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Review of learning management systems: history, types, advantages, and challenges

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ABSTRACT

As technological advancements continue in the higher education domain, the systems of higher learning management in universities and institutions have witnessed significant attention from researchers and developers. The technologies of these systems can present extremely useful tools and provide many advantages to enhance learning and increase the students' performance. However, there are some issues and challenges that face these systems and need to be highlighted. Moreover, there is a need to review the advantages of such systems in order to motivate other countries to adopt, use, and develop the learning systems. Therefore, this paper gives an overview of the learning management systems (LMSs) in universities and institutes. Furthermore, it presents the history of LMSs, usages, systems types, advantages, challenges and issues.

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1. INTRODUCTION

Appearing technologies in education are propelling universities, institutes, and colleges to progressively use them in higher education due to their indisputable significance [1], [2]. By using modern technologies in higher education, the learners' experiences will be enhanced and the academic outcomes will be improved [3], [4]. In this regard, learning management system (LMS) is considered a web-based online application that is capable of changing information and sessions between students and providing them with a space for online learning [5]. In addition, the LMS is regarded as a useful method of presenting instructions to students by delivering 24/7 access to the content of a course. Meanwhile, the LMS is promoting comfortable course establishment and management for teachers [6]. However, although the perceived advantages of using LMSs, there are many members of universities and faculties still reluctant to embrace the LMSs as a teaching tool in education [7]. Moreover, there are many teachers who tend to underutilize such technology in education despite the LMS being widely known and unrestricted in settings of higher education [6]. The variables which influence faculty adoption of the technology involve teachers' perceptions, instructional goals and self-efficacy beliefs. Additionally, the resources' availability, support services, and time [8], [9]. Further, the teachers play a significant role in bringing out any innovation in the classroom. This is the reason of specifying the variables

which motivate and encourage teachers to deliver a learning environment that is supported and based on a technology to their students is fundamental [10].

Generally, the LMSs are considered as platforms that involve systems of course management, systems of content management, learning systems, systems of instructional management, and portals [11]. LMSs represent a development from the systems and processes which have been improved by particular institutions for the purpose to register students on certain courses and maintaining students' activities records. Different learning choices have been developed for allowing students to take courses online. In general, the LMS can present assistance for students to access learning information through course guidelines, downloading marks, uploading assignments, interactions among students, active interactions among lecturers and students, sharing knowledge, interactions among learning tools and students and handling online quizzes and exams [12]. The Higher Education Institutions (HEIs) in Malaysia have been developed several systems of LMS for learning and interactive online activities and teaching among students and teachers [13]. However, such systems still need to be explained more in terms of concepts, types, tools, advantages, and valuable insights that can enhance learning performance. Moreover, it is highly imperative to highlight and study the challenges and issues that face these learning systems. Therefore, this paper presents the essential concept of the LMS, history, types, tools, and methods used in these systems. In addition, this paper presents the issues and challenges that face these systems.

The rest of this paper is organized as follows: Section 2 presents the history of LMSs. Section 3 presents the reasons for adopting LMS systems. Section 4 gives the LMS tools. Section 5 presents the types of LMS systems. Section 6 presents the most applied systems of LMS. Whilst, Section 7 indicates the advantages of LMS systems. Section 8 discusses the challenges and issues of LMSs. Sections 9, 10, and 11 present the LMS systems in developed countries, developing countries, and Africa, respectively. Section 12 provides the related works of LMSs. Section 13 presents the discussion. Finally, section 14 concludes the paper.

2. HISTORY OF LMS

Systems of learning management have been passed via some significant phases until these systems became their form today. Despite this, there were some important points at that old-time which cannot ignore them, it is highly necessary to focus on LMSs from the perspective of it is a cloud-based software or it is web-based software. This is lead to conclude that the internet is considered the major medium of communication in the systems of learning management. The firstclass is regarded as the first software of LMSs, where it has been created in 1990 by SoftArc [14]. It was a software of client-server; such software has many helpful features. For example, online conferences, discussion boards, and email. Furthermore, the FirstClass is compatible to work in various operating systems such as macOS, Linux, and Windows. Later, there are other developed LMSs that have been suggested after that date in order for open competition. Examples of these systems are blackboard LLC, where it was launched in 1997 by Matthew Pittinsk and Michael Chasen [15], Moodle that is established in 2001 by Martin Dougiamas [16], D2L that is indicated as Desire2Learn which was created in 1999 by John Baker [17], and Canvas which is created by Josh Coates in 2008 [18].

The system of learning management or LMS is a general term that is used widely to represent and define different systems which are delivering online educational services for administrators, teachers, and students. Commonly, these services include and present many essential facilities. For instance, determining authorised users only to access the control unit, deliver various types of communication tools, and present various types of learning content. Additionally, the online learning platform is another term that is sometimes used alternative which indicates LMS [19].

3. WHY CHOOSE LMS SYSTEMS

Khairudin *et al.* [20] has been provided five major criteria for the viewpoints of the human capital. In addition, it has been mentioned one example for every criterion. First, supporting the proficiency of technical operators such as making the IT members take the technical short-courses on their new LMS. Second, supporting the lecturers' knowledge of modern technologies such as delivering fundamental support and training depending on available software and apps to academic lecturers and staff in continuing phases. Third, delivering many opportunities for student obligation level and contribution of students in remote learning courses. For instance, the advantage of accessibility can improve online activity and contribution, especially for remote learning courses. The fourth criterion refers to supporting the academic integrity of students. For example, presenting components of online submission for assignments, where will decrease the number of late submission assignments. Meanwhile, the fifth criterion is improving the contributions of students in collaborative interaction in learning such as the effort to obtain the highest ratio of students who participate in online discussions.

Therefore, all universities and institutions are preferring to select LMS that assists in their educational procedures in order to be more developed, powerful, flexible, and efficient in learning. It is highly significant to all universities and institutions to focus on the advantages related to any approved LMS. For example, the performance of students during a course and the results of students after they completed the courses. Furthermore, it is highly considerable to emphasize providing mobile phone devices and computers which is considered as another advantage of universities preference.

4. LMS TOOLS

4.1. Learning skills tools

In this type of learning tools, there are different modules such as a learning module, quizzes module, assignments module, and an online presentation module. The learning module refers to learning tools and producing activities for students. Furthermore, the quiz module can include numerous functions. For example, a marking scheme, a response facility, a question database, and a tool for facilitating the performance of students. Meanwhile, the assignments module indicates enabling the lecturer to upload the assignment to the LMS. On another side, the students online can work on the assignment, amendment, and send the assignment before or on the submission date. While the online presentation module refers to uploading the members' presentations to the LMS or attached from websites such as YouTube [21].

4.2. Communication tools

In this type of tools in LMSs, there are various tools that facilitate and enables to perform interaction among students, and as well as interaction among lecturers and students. In the communication tool, the most widely used tool is the announcements, where such a tool is applied to provide numerous information to all the students such as information related to the course, the upcoming activities and the latest news. Moreover, the discussions tool is involved in the communication tools also, where it permits lecturers and students for reading users' comments, posting and replying to messages.

4.3. Productivity tools

This type of tool is considered the last tool that is related to LMSs. The productivity tools are referring to calendars, systems of document management, surveys, and other services that can be presented to students and lecturers. The systems of document management allow students and lecturers for downloading and uploading files from computers that are connected to the internet. In LMS, there are other management tools that can gather information about the number of students that are accessed to the LMS website and also about the performance of students. Many LMS systems permit students to check and see their general performance and details of their report (e.g., the grades for exams, assignments, and quizzes).

5. TYPES OF LMS SYSTEMS

5.1. Student management system

Student management system (SMS) is commonly a fundamental online software in academic organisations such as universities, faculties and institutions. The SMS is created in order to manage and control students' data and information. Furthermore, the SMS delivers many essential services with respect to courses, exams, applications, grades, and payment. There are two commercial systems of SMS that have been widely used which are Banner and PeopleSoft [22].

5.2. Learning content management system

It is another educational system, where the learning content management system (LCMS) may be described as a software that is applied to generate, amend, and control e-Learning content. Currently, the LCMS is considered as the most system adopted in the education domain. It indicates several user's environment, where the lecturer can generate, save, manage, reuse, and deliver digital learning content from the repository object center. Such systems can deliver tools for lecturers to manage and provide assignments asynchronously and synchronously depending on the learning methodology. Generally, most systems of LCMS deliver essential LMS functions and numerous functions of content management. Further, the LCMS uses the shareable content object reference model (SCORM), where it communicates the LMSs with the online learning content [12]. The major objective of LCMS is to handle and control the digital assets which have been used for developing the learning products. The systems of LCMS contain datasets named as learning content repository objects. These datasets have the lecturer's works, particularly for learning intents. Besides, the LCMS systems can be accessed through the same lecturer or other lecturers for the purposes of new learning development, with respect to the capability to write courses, the provision of appropriate work-charts to update the content, and collaboration tools that permit the lecturer and the students to work with each other [23].

5.3. Content management system

Content management system (CMS) may be described in three aspects which are process, content, and software or technology [24]. The process is a collection of activities, where it can handle many inputs and react to them in order to deliver the output such as sharing information, publishing information, and downloading documents [5]. Meanwhile, in the CMS systems, the content can be described as sound, graphical, video, animation, text and other of the media system [25]. Furthermore, in the software or it is known as technology as well, it can be described as means of executing processes for users as well as it can control the content through the internet [26]. In addition, there are different kinds of CMS systems. For instance, record management, CMS enterprise, document management, CMS web, CMS component and other types of CMS systems.

6. THE MOST APPLIED SYSTEMS OF LMS

6.1. Canvas

The canvas has been created by Josh Coates in 2008, and it has been used for the first time in 2011. In the next year (i.e., 2012), the canvas has been named as "instructor". Later, the creators have decided to change its name (i.e., instructor) to the canvas. The canvas is regarded as online available software [27].

6.2. Blackboard

The blackboard LLC has been created by Michael Chasen and Matthew Pittinsky in 1997. There are some companies that have been bought by blackboard LLC in the range of years 1998 to 2004. These companies have been worked in the same domain of education. For example, Promethius and MadDuck. Meanwhile, blackboard LLC has been joined with other competitors (e.g., WebCT and course info LLC). The blackboard is considered a commercial LMS, where it needs fees for the signup process, to renew it, and also there are some features that require payment for activating them [28].

6.3. Moodle

The moodle has been created in 1999 by Martin Dougiamas, where its first version was named moodle 1.0, and it has been projected in 2002. Furthermore, the word "moodle" is regarded to an abbreviation, where it refers to modular object-oriented dynamic learning environment. In the year 2002, the server of moodle has been located at the Science and Mathematics Education Centre at the Curtin University of Technology in the capital city (i.e., Perth) of Western Australia. It is worth mentioning that moodle is considered a free open source LMS, where there is no need for the signup fee in moodle or payment to renew it yearly [29].

6.4. Desire to learn

The desire to learn or it also called "D2L" has been created by John Baker in 1999. The D2L is regarded as open-source software and it is a cloud-based software. There are many official offices which are represented D2L in numerous countries around the world [30]. In addition, the D2L software has been accomplished many important achievements, especially in 2016. The D2L software in 2016 has been the first accepted LMS in the national federation of the blind (NFB), strategic nonvisual access partnership (SNAP), and the 2nd partner behind target corporation [30].

7. ADVANTAGES OF LMS SYSTEMS

Systems of learning management have numerous advantages for educational procedures. The first advantage is the idea of discarding the physical location. Furthermore, the LMS systems can be applied as a useful tool for students and researchers who are studying on various campuses and they are belonging to the same university [31]. Where there are universities that contain multiple campuses that might be international and national campuses which consequences in the various time zone. Consequently, the LMSs are utilized in order to collect all these various students in one virtual place. Thus, all their discussions, feedbacks, interactions will be enhanced. The application of e-Learning or LMS for all students is valuable generally, and particularly for those students who are facing some difficulties. For instance, those students who are living remotely from the original location of the campus (e.g., living in rural places or other countries), or those students which have problems with their health. Therefore, these are considered important and continuous educational procedures regardless of the time and place [32]. Another advantage of LSM systems is the accessibility of using LMSs in the academic field. In recent decades, laptops and personal computers (PCs) have been the major devices that many students use. Also, there is an increase in utilizing digital devices between teachers and students in academic institutions as a part of the educational procedure [33]. For instance, bring your own device (BYOD), where it involves the new generation of phablets, tablets, and smartphones. Consequently, most systems of LMS were increased in terms of the accessibility that permit users (i.e., lecturers and students) to log in through

several methods. For example, utilizing browsers of the internet from laptops and PCs or utilizing the official app of the LMS, where most LMSs contain their own app in various operating systems.

The following advantage of LMSs is that the LMS is regarded as attractive environments. Generally, the e-Learning systems and LMS systems particularly are attractive environments, specifically for young students. The use of video games and gamification is may lead to attracting the adolescences and school-age for purposes of the educational in their findings [34]. Actually, multiple LMSs support this optional advantage and its application is based on the decision from the academic institution management. Lastly, there are many systems of LMS that can be combined with any lost content. The developers of LMSs are attempting to deliver all the available advantages in their app or software for two major purposes. The first purpose is to make the current customers more satisfied and the second purpose is for looking to new customers. These two purposes can be accomplished via keeping the LMS improving and updating periodically. Sometimes, a missed advantage could be discovered due to a variety of requirements of users. Therefore, the LMSs can be combined with other popular advantages to match the requirements of users [35].

8. LMS CHALLENGES AND ISSUES

Higher education is considered highly significant and plays a main role in the economic development of a country. Additionally, higher education presents developed skills that lead to obtaining high productivity and enhancing life quality. This is the reason that the advanced world prioritizes higher education for developing skills that are regarded as essential and vital in today's workplace due to its importance [36]. For instance, the human capital in the USA is perceived to be more significant than physical capital. However, the higher education in the developing countries generally and in Sub-Saharan Africa particularly is still extremely low. According to organization for economic cooperation and development (OECD) statistics, they stated that developed countries, for example, Canada, the USA, and the UK, have their enrolment in higher education more than 50%. While, the enrolment in higher education in developing countries is lower than 5% [37]. Therefore, the developing countries need to use and apply suitable and proper strategies in order to increase and improve higher education enrolments. Otherwise, such countries will face an increasing exclusion future from the world and developed countries because they shortage the essential skills required in the 21st century [37].

9. LMS IN DEVELOPED COUNTRIES

The developed system has superior performance due to it essentially a web-based decision support system employed for evaluating LMSs by utilizing a smart and flexible. In addition, the evaluation system can assist instructors to choose the best LMS with respect to their type of usage and requirements. The primary purpose of the developed system is to deliver a web-based method for the LMSs' evaluation with the smallest effort and in the briefest time by using easy steps. Thus, the developed LMS can be utilized with no need to any particular technical skills. Furthermore, the developed countries contain datasets that include information about manufacturing companies, where this information may be utilized for research study to be compared with other developing countries. In other words, these datasets may assist researchers to acquire information that can test hypotheses between various countries. Sartal *et al.* [38] have used dataset for evaluating the influence of LMS on industrial performance with information technology and environmental technology that working as mediating variables between 5 European countries. The dataset has been obtained from European manufacturing survey. In this regard, the researchers in [39] have investigated the impact of LMS tools and organizational culture in 10 developed countries. They have utilized a dataset that has been acquired from the high-performance manufacturing. The authors have concluded that an effective LMS execution must be characterized by particular LMS tools and organizational culture.

10. LMS IN DEVELOPING COUNTRIES

In the literature, reinforcement factors and social have been not obtained high academic attention. In addition, many studies have been reviewed and conducted in developed countries, where these studies were a mixture of quantitative, review, and qualitative. Besides, most researches have been performed in different developing countries. For example, Nigeria, Kenya, Pakistan, Ghana, Iraq, and Slovenia. These researches have been indicated technological issues are considered the most challenging in terms of adoption and utilize Moodle platform in LMSs [40]. This is demonstrated more complexity in the usage of LMS platforms in various developing countries. Ansong *et al.* [41] have mentioned that organizational factors, environmental factors, and technological factors are the most obvious factors influencing the adoption of technology. They concluded also that the organizational factors and environmental are classified as social factors, where these factors have not been obtained much academic attention in various developing countries.

11. LMS IN AFRICA

The adoption of different LMSs in Africa to complement conventional sessions of face-to-face classroom, as well as to enlarge access to universities by using remote learning is becoming familiar. This is obvious from numerous surveys that were performed in numerous institutions in Africa which found that nearly each institution had established various LMSs. For example, 5 institutions have been surveyed in Africa and these institutions have been established different LMSs [42]. Likewise, there were more than eleven institutions that have been surveyed in Tanzania were using LMSs [43]. In addition, there were seven institutions that participated in the project of partnership of Higher Education Africa (PHEA) and they have established different LMSs also [44]. It has been observed a similar situation in different countries such as Kenya [45], Uganda [46], Sudan [47], and Zimbabwe [48]. Furthermore, the adoption of LMSs is increasing in Africa for the purpose of improving education, where there are several systems will be deployed in the near future. However, there is a need to enhance such systems for the purpose of enlarging the LMS usage. Thus, they can be simple to learn, simple to use, as well as attractive to many users. It is worth to be noticed that most LMSs were developed and examined with users from Western countries. Moreover, these LMSs cannot be applied without modifications because there are many users in Africa who are not exposed to numerous IT solutions. Therefore, the need to perform a usability evaluation for the purpose of finding any possible usability problems that may impede users from utilizing LMS is significant.

12. RELATED WORK

In recent years, there are several studies that have been witnessed high attention by researchers and developers who have been working in the systems of LMS, where they have presented different tools, methods, software, and techniques for the purpose of developing the educational processes in universities and institutions in different countries. Table 1 shows the summery of related works. For instance, Bai [49], has been studied the use of students in the system of D2L in the hybrid classes which included asynchronous online learning more than face-to-face meetings. Furthermore, in this work, the participants were able to access the D2L system by utilizing the browsers of laptops and computers, the browser of mobile, and the system of mobile learning management system (m-LMS) app, brightspace pulse. It has been shown that the accessibility of participants to the D2L's system in various manners is attracting them to the learning activities, where their perceptions of Brightspace Pulse and their chosen access to D2L's system were analyzed. It has been noted that the participants have been used the computers more repeatedly than the smartphones when they are participating in the online discussion, reviewing course materials, and submitting assignments in the D2L's system. Therefore, this study concludes that there are many students are preferring to use browses of laptops and PCs in order to access D2L's system and take different learning activities. Nevertheless, the brightspace pulse has been preferred by more than half of the participants in order to check their grades. Despite that the computers have been the main learning tool, the participants had favorable perceptions when they used the m-LMS app.

In regard to learning management systems, Alkhateeb and Abdalla [50], have aimed to investigate various factors which are affecting the satisfaction of students in terms of using the Moodle software as the system of the learning management system. This work has been conducted on the students of Palestine Technical University-Khadoury (PTUK) in Palestine. Furthermore, there were six different factors have been employed which are computer self-efficacy, perceived ease of use, the quality of the system, the quality of information, perceived usefulness, and the quality of presented services. In addition, the method of the survey has been used for the purpose of gathering the needed data, where there are 372 questionnaires have been studied and investigated utilizing multiple and simple regression. The results of this study have shown that all the studied predictors had a significant impact on the satisfaction of students with respect to using systems of LMS. These outcomes enhance the earlier literature with input towards adopting systems of learning management in institutions of higher education. Finally, the authors have suggested that the LMS at PTUK must be combined with platforms of the social media, and developed in a method that permits it to function correctly and completely on mobile phones. Saadati *et al.*[51] has been presented a new development of LMS system that is enabled by blockchain as a metacognitive tool in higher education online with self-regulated learning (SRL) adaptive intervention (AI) in order to enhance collaboration, reflection, scaffolding, zone of proximal development (ZPD), monitoring, and planning across self-regulation evolution and obtain many achievements in the learning. To accomplish this, according to the benchmark data that contains 33 students who are studying english language teaching (ELT) master of art (MA), the LMS's system has been developed based on blockchain that delivered three phases which are designing, action, and reflection SRL AI in the online program. Furthermore, the data in this study has been gathered quantitatively by using SRL pre-and post-test questionnaires which have been investigated along with the t-test and qualitatively by adopting reflective essays that have been studied via the strategy of content analysis. The results of this work have been shown that the SRL intervention online program that is based on blockchain has presented opportunities for

MA students for developing their SRL skills in realistic objectives, self-monitoring, self-awareness, and self-reflection via training, ZPD, and cooperation.

Fearnley and Amora [52], have studied and analyzed various factors that affected the adoption of systems of learning management through lecturers of higher education utilizing the model of the technology acceptance which includes three external constructs: facilitating conditions, perceived self-efficacy, and system quality. In this study, the data have been gathered from faculty respondents, where the total number of data is 127, and it has been examined via an online survey by using partial least squares-structural equation modelling. However, although many relationships have been documented, others have been not confirmed by this work. The outcomes indicated that the perceived self-efficacy and system quality are extremely impacted indirectly by perceived usefulness, where it influenced attitudes towards the behavioral intention and the technology. Besides, system quality directly influenced the attitudes toward the use of technology and perceived ease of use. The direct and powerful impact of perceived self-efficacy on perceived ease of use and perceived usefulness indicates that faculty with positive views about their ability to utilize the system of learning management will consider it as simple to use and helpful. On the other hand, the facilitating conditions have been not influenced by attitudes or perceived ease of use. In addition, policy, implications for practice, and possible directions of this study are provided as well. Mpungose and. Khoza [53], has been presented the application and adoption of a non-formal learning model that aims to combine informal and formal learning by keeping the connection and networks between participants in the use of the LMS. In addition, this presented model expect that students be guided through personal experience (i.e., individual requirements) instead of societal experience (society requirements) or knowledge (i.e., subject requirements) in the use of the LMS. In this study, the data have been created by using two different activities which are group meetings by using zoom and interviews with 31 students, where these samples have been taken appropriately and purposively from education programs at universities of the USA and South Africa. Also, the theoretical framework has been used in order to analyze the data thematically. The outcomes indicated that students have not been adored of utilizing LMS but they have utilized the canvas and moodle LMS especially for readings, downloading, and participating in discussion meetings. While, the framework of the non-formal learning for self-direction, and ignoring personal experiences of students can encourage them for using LMS.

Table 1. The summery of related work

Authors\Years	Problems	Methodologies	Contributions	Limitations
Bai (2022) [49]	Study the performance of students in the system of D2L in the hybrid classes.	The participants were able to access the D2L system by utilizing the browsers of laptops and computers, the browser of mobile, and the system of m-LMS app, brightspace pulse.	This study has concluded that the students are preferring to use browses of laptops and PCs in order to access D2L's system.	The brightspace pulse has been preferred by more than half of the participants.
Alkhateeb and Abdalla (2021) [50]	The satisfaction of students in when using the moodle software.	There were 372 questionnaires have been studied and investigated utilizing multiple and simple regression.	The results have shown that all the studied predictors had a significant impact on the satisfaction of students with respect to using LMS.	The work has not been combined with platforms of the social media.
Saadati *et al.* (2023) [51]	Enhancing the LMS systems.	Presenting a new development of LMS system that is enabled by blockchain as a metacognitive tool in higher education online with SRL AI.	The results shown that the SRL intervention online program is presented opportunities for MA students for developing their SRL skills.	The total number of students was limited.
Fearnley and Amora [52]	Affect various factors of systems of learning management.	There are 127 data and it has been examined via an online survey by using partial least squares-structural equation modelling.	The perceived self-efficacy and system quality are extremely impacted indirectly by perceived usefulness.	-
Mpungose and Khoza [53]	Non-formal learning for student learning.	The application and adoption of a non-formal learning model that aims to combine informal and formal learning by keeping the connection and networks between participants in the use of the LMS.	The outcomes indicated that students have not been adored of utilizing LMS but they have utilized the canvas and moodle LMS especially for readings, downloading, and participating in discussion meetings.	The total number of students was small.

13. DISCUSSIONS

In the literature, it has been indicated that the factors which specify the adoption and application of the LMSs in the developing and developed countries differ. Besides, there are main concerns impacting the

adoption and application of the LMSs platforms in developing countries. For instance, shortage of technological skills, a lack of incentives, and poor internet connectivity [54], [55]. Whilst the situation in the developed countries, it has been observed that there are many considerable technological facilities which allow to adoption and apply the LMSs platforms. Nevertheless, Brazil, and China's focus on the issues of the adoption and application of the LMSs platforms have further demonstrated that even countries which are endowed with human resources and abundant technological facilities suffer from some challenges in the adoption of LMS such as learning strategy and the technologies in the teaching. Also, it has been noticed that technological factors obtained high academic attention, while reinforcement factors and social obtained limited academic attention from scholars. Filippidi *et al.* [56] have concluded that institutions face technological challenges in terms of the adoption of LMS platforms. Additionally, many studies have been performed in different developing countries such as Nigeria, Slovenia, Ghana, Pakistan, Kenya, and Iraq, where these studies indicated that technological issues are considered the most challenging in the adoption and application of moodle platform in LMSs.

14. CONCLUSION

The market of higher education has been gained extremely competitive, where the systems of learning management in universities have been proven that they are highly flexible and adaptable to combine with modern technologies. The quality of research and education is the nature of business for any institution and university. Consequently, technologies are playing a consequential role in presenting high quality to students, lecturers, and staff. In general, higher LMSs deliver many useful tools for learning students, for example, supporting resources, video conferencing, online chat, assessments, and discussion threads. In this paper, we have reviewed the LMSs in terms of usages, types of these systems, advantages, challenges and issues. In addition, we have presented the recent state-of-the-art studies of LMSs with respect to their contributions and limitations. Future work can include using and developing a new LMS in universities for the purpose of improving the student's performance.

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