environment interprets (59.3%) of the variation in knowledge creation model (SECI) between (SVU) students.

This agreed with the study of (Liebowitz & Frank, 2010) who mentioned that it is easily to identify certain knowledge management activities which are embedded in the eLearning process if the looking at eLearning concept is in an abstract way.

Multiple regression analysis used in order to test the relationship between the eLearning environment, and its dimensions (a mean of communication, general resource, LMS), and knowledge creation model (SECI).

Analysis results indicate positively about the eLearning environment as all answers related to



eLearning environment were positive. Specifically the testing results of eLearning environment dimensions which were:

1. The direction of respondent answers was generally positive about a mean of communication; the average was (4.03).
2. The direction of respondent answers was generally positive about general resource; the average was (3.95).
3. The direction of respondent answers was generally positive about LMS; the average was (3.95).

Syrian Virtual University (SVU) adopts several means that facilitate knowledge process creation such as, virtual class, e-mail, discussion forums, learning management system and other technologies which allow them to communicate without having to be in the same place and time.

5.4. Discussion Of Hypothesis Four

A two-stage least squares analysis was applied to test hypothesis four (H_4) which is discussing the effect of BA as a shared context on knowledge creation model (SECI), in the mediation of eLearning environment.

The analysis shows a significant relationship between the context of BA and the knowledge creation model (SECI) which is mediated by eLearning environment, these results are the researchers' hypothesis that eLearning environment provides a context (depending on the concept of BA) that can stimulate or enhance the creating of knowledge (Nonaka's model SECI). In addition, the context of BA interprets (55.6%) of the variation in knowledge creation model (SECI), in the mediation of eLearning environment at (SVU). This perspective plays a crucial role in the performance of Syrian Virtual University (SVU).

This result also supports the relationship between each of independent variables and eLearning environment; also it supports the relationship between eLearning environment and the knowledge creation model (SECI).

6. FINDING AND CONCLUSIONS

Knowledge creation processes (SECI model) and the concept of BA together are providing an important guidance toward a more integral framework for the integration of eLearning activities that is based on both tacit and explicit knowledge, directed instruction, and personal and

collaborative learning which adopted by Syrian Virtual University.

The Originating BA is energized when feelings, experiences, and mental models shared between students, primarily through SVU forum discussions and virtual class activities which required collaboration and this represent the socialization process.

The exercising BA is energized when students are continuously and fully engaged in using electronic resources (ex. digital library), LMS and discussion forum, particularly in situation where students have to deal with a common problem such as accomplishing an assignment, they analyze the situation, discuss possible solutions, and eventually act on an agreed upon decision and be ready to respond to what transpired.

The systemizing BA is energized when the students build and rely on each other's externalization of explicit knowledge in the SVU forum discussions, virtual classes, using LMS or digital library at SVU, the cumulative discussions resulted in new knowledge synthesized from multiple sources of information.

The exercising BA is energized when student are continuously and fully engaged in using electronic resources (ex. digital library), LMS and discussion forum, particularly in situation where students had to deal with a common problem such as accomplishing an assignment, they analyze the situation, discuss possible solutions, and eventually act on an agreed upon decision and be ready to respond to what transpired.

Syrian virtual university usually offers collaboration tools by creating groups of students who are performing in the same learning task, the collaboration between group members in the same task enhances the effectiveness of the learning process, speeds up the knowledge capturing by students and supports natural evolution of a new knowledge as a result of synergic interaction of the group members, in other words, eLearning environment relies on the concept of BA and supports knowledge creation and sharing between.

7. FUTURE WORK

The future of eLearning is highly potential as it is the future of education, and it is recommended to apply the research model in other eLearning environments to generalize the results.



REFERENCES

- [1] Bedrule-Grigoruță, M. V., & Rusu, M. L. (2014). Considerations about E-learning Tools for Adult Education. *Procedia - Social and Behavioral Sciences*, 142, 749-754.
- [2] Edelson, p J; Pittman, V V;. (2001). *E-learning in the united states:New directions and opportunities for university continuing education [Electronic version]*. Retrieved 11 22, 2008, from <http://www.ignou.ac.in/e-journal/contents/edelson.htm>.
- [3] Gyambrah, M. K. (2007). *E-Learning Technologies and Its Application in Higher Education: A Descriptive Comparison of Germany, United Kingdom and United States*. Germany: lmu.
- [4] Hammami, S., & Alkhaldi, F. M. (2012). Enhancing BI Systems Application through the Integration of IT Governance and Knowledge Capabilities of the Organization. In A. R. El Sheikh, & M. Alnoukari, *Business Intelligence and Agile Methodologies for Knowledge-Based Organizations: Cross-Disciplinary Applications* (pp. 161-182). Hershey, PA: IGI Global. doi:10.4018/978-1-61350-050-7.ch008
- [5] Hammami, S., Kassem, S., & Alhousary, T. (2015). BA as an enabler of knowledge creation in eLearning environment. *International Journal of Applied Business and Economic Research IJABER*, 13(4).
- [6] Hofer, B. K., & Pintrich, P. R. (1997). The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. *Review of educational research*, 67(1), 88-140.
- [7] Lara, J. A., Lizcano, D., Martínez, M. A., Pazos, J., & Riera, T. (2014, march). A system for knowledge discovery in e-learning environments within the European Higher Education Area – Application to student data from Open University of Madrid, UDIMA. *Computers & Education*, pp. 23-36.
- [8] Lee, Y. J., & Lee, D. (2015, 6 5). Factors Influencing Learning Satisfaction of Migrant Workers in Korea with E-learning-Based Occupational Safety and Health Education. *Safety and Health*, pp. 211-217.
- [9] Liebowitz, J., & Frank, M. (2010). *Knowledge Management and E-Learning*. USA: Auerbach Publications Boston.
- [10] Nonak, I., & Konno, N. (1998). The concept of BA. Building a foundation for knowledge creation. *California Management Review*, 40(3), 40-54.
- [11] Nonaka Ikujiro; Toyama Ryoko; Konno Noboru. (2000). SECI: BA and Leadership: a Unified Model of Dynamic Knowledge Creation. *Long Range Planning*, 3, 5-34.
- [12] Nonaka, & Takeuchi. (1995). *The Knowledge-Creating Company*. uk: oxford.
- [13] Nonaka, I., & Nishiguchi, T. (2001). *Knowledge emergence: Social, technical, and evolutionary dimensions of knowledge creation*. New York: Oxford University Press.
- [14] Prusak, L., & Davenport, H. (2000). *Working Knowledge - How Organizations Manage what they know*. Boston: Harvard Business School Press.
- [15] Ravanelli, F., & Serina, I. (2014). Didactic and Pedagogical View of E-Learning Activities Free University of Bozen-Bolzano. *Procedia - Social and Behavioral Sciences*, 116, pp. 1774-1784.
- [16] ŠiĚanská, K., & Žiaková, E. (2014). E-learning as a Significant Part of Education Increasing the Possibilities of Coping with Oncological Disease in. *Procedia - Social and Behavioral Sciences*, 132, pp. 715-721.
- [17] Urh, M., Vukovic, G., Jereb, E., & Pintar, R. (2015). The model for introduction of gamification into e-learning in higher education. *7th World Conference on Educational Sciences, (WCES-2015)*, (pp. 388-397). Greece.