IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 3, December 2023

An Examination of Literature on Higher Education E-Learning Systems

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Abstract: *Universities all around the globe are aggressively investing in e-learning systems to supplement their conventional teaching methods and enhance their students' performance and learning experience. This is because internet technology is growing at an accelerated rate. Nonetheless, the effectiveness of an e-learning system relies on comprehending certain predisposing elements that impact students' adoption and utilization of these e-learning platforms. The purpose of this research is to explore the features, drawbacks, benefits, and key elements influencing the adoption of these technologies in the context of today's e-learning settings. The conclusion is that an effective e-learning system has to take organizational, technical, social, cultural, personal, and environmental elements into account.*

Keywords: Educational technology, Online learning

I. INTRODUCTION

One of the most important drivers of change in every aspect of our life is thought to be information technology (IT). Many students now want to study online and receive degrees from colleges and institutions throughout the globe, but many are still unable to travel since they reside in remote places without enough connectivity infrastructure. Because it saves time and energy for students who are residing in remote areas far from the institutions or colleges they have registered in, several researchers advocate taking courses via an e-learning system (Hubackova and Golkova, 2014; Alenezi et al., 2015). In fact, the majority of universities and other higher education institutions worldwide are adopting e-learning at an increasing rate. The delivery of education in a flexible and simple manner via the use of the internet to support individual learning or organizational performance objectives is known as e-learning, sometimes known as web-based learning (Clarkand Mayer, 2011, Maqableh et al., 2015). In addition, there are several e-learning platforms like Second Life and Blackboard. For attending lectures, doing homework, and using a plethora of other services, both Blackboard and Second Life are used.

For example, Linden Lab made the second life available to the general public in 2003. It is frequently employed in instructional trainings. Because it employs 3D technology, the second life gives students a sense of being at a university (Masa'deh et al., 2012; Alenezi and Shahi, 2015; Maqableh et al., 2015). There are many advantages to the second life, including the ability for people to attend classes from home, interact with others through completely new forms of communication, find new solutions to problems that might not be possible in the "real world," and provide a variety of opportunities for researchers due to user collaboration and connections. According to Alenezi and Shahi (2015), computers and a fast internet connection are necessary for the second life. Therefore, using it may have been quite challenging for several developing nations. The researchers contended that in the near future, virtual worlds would serve as universities' most useful tool for facilitating various forms of remote learning. Even if second life apps have a lot of problems, their benefits put them on par and make them appealing. Second life cannot entirely replace conventional online e-learning platforms as they are right now.

At the outset, Smith (2009) noted that e-learning is one of the newest forms of educational systems to catch on with global educators. E-learning is the method that enables people, especially students, to take courses from home or anywhere as long as they can access the internet, among other platforms like peer-to-peer, client-server, and web services, according to Arasteh et al. (2014), Draghici et al. (2014), and Mustea et al. (2014). According to Moravec et al. (2015), a number of studies have examined the impact of e-learning tools on student outcomes. For example, Fatih

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Baris and Tosun (2013) discussed the impact of e-tools in the high school education process and came to the conclusion that these tools have a positive effect on students. Furthermore, whereas mobile e-learning (M-learning) enables users to access information using mobile devices, e-learning platforms only permitted users to access information through personal computers (Zamfiroiu and Sbora, 2014; Masa'deh et al., 2015; Almajali et al., 2016). As a result, using these technology platforms, students may communicate with their classes virtually.

Nonetheless, the effectiveness of an e-learning system relies on comprehending certain predisposing elements that impact students' adoption and utilization of these e-learning platforms. The purpose of this research is to examine the features, drawbacks, benefits, and key elements influencing the adoption of these technologies in the context of the contemporary e-learning settings. The conclusion is that an effective e-learning system has to take organizational, technical, social, cultural, personal, and environmental elements into account.

II. CHARACTERISTICS, ADVANTAGES AND DISADVANTAGES OF E-LEARNING

In order to improve the learner's experience and performance, e-learning refers to the use of information and communication technology (ICT) to deliver information for education when instructors and students are separated by time, distance, or both (Keller et al., 2007; Tarhini et al., 2016). According to Horton (2011), e-learning is the delivery of instructional materials via any electronic medium, including intranets, extranets, and the internet. Thus, people may now take control of their own lifelong learning by removing the constraints of time and location (Almajali et al., 2016; Bouhnik and Marcus, 2006; Fletcher 2005; Obeidat et al., 2015). Because e-learning environments lower provider costs, they boost academic institutions' income (Masa'deh et al., 2016; Ho and Dzeng, 2010).

Universities have to choose whether to use a blended learning method, online learning, in-person instruction, or a combination of both during or prior to the implementation phase. For the purposes of this research, e-learning refers to the use of web-based learning platforms to supplement in-person instruction, with an emphasis on higher education institutions. Wagner et al. (2008) claim that when compared to learning only online or via in-person interactions, this method is the most effective.

According to Freire et al. (2012), learning management systems (LMSs) are web-based technologies or apps that universities and other higher education institutions use to manage the educational process, provide remote learning, and distribute course materials. Different approaches of instruction delivery and electronic resource provision for student learning are made possible by LMS. Academic staff members are extremely acquainted with certain strategies, such as leveraging Web sites to provide material in a manner similar to that of hardbound volumes. But one major benefit is that multimedia components like music, video, and interactive hypermedia may also be sent and used over the Internet (Masa'deh et al., 2016; Tarhini et al., 2016). To support learning in a web-based learning environment, many web-based learning systems have been created for higher education. These include Blackboard Learn (BBL), Moodle, Web Course Tools (WebCT), LAMS and SAKAI. The next part will go into further depth on the latter.

Blackboard learning system

Because it offers a framework for course delivery and is user-friendly for students, Blackboard is regarded as one of the most widely used web-based learning systems tools in higher education today (Iskander, 2008).

The definition given by BlackboardInc. (2012) is that it is "a comprehensive technology platform consisting of integrated modules with a core set of capabilities that work together for teaching and learning, communitybuilding, content management and sharing, and measuring learning outcomes." More than 39,000 teachers at more than 1,350 colleges and institutions use it to teach more than 147,000 courses to more than 10 million student accounts across 80 countries. It incorporates chat rooms, private email accounts, and bulletin boards as communication options. A Blackboard site may further include images, videos, and audio materials. In addition, Blackboard offers learning resources including a lexicon, references, a self-test, and a quiz module to supplement the course material. Assignments and other materials for courses in which they are enrolled may also be posted by students on Blackboard. Moreover, Blackboard provides course administration capabilities to academic staff for tracking student involvement, grading assignments, and keeping tabs on class progress (Tarhini et al., 2016). These attributes have the potential to enhance communication between faculty members and students (Iskander, 2008). These tools are exclusive to the course's

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students and instructor, and access to the system requires both a user name and password (Tella, 2012). This keeps the instructor's intellectual property, students' privacy, and the course material safe from prying eyes.

Characteristics of Web-based learning

Although substantial computer knowledge is not necessary for web-based learning, it does assist lower acceptance barriers if one is comfortable with computers and software, particularly Web browsers (Steven, 2001; Tarhini et al., 2013a). Online education often falls into one of three main categories:

Independent, self-paced study: The timetable is set by the students, who study at their own speed. They get as much time as needed to go over the content. Pre-programmed replies are the sort of feedback obtained from online quizzes. Unfortunately, the pupil cannot ask inquiries of anybody. The highest level of self-motivation is needed for this kind of investigation (Tsang et al., 2007).

Asynchronous interactive learning: Students engage with a teacher and fellow students, but not simultaneously. They show up for class whenever it's necessary or until the material is finished. This method provides feedback and encouragement from classmates and the teacher. Generally speaking, it is slower than independent study. Additionally, it gives time for thoughtful answers, which improves critical thinking abilities (McCombs, 2011). This may enhance a topic's in-depth examination. Additionally, it may boost group members' overall effort and provide social support and encouragement to individuals (Benbunan-Fish et al., 2005). According to McCombs (2011), this strategy will move the focus from being instructor-centered to being learner-centered. This will result in a more democratic and equitable setting where the teacher serves as a knowledge guide (McCombs, 2011).

Synchronous learning: Students participate in online live lectures and submit questions via email or live chat. Out of the three formats, this one seems the most like a typical classroom and is the most engaging. The already decided lecture schedule limits flexibility. Because of the high cost of distribution, there aren't many course offers in this format (Weimer, 2013).

For the purposes of this research, web-based learning systems used to supplement in-person instruction are referred to as e-learning, with an emphasis on higher education institutions.

III. LITERATURE REVIEW ON E-LEARNING ADOPTION

Even if e-learning has grown significantly in the educational field and is thought to have many advantages, the effectiveness of these technologies will not be completely realized if users are unable to embrace and use the system. Thus, the willingness and acceptance of the technology by the students will determine the success of the use of e-learning tools. Therefore, in order to improve the learning experience for students, practitioners and policy makers must comprehend the aspects influencing user approval of web-based learning systems (Tarhini et al., 2014a). Recent research, however, has demonstrated that the implementation of e-learning is a multifaceted process that involves a variety of factors in addition to just technology (Schepers and Wetzels, 2007; Tarhini et al., 2014b; 2015). These factors include social, individual, and organizational factors, as well as behavioral and cultural aspects (Masoumi, 2010), as well as organizational facilitating conditions (Liaw and Huang, 2011).The development and use of information technology are significantly influenced by these key elements (Kim and Moore, 2005).

Fischer et al. (2015) investigated the use of scientific conference proceedings for e-learning trend analysis. The abstracts of 427 scholarly publications published between 2007 and 2013 from two of the top German-speaking e-learning conferences, Gesellschaftfür Medien in der Wissenschaft and E-Learning-Fachtagungen der Gesellschaftfür Informatmatik e. V. (GMW and DeLFI), were studied. Because the research was done at conferences where people spoke German, it is representative of the circumstances in Germany, Switzerland, and Austria. A significant contribution to the use of digital media in higher education was made by Fischer et al. (2015). The researchers discovered that judgments about the didactical or technological potentials of innovations may be presented based on a thorough investigation of the frequency distribution over the course of seven years, which indicates the intensity of scientific debate towards e-learning trends. They discovered that the possibility for learning management, mobile learning, e-portfolios, social media, virtual worlds, and Massive Open Online Courses to flourish is essential for e-learning in German higher education.

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Students' success is impacted by e-learning technologies, as shown by Moravec et al. (2015). Almost two thousand students participated in the research. Moravec et al. (2015) state that the research contrasts the answers to questions in the legal field where the e-learning tool was offered in a pilot form with the answers to questions in the non-legal domain. The researchers discovered that the students' performance has been impacted by the e-learning resources. However, the notion that students who rely on provided resources may suffer as a result of using an e-learning tool has been refuted.

Mothibi (2015) examined the relationship between e-learning and students' academic achievement in higher education by using Cohen's model and based on data collected from 15 documents from relevant research studies conducted on the effect of ICT-based e-learning on academic achievement during 2010–2012. The study discovered that, based on students' academic performance in e-learning, ICT had a statistically significant favorable impact. Additionally, the findings showed that ICT significantly improved pupils' overall academic performance.

Enterprise resource planning (ERP) systems may benefit from mobile learning (m-learning), as investigated by Scholtzand Kapeso (2014), Almajali et al (2016), and Shannak (2013). The usefulness, acceptability, and perceived simplicity of use of the m-learning were evaluated using the Technology acceptability Model (TAM). Perceived utility and simplicity of use of the m-learning system were shown to be positively connected by the researchers.validated earlier research that emphasized how crucial high-quality course materials are to successful m- and e-learning initiatives.

Pieri and Diamantini (2014) based their study on the University of Milano-Bicocca's Web 2.0 e-learning experience during the 2011–2012 academic year. The aim of the study was to increase accessibility by making the implicit and tacit information held by the users apparent. The researchers began explaining the shift from Web 2.0 to e-learning and the aggregation of Web 2.0 power with social networks in the learning process because ICTs have become an indispensable component of learning for people of all ages, making it a concept that needs to be investigated. They trained 137 students in two subjects—tourism and the sociology of innovation—using Thinktag Smart, a new Web 2.0 platform that combines the learning opportunities of social networks with the Web 2.0. Following the training, they gave the students a questionnaire to assess both the platform and the learning experience. The most frequently used features on Thinktag Smart were resources, shelves, and groups; the least frequently used features were Wiki, collections, and chat. The platform's strengths, which led to its widespread appreciation, were its resources, or the capacity to share and exchange information with other Thinktag Smart users; its ability to support teaching by allowing users to share notes and materials related to courses they need; and its interactive features. The following were the shortcomings that prevented total satisfaction: the pages' poor loading speed, their complexity and ambiguity, their lack of immediacy, and their intuitiveness. All things considered, the platform was a very promising tool, but in order to compete, real life need further advancements.

In their study, Salter et al. (2014) sought to illustrate the characteristics and advantages of e-learning in general and pharmacy practice in particular. E-learning aids in the clarification of pharmaceutical vehicles and vehicle elements by speeding up and simplifying the analysis process and counting the number of elements in a more accurate and efficient manner. Several theories also contribute to this clarification. These theories are used to assess the system's efficacy and provide an explanation for any overlaps that arise in complex e-learning environments. As a result, the theories tremendously aid in the system's capacity for analysis and significantly reduce time, effort, and expense. The researchers discovered that e-learning is efficient in boosting knowledge across all subjects and situations right away after training.For pharmacists and pharmacy students, e-learning was a very useful educational method. The advantages of their e-education system in the university setting, where all students take attendance and exit through computer systems because of student e-education, e-has to know the number of absences, as well as duties related to sending and receiving the solution through e-education, sustain this system's capacity to sweep all organizations' work with accuracy and speed.

Teo (2014) sought to elucidate the degree of teacher satisfaction with the implementation of e-learning programs among dedicated educators. Teo (2014) looked at the main factors influencing instructors' satisfaction with online learning. A survey measuring six constructs—tutor quality, perceived utility, perceived ease of use, course delivery, enabling circumstances, and course satisfaction—was completed by 387 participants in a postgraduate diploma program in education. Data analysis using structural equation modeling revealed that all other components were significant

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predictors of e-learning satisfaction, with the exception of enabling circumstances. However, it was shown that the enabling circumstances construct significantly mediated the perceptions of pleasure and ease of use.

The use of e-learning as a teaching and learning tool is now spreading quickly across the educational sector. Suri and Sharma (2014) investigated how students' specialties affected their reactions to and attitudes toward online learning.Using survey questionnaires, the researchers used the computer and e-learning attitude scale with 477 students enrolled in diverse courses across 6 key disciplines at Panjab University in Chandigarh, India. The discipline of the student and the variables of computer and e-learning attitude, which place emphasis on the department's involvement in teaching and student satisfaction, were shown to be significantly correlated by the researchers.

A dynamic resource management approach was presented by Arasteh et al. (2014) in order to improve the reliability and availability of the e-learning services inside the grid system.In order to handle resource failure or unavailability while an e-learning service was being executed in the economic gridsystem, a dynamic replication approach was used.

The researchers discovered that the suggested model's e-learning services had a greater availability rate than its basic resource management services. This paradigm upholds a trade-off between the level of e-learning service quality and cost.

Ceobanu and Boncu (2014) looked at the difficulties that come with using mobile technology in adult education from a theoretical perspective. They contended that mobile learning, or mLearning, can be positioned at the intersection of eLearning and mobile computing. What sets it apart is the ability to access learning resources at any time and from any location thanks to strong search, high interaction, high support for efficient learning, and continuous performance-based assessment capabilities. Additionally, mLearning is thought of as an expansion of eLearning, but it differs from eLearning in that it is not dependent on a certain place, time, or location. Moreover, mLearning refers to the use of mobile technologies to teaching and learning activities. Mobile computing and e-learning come together to form mLearning, which is a learning experience that can be started at any time and from any location.

According to Beurs et al. (2015), there aren't many randomized studies looking at the effects of mental health practitioners' training in suicide prevention techniques. The researchers assessed whether professionals profited from a train-the-trainer program backed by e-learning that attempted to implement the Dutch interdisciplinary suicide prevention guideline. Forty-five psychiatric departments from around the Netherlands were paired up and randomly chosen. Peers educated all of the psychiatric department personnel via a train-the-trainer program facilitated by e-learning. To determine if variance across conditions was caused by variations between specific professions or departments, multi-level analyses were used. According to the research, each professional improved as a consequence of the intervention. Professionals who received the intervention showed better adherence to guidelines, improved self-perceived knowledge, and superior confidence as care providers at the three-month follow-up compared to professionals who were solely exposed to standard guideline distribution. Furthermore, the analysis revealed that improved adherence to guidelines was seen in nurses, but not in psychiatrists or psychologists, and that the intervention had no discernible impact on team performance.

Judrups (2015) states that it is not surprising that knowledge management and e-learning have been developed over many years, as both fields deal with the acquisition, sharing, application, and generation of knowledge; they also have essential technological components that improve learning and help to foster a culture of continuous learning.

Judrups (2015) discovered that e-learning and knowledge management inherently strengthen integration and bring the two fields closer together. Several integration strategies were validated via model analysis. The more universal strategy is to build integration on learning, which is recognized as a common foundation. However, these methods lack implementation in production environments and need application support and technical specifications.

The goal of Jakobsone and Cakula's (2015) study was to get fresh insight into the process of sharing information and gain a deeper understanding of how automated learning support systems would develop in the future by using emerging technical possibilities. How the automated learning support system may improve the quantity and quality of future information flow and provide long-term collaboration between educational institutions and business owners was the main research topic. In addition to promoting effective knowledge management technologies, the researchers discovered that the information system's analysis as an online learning support platform enhanced the quality of knowledge flow and offered suggestions for increasing work-based learning. Additionally, in order to assist adults in finding solutions to their problems, innovations in the learning process must be practical and easy to implement;

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training must be prepared in response to specific employer demands; knowledge sharing must be equally vigorous on the part of all interested parties; needs must be met; and accurate content and quality must be presented in accordance with merchant prospects.

IV. CONCLUSION

This study highlighted some of the most important variables used in the area of information systems research after conducting a thorough analysis of the literature on e-learning systems. More precisely, this research provided insight into the history, traits, constraints, advantages, and disadvantages of web-based learning systems. Important factors that affect student learning include behaviors and attitudes, cultural origins, and other demographic traits of the learner, particularly in a collaborative online learning environment. With a better understanding of these factors, educators may create engaging learning activities that encourage students to build their own knowledge and improve the efficiency and attractiveness of the learning process. Specifically, this study contributes to a better understanding of the features of students in England and Lebanon, respectively. This understanding may assist specialists, educators, and policy makers in understanding what the expectations of students are for learning management systems. In addition to assisting management in deploying the system in the most efficient manner possible, this may help them make better strategic decisions regarding technology going forward by enabling them to choose the best course of action for their students before introducing any new technology.

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IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.301
Volume 3, Issue 3, December 2023

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