The Influence of Knowledge Externalization in e-Learning Management System

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Abstract—In higher education institutes, e-learning is a formally planned and systematic teaching and learning event wherein the teachers and the learners use Information and Communication Technology (ICT) to promote students contact and collaboration. The importance of Knowledge Management (KM) as a subject worth researching is growing. The e-Learning Management System (eLMS) is a technique of delivering education that has gained recognition for being powerful and successful in supporting teaching and learning opportunities across the world, eLMS integration with KM is often known as a knowledge resource repository, with the KM techniques used to improve the efficiency of information distribution. Thus, this empirical study aimed to see the influence of knowledge externalization in eLMS among Iraqi students. To accomplish these objectives, a survey method was adopted with a sample of 109 undergraduate students from the College of Information Technology in Iraq, all of whom were engaged in eLMS activities. The outcome demonstrated that the eLMScould effectively transfer information from instructors and lecturers to students. Additionally, eLMSallows students to broaden their knowledge through the externalization process. Students may also integrate and utilise various knowledge sources to improve their learning.

Keywords— e-Learning Management System (eLMS), Knowledge management (KM), Externalization, Explicit Knowledge, Tacit Knowledge.

1   Introduction

In the 1990s, researchers from several disciplines, including organizational behavior, strategic technology administration, organizational learning, strategic technology administration, and computer science, contributed to the development of the KM research field[1]. Furthermore, due to its contribution to the performance of several businesses, including higher education institutions, KM is becoming more and more of a worthwhile study topic[2]. In current age of technological advancements, the academic sector relies heavily on technology and the learning process since it enables students to study more efficiently and work more effectively[3].

E-learning functions as a mediator to link and deliver education to diverse learners of any age group, whether a kid or an adult, anytime and anywhere across the world, since the technology may turn the traditional education system into an upgraded education system [4]. Furthermore, by utilizing advanced multi-media information technology, online teaching is a teaching method that enables learnersto complete autonomous learning online[5].

E-learning is a subset of the more general phrase "technology-based learning," which includes instructional methods utilizing electronic technology such as the internet or intranet,satellite broadcasts, or video conferencing.The most recent online trend for improving academic and professional abilities is called "e-learning" [6]. e-Learning has emerged as a form of future training, thanks to a varied range of educational facilities, an expanding number of subscribers, as well as the increase of educational resources [7].

Moreover, Significant changes in KM practices have been driven by the development of eLMS and its improved capacities in a number of organizations [8]. It is common to refer to the combination of an eLMS with KM as a "knowledge resource repository," with the KM techniques being used to improve the efficiency of information distribution. The importance of KM cannot be over emphasized in any economy and that informs why it is acknowledgedas a simplified tool for distributing and utilizing knowledge in a way that directly influences

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performance in any organization[9]. Finally , A study by [10] illustrated that the effects of implementing KM in e-learning have been shown to enhance and improve the quality of the e-learning system.

2 Related Works

2.1 e-Learning Management System (eLMS) and Knowledge Management(KM)

With the advancement of information technology, life has grown easier. With the advancement of technology, the education department throughout the world is undergoing a massive upheaval. The typical classroom study is upgraded and computerized, and visualization is used [11]. One of the technologies that are increasingly being utilized to assist and manage teaching and learning in the higher education institutions is the eLMS[12] [13]. The idea of learning is broadened through e-learning, expanding into a setting with a variety of rich sources outside the confines of standard classroom walls, where the interactive distance learning techniques play an important part in altering the roles of the student and the instructor [14].

The advancement of computational technologies has a significant impact on modern learning, which primarily considers the use of ICT to manage both teaching and learning activities and it serves as a medium for adapting and accelerating the existing learning management system. eLMScan organize, manage, deliver, and record learning materials, as well as monitor learning activities completed for improved engagement and successful e-learning [4].

An eLMS platform allows teachers to design standard courses, include multimedia instructional resources, and monitor student activity [15]. Furthermore ,[16] pointed out that in the eLMS, the student learns alone and independently for the majority of the training period and engages in consultations for a lesser portion of the time with the assistance of teachers, i.e., tutors, through direct supervision and personal interaction.

In addition, [9]pointed out that e-learning has several advantages, including the freedom from time and place constraints, the ability to learn at the student's own speed, and the ability to organize, store, and access learning materials anywhere in the world. Moreover, the introduction of mobile devices has further increased distant students' access to e-learning, and eLMS has generated a significant amount of interest in education throughout the world. [17].

KM is defined as a process that supports the discovery, capture, and exchange of knowledge in order to improve individual experience in institutions [18]. Knowledge is separated from data and information by the fact that data reflects facts in the form of measurements, whereas information sets data in a meaningful context. Understanding information gained via study, research, investigation observation, or experience is referred to as knowledge [19].

Knowledge as a prospective stance attempts to build fundamental competitiveness, understand strategic benefits, and generate intellectual riches. Knowledge management necessitates the use of technology as a tool that enhances creativity, hence assisting in the distribution and deployment of knowledge in order to achieve corporate goals [20] cited by [21].

There are many e-learning programs available today, but the majority of them replicate traditional education with all of its issues because they only support content management systems and rely on material transmission. Currently available e-learning just "automates" conventional education and adheres to the existing quo in an inventive manner.To accomplish the aim of information sharing and acquisition depending on each learner's needs, the world requires an eLMS related to knowledge development, transfer, and sharing among people and organizations [14][22].

A common strategy for establishing a learning organization is shared by learning and knowledge management. Organizational learning suggests that learning should be highlighted above the individual level; an organization should have the capacity to continually and successfully learn from its experiences and adapt to its surroundings, building an organization's intellectual assets and enhancing individual, group, and organizational performance are both possible through knowledge management[23].

2.2 Externalization in eLMS

According to Nonaka and Tackeuchi's model, knowledge management consist of Socialization, Externalization, Combination, Internalization. The model developed by Nonaka and Tackeuchi aids in investigating knowledge transmission and sharing among individuals. This paradigm is ideal for examining how information is shared or transferred within a group setting. Additionally, it is advantageous for students to demonstrate creativity and invention at a statistically significant level. Thus, externalization (tacit-to-explicit) is thus viewed as a second dimension of the spiral model that makes tacit information apparent and turns it into explicit knowledge [24].

As can be seen, developing entrepreneurial orientation in students is a difficult process since it requires combining a highly conceptual notion with a tangible activity, with online learning, students may benefit from the wealth of learning materials available at any time and from any location to fully understand entrepreneurial orientation. By enhancing contact between instructors

and students, the discussion teaching technique and the case analysis teaching method, which are the primary ways to actualize tacit knowledge of entrepreneurship, may be applied in the e-learning process[25].

In virtual learning communities, externalization is the process of converting tacit knowledge to explicit knowledge through conversations, dialogues, sharing ideas and experiences, observation and engagement, and personal experiences and sentiments.In order to achieve the interchange and transfer of knowledge, the purpose of KM in virtual learning communities is to gather explicit knowledge from the sharing of tacit knowledge that is connected, categorized, and stored in the database for learners to access when they need it [14].

Different types of knowledge should be externalized as user-accessible knowledge objects in order to create an adaptable and dynamic e-Learning environment [26]. eLMS, Wikis, email, online discussions, blogs, collaborative working, video conferencing, mobile technology,electronic resources , conceptual modeling tool, tag, metadata, word processor, external interactive learning, social networks, discourse systems, repository of shared documentsand discussion forum were the technologies used the most through the SECI process under the externalization process[27].

The externalization process is primarily concerned with the explicit description of tacit information and its transformation into an understandable form. To implement the transformation of tacit knowledge into explicit knowledge. Externalization is a significant method for broadening the scope of tacit knowledge flow and conversion and realizing corporate knowledge production. The externalization process is primarily concerned with the explicit description of tacit information and its transformation into an understandable form, to implement the transformation of tacit knowledge into explicit knowledge [28].

Using this technology, it was discovered that the SECI model is both substantial and comprehensive in terms of thinking and decision-making abilities.Therefore, these abilities may be performed in an eLMS setting since students can learn new information from outside sources and instructional materials, which helps them grow their own tacit knowledge[27].

3   Methodology

In order to understand the influence of knowledge externalization in eLMS among Iraqi students, a quantitative survey research design was adopted in this paper. According to [29], When the goal of the study is to demonstrate the causal relation between the dependent and independent variables, a survey design is the most appropriate approach.

Therefore, the survey research design was suitable for the current study due to the relevant data can be obtained through a set of questionnaires developed by [30] that focus on how knowledge is transferred through the process of bringing together students as well as the method of transferring tacit knowledge to written or explicit knowledge in inconsistent form so that it may be shared with learners and used as the foundation for new knowledge.

109 undergraduate students from the College of Information Technology at a public university in Iraq made up the study samples. As part of gathering data for this study, participants were given 17-item externalization questionnaires to complete. Every question asked about someone's viewpoint and required a response on a Likert scale of 1 to 5, with 1 denoting "Strongly Disagree" and 5 denoting "Strongly Agree.".

4   Results and Discussion

109 undergraduate students participated in this study survey, with 39 men and 70 women. The participants were between the ages of 19 and 23. With the help of the "Statistical Package for Social Science (SPSS) ", the collected data was examined . The instruments' dependability score was 0.85, which is considered to be accepted in reliability.

Table 1. Descriptive Statistics

	Questions		Stronly Disagee	Diagree	Do not agree neither disagree	Agree	Strongly agree	Mean	Std. Deviation	Rank
1	I access the learning materials online.	N	10	6	13	17	63	4.07	1.32432	3
		%	9.2%	5.5%	11.9%	15.6%	57.8 %			
2	The e-learning system offers flexibility of scheduling for my learning sessions.	N	6	9	17	32	45	3.93	1.18405	6
		%	5.5%	8.3%	15.6%	29.4%	41.3 %			
3	The activities in e-learning system are time consuming.	N	54	14	18	11	12	2.20	1.42582	17
		%	49.5%	12.8%	16.5%	10.1%	11%			

4	I enjoy the activities offered in the e-learning system.	N	15	9	19	24	42	3.63	1.41853	10
		%	13.8%	8.3%	17.4%	22%	38.5%			
5	The e-learning system allows me to work on my own before discussing with the lecturer.	N	10	12	16	21	50	3.82	1.36195	8
		%	9.2%	11%	14.7%	19.3%	45.9%			
6	I can access e-learning system from anywhere.	N	5	10	9	17	68	4.22	1.20460	1
		%	4.6%	9.2%	8.3%	15.6%	62.4%			
7	The e-learning system sometimes gets interrupted during my learning activities.	N	13	19	34	24	19	3.16	1.24851	13
		%	11.9%	17.4%	31.2%	22%	17.4%			
8	There are no compatibility issues between my computer and the e-learning system.	N	40	17	14	11	27	2.71	1.62903	16
		%	36.7%	15.6%	12.8%	10.1%	24.8%			
9	I need more training in using e-learning system for learning.	N	36	9	21	23	20	2.83	1.53064	15
		%	33%	8.3%	19.3%	21.1%	18.3%			
10	Learning materials can be viewed easily.	N	4	9	13	25	58	4.14	1.14235	2
		%	3.7%	8.3%	11.9%	22.9%	53.2%			
11	Learning materials can be down-loaded smoothly.	N	8	12	9	20	59	4.04	1.33282	4
		%	7.3%	11%	8.3%	18.3%	54.1%			
12	I like the forum because it is like class discussion.	N	8	9	14	20	58	4.02	1.29086	5
		%	7.3%	8.3%	12.8%	18.3%	53.2%			
13	I feel the presence of the lecturer during the forum.	N	5	12	20	23	49	3.91	1.22127	7
		%	4.6%	11%	18.3%	21.1%	45%			
14	It is easy to contact the lecturer.	N	11	15	24	21	37	3.56	1.37053	11
		%	10.1%	13.8%	22%	19.3%	33.9%			
15	I can exchange ideas with the lecturer.	N	9	13	17	32	38	3.71	1.28598	9
		%	8.3%	11.9%	15.6%	29.4%	34.9%			
16	I had no difficulty with learning material presentations.	N	21	23	23	17	25	3.02	1.44005	14
		%	19.3%	21.1%	21.1%	15.6%	22.9%			
17	The learning materials are easy to fol-low.	N	19	12	22	23	33	3.36	1.45629	12
		%	17.4%	11%	20.2%	21.1%	30.3%			
Average Result								3.55	.51142	

The descriptive statistics for the elements pertaining to the students' externalization process are displayed in Table 1, showing that Question 6 received the highest average score.: "I can access e-learning system from anywhere." (M =4.22,SD = 1.204), after that Question 10: "Learning materials can be viewed easily." (M = 4.14, SD = 1.142), These activities improve the externalization of knowledge because of the externalization process is primarily concerned with the process of gathering inconsistent explicit knowledge such as educational material via an eLMS into a group of systematic and complex explicit knowledge. The question with the lowest average score, Question 3, was: "The activities in e-learning system are time-consuming." (M =2.20,SD =1.425).

Furthermore, after analyzing the data, it is important to highlight that the overall weighted average score was 3.55 with SD= .511,which means that **Agree**is the general trend according to the 5 - point Likert scale, since 3.55 lies in the 3.40–4.19interval. These results are depicted in Figure 1.
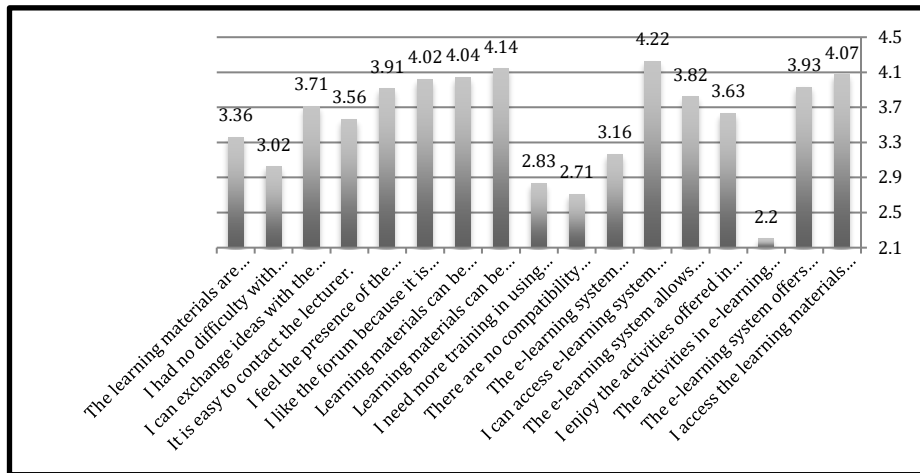
Fig. 1. Responses of the sample responders on externalization.

5   Conclusion and Recommendation

The results demonstrate that to stimulate knowledge externalization effective medium is required for the learners to attain knowledge from multiple sources. Thus, eLMS plays a crucial role in ensuring learners perform better. Accessibility and usability criteria of eLMS can promote knowledge externalization among learners. In addition, the performance of the eLMS with efficient response time will encourage the learner to use the eLMS, and consequently, knowledge externalization occurs. This happens when the tacit knowledge can be transformed into a practical form in eLMS. Furthermore, frequent feedback between learners and instructors impacts stimulating expertise and sharing of ideas. Thus, eLMS can articulate learners' thinking ability and acquire useful knowledge. Future studies may consider replicating this study to other institutions and comparative studies. Also, the impact of knowledge externalization can be further research on a different form of social media platforms like facebook, twitter and Instagram. By having this information, effective method can be designed to enhance the externalization of knowledge that can assist in gaining valuable knowledge.

6   References

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