



## Learning Management Systems (LMS) and Future Vision

**Bodoor F Alazemi**, [bdoralazmi@hotmail.com](mailto:bdoralazmi@hotmail.com)  
**Ibtisam L F H Almutairi**, [E\\_almutairi@hotmail.com](mailto:E_almutairi@hotmail.com)  
**Faisal L F H Almutairi**, [flfmutairi@hotmail.com](mailto:flfmutairi@hotmail.com)

---

**ABSTRACT-** Currently, Learning Management System (LMS) is used to promote quality education and training through an on-line and partially automated system creating a virtual environment for the instructors, students, and employees to communicate among them at a single platform with all available resources and learning material. An increase in use of Learning Management System has been observed and knowledge learning is being digitalized by various top institutions in the world. The purpose of this study is to identify the current Learning Management Systems (LMS) applications and future vision. To accomplish the objective of the research, a systematic review of literatures will be implemented. Also, findings, conclusion, and recommendations will be mentioned.

**Keywords—**Learning Management Systems (LMS), Technology learning, Virtual environment, Moodle, Blackboard, Future vision, Mobile Learning

### I. INTRODUCTION

Increasing adaptation of Learning Management System (LMS) has been seen as platform for revolutionizing the learning experience in the institution as well as for distance learning for the users around the globe (Walker, D. S. et al., 2016). This system has generated competitive advantage for the world class institute to communicate and share knowledge. Thus, Learning Management System (LMS) defines in general as a system provides E-Learning materials through electronic platform for users e.g. instructors, students, employees, and other workforces (Walker, D. S. et al., 2016). In other word, LMS is basically a software-based application which is used to design, implement, and evaluate the learning process in the institutes (Aldiab, A. et al., 2019). Features of learning management systems are subjected to variance. It varies from time to time releases and from the company to company who owns its. Some of Learning Management Systems (LMS) are efficient and advance in their features while others are now passing through the phase of having modifications (Kasim, N. et al., 2016). In general, Primary LMS feature is to use computers as basis for education with more systematic infrastructure that can manage the learning process of associated organizations or institutes. Secondly, LMS is having the infrastructure specifically designed to manage the instructional process smoothly with the addition of identifying and assessing organizational and learning goals. Thirdly, it is designed for reporting, tracking all the changes and skills gap analysis. Also, LMS can also be declared as highly automated and intelligent System (Kasim, N. et al., 2016; Kostiuchenko, A., 2017).

The adoption of LMS in any institution has several strengths and weaknesses. Some studies explored advantages of LMS. Kostiuchenko, A. (2017) found that LMS can focus on the requirements and needs of the participants (Kostiuchenko, A., 2017). Also, the author said that LMS has been praised regarding its flexibility and adaptability in time and location for the participants. For example, participants can use self-paced courses and acquire knowledge on their own time. This helps any institution to reach its objectives in efficient way (Kostiuchenko, A., 2017). Moreover, Wicaksono, G. et al. (2020) mentioned that LMS has ease of access and provides centralized to manage the system for institution, and this distinguishes it from other traditional learning system without requiring of physical classroom (Wicaksono, G. et al., 2020). The authors found that cost cutting led many institutions to offer world class courses from top ranked professors at an affordable price. Moreover, LMS compensates lack of academic staff, also instructors have ability to manage and monitor various courses at a time due to creation of virtual environment. Therefore, it is easy to communicate with hundreds of students at a time. LMS can highlight greater collaborative opportunities among participants. Finally, one of the most important advantages of LMS is that it reusable; the lecture content can be utilized for many following sessions with or without required minimum effort. It is easy to modify and update the

knowledge resource due to availability of resource in platform (Wicaksono, G. et al., 2020; Kostiuchenko, A., 2017).

With advantages there are always some disadvantages. First, focus on the system shifted more toward technology rather than being on the users. The staff and participants involved in LMS need initial training because without it, the system cannot be operating at its maximum efficiency (Ülker, D., &Yılmaz, Y. 2016).Second, the infrastructure cost to maintain Learning Management Systems (LMS) can become costly if not properly maintained(Ülker, D., &Yılmaz, Y. 2016).Third, LMS lacks human interaction because it is based on virtual interaction which affecting on the learning curve of the participants. Fourth, LMS lacks social interaction and it may create an environment of self-isolation for the participants. Finally, internet is compulsory to access material, so if there is connectivity or low bandwidth issue, the system can be a problematic. (NurakunKyzy, Z. et al., 2018).

The primary goal of Learning Management Systems (LMS) is to centralize all the knowledge resources at one place for maximization of learning within the institution (Walker, D. S. et al., 2016). Thus, LMS facilitates a wide range of institutional stakeholder in the process of knowledge intake. Its benefits are not limited to just educational institutes rather they are extended toward professional organizations in which such system is being used as for training and administrative purpose (Hu, X. et al., 2020).

## II. LITERATURE REVIEW

The history of LMS can be dated back to the introduction of computers to education in 1970, where the first personnel computer was launched for making E-learning possible worldwide with having specific software meant for teaching and learning interactions(Aldiab, A. et al., 2019). But its adaptation in learning organizations was in 1990 after the term -LMS- was given by SoftArc for the Macintosh platform(C. Dalsgaard, 2014).After the first release of LMS, different kind of LMS were launched i.e. ASAP, LMS Moodle, Interactive learning network and SCORM 2004 came into existence. SCORM 2004 is heavily utilized by all of the LMS and it is providing basics for today's LMS operations and functions as well (C. Dalsgaard, 2014).Also, LMS have been developed on various platforms including PHP, .NET, Java environment and else (Hu et al., 2020).

Some of the leading examples of Learning Management Systems have been reviewed in numerous studies. Moodle is free online Learning Management System that is being utilized by many universities and schools for educational purposes(Kc, D., 2017).The reason behind its fame and extremely functional characteristics is its access to open source solution and E-learning activities that are available worldwide and These E-learning activities are robust, secure, reliable and customizable(Kc, D., 2017).Also, Built-in course authoring and blended learning are one of the primary targeted features. Thus, Moodle Cloud is one of the pioneer initiatives that are taking over the Learning Management system to the new dimensions of providing E-learning (Kasim, N. et al., 2016).Blackboard is a web-based server software mostly utilized in course management purposes. This platform is mostly used to enhance face to face interaction in the class and provide online resource help as well as the partial or full monitoring of course evaluation(Tawalbeh, T. I., 2018). Also, the feature which distinguishes blackboard from other available learning systems is including communication(Tawalbeh, T. I., 2018).while Canvasis relatively new in the market with user friendly platform and simple design. Canvas is available free to use in the market and it has been popular among leading educational institutes and integrates social media. Moreover, Canvas helps the participants to track and maintain their progress in a very effective manner by keeping track of assignment and ease in discussion board participation. Students can also predict the effect of grades in particular assignment or exams on their overall score (Baldwin et al., 2019).

## III. WHO USE LMS AND WHY?

There are more than 600 varieties of LMS are available. LMS is taken by many organizations and various institutes (Hu et al., 2020). Moreover, its users are not limited among students and teachers only, its potential users now in human resource, financial departments and teaching faculty and visitors (Walker, D. S. et al., 2016). LMS capability and efficiency can be accessed through its number of users and ratio of the increasing number of customers. The Major users are health care, pharmaceutical and biotech, marketing and

advertising agencies, while the Primary users are education industries and institutes (Walker, D. S. et al, 2016).

There are various potential reasons of using LMS, these are as follows (Sireesha, N., & Rao, K. S., 2020):

- Curricular Content Management: Uploading, storing, and managing document for curricular content.
- Multiple devices accessibility: Delivery and managing course and lecture content on different platforms i.e. desktop, web, mac and Linux.
- Effective user Engagement: user engagement around whole globe through various modes of communications is given by LMS that enhances and provides effective engagement between users and other associated departments.
- Digital scoring and grading: LMS enable its users to view grades and scores at a time of submission of their exam and grading sheet.

#### IV. LMS SELECTION PROCESS

There are several criteria to consider when choosing LMS:

- Product Features and Requirements: Before selecting LMS, evaluation must be made for future growth of the organization. Also, making sure that selected LMS is providing solution of all the problems encountered by the organization(Karagöz, E. et al., 2017).
- Check the Standard Compliant: selected LMS must be made based on checking standard compliant like SCORM. This will reduce compliant material cost
- Stakeholder Involvement: inform all stakeholders in written form to illustrate functional and non-functional needs before selecting the LMS(Karagöz, E. et al., 2017).
- Quality checkups: upgrades of LMS are well supported by quality standards and are not subjected to broken courses links and any other stored data collisions (Abdullateef, B. N. et al., 2016).
- Accessibility to vendor and help center: Selection process must be made through analyzing the proper help center and accessibility to vendor checking, because LMS needs sudden helps due to greater interaction of the users. Thus, the 24/7 available help center and vendor availability are the things that cannot be compromised(Abdullateef, B. N. et al., 2016).

#### V. ANALYSIS OF CURRENT LMS SOFTWARE AND FUTURE SOFTWARE

##### **5.1 MOODLE APPLICATION SOFTWARE SYSTEM**

Moodle is open source learning management system that is distributed under pedagogical principles. It is specifically designed for distant learning, E-learning and above all for blended learning workspace(Kc, D., 2017).Moodle has the following general advantages. First, ease in navigation among different users and sources. Second, ease in communication between instructors and other classrooms.Third, it has audit reliability and flexible(Kc, D., 2017).On the other hand, Moodle has some cons regarding its functionality; this system finds difficulty when being integrated with Human resource system(Kasim, N. et al., 2016).

##### **5.2 BALACKBOARD APPLICATION SOFTWARE SYSTEM**

As mentioned earlier Blackboard is online web-based learning management system that providing face to face interaction in the class and encouraging learning experience. Also, blackboard LMS currently hold about 40% of the market share(Tawalbeh, T. I., 2018). Its advantages are it has higher reliability, because it is developed by people who are specifically chosen for effective learning product. Second, it Provides warranty service. Third, it provides third party hosting on lease(Tawalbeh, T. I., 2018). Blackboard has disadvantages, some of them are blackboard has lack in service cloud arena and frequent break downs(Tawalbeh, T. I., 2018).

###### **5.2.1 Blackboard vs Moodle**

As it is known, choosing best type of LMS depends on the need developed by the institution. Due to high maintenance cost, some organizations have shifted toward Moodle due to its flexibility and cost efficiency (Alghafis, A. et al., 2020). Thus, Moodle has maintained to be the top learning tool among other LMS. The main reason of trend shiftingto Moodle is being open source as compare to blackboard(Alghafis, A. et al., 2020). Also, Moodle use simple and most reliable technologies including PHP, MySQL platform where it is easy to

modify and add extension of the required feature(Alghafis, A. et al., 2020).Moreover, Moodle uses most advanced programming approach which is Object Oriented Programming that making its functionality efficient and effective and allowing users to customize the platform according to their requirements (Öztürk, Y. E., &Gürler, İ., 2020). On the other hand, Blackboard is aged LMS platform because it is using same old functional interface with no timely updated standards (Öztürk, Y. E., &Gürler, İ., 2020). Also, Blackboard displays all the functionalities altogether whether they are functional or non-functional (Öztürk, Y. E., &Gürler, İ., 2020).Sometimes, some functions are not used by the instructor for thespecific course, but still blackboard displays them. This makes it more confused in term of its usage(Öztürk, Y. E., &Gürler, İ., 2020).

Adaptability distinguishes Moodle from all other LMS providers due to its simplicity in its design, thus it has been termed as most convenient for use in academic organizations as for course management and learning purposes(Alghafis, A. et al., 2020). Furthermore, Moodle has regular support which keeps the maintenance on weekly and daily basis to check and balance for any error in the system(Alghafis, A. et al., 2020). Blackboard Learning Management Platform on the other hand is comprehensive and flexible in customization but found to be expensive than Moodle(Öztürk, Y. E., &Gürler, İ., 2020). Blackboard LMS has advantage in having administrative reporting system while Moodle lacks this feature(Alghafis, A. et al., 2020). Although Blackboard has a big market share, some organizations shifting to Moodle learning environment which makes it the best type of LMS and going up above all(Öztürk, Y. E., &Gürler, İ., 2020).

### **5.3 ALTERNATIVES OF LMS SOFTWARE IN FUTURE**

In future, it will be many Alternatives to LMS software such as cloud-based platforms. Also, Google+ (G+) could be an alternative to LMS software(Zawawi, B. F. et al., 2017). Although G+ lacks some features of LMS, these features can be incorporated through an integration of G+ with instructor's blog(Zawawi, B. F. et al., 2017).G+ can serve a good alternative as a discussion board and interaction facility, also sharing course material is quite simple in G+ comparing to LMS Moodle and other platforms. Thus, students and instructors can interact easily on G+(Zawawi, B. F. et al., 2017).

Some steps required for deploying the alternative of LMS - G+- these are as follows. First, create a private community with an invitation to students. Second, Create category for each content. Third, allocating a G Drive folder for centralize all resource materials. Fourth, create another folder for students to share their documents.Also, Google forms can be used for exams, surveys, questionnaire and else.Calendar can be added as event to create deadlines for assignments in the course as well(Zawawi, B. F. et al., 2017).

#### **5.3.1 THE DIFFERENCE BETWEEN LEARNING CONTENT MANAGEMENT SYSTEMS (LCMS) AND LMS**

At present, there are some alternatives to LMS in the market such as Learning Content Management System (LCMS) which specifically focus on creates content rather than managing people(Kamarga, H., 2018). Although LCMS and LMS have almost same features, but LCMS is less costly and complex while being used than LMS(Kamarga, H., 2018). Moreover, LMS focuses on tracking the learner and their progress while LCMS main focus is on management the content and making sure that online content could be used again(Kamarga, H., 2018). LMS and LCMS can be complimentary to each other and both have their unique usability(Kamarga, H., 2018).

#### **5.3.2 THE INTEGRATION OF MOBILE LEARNING AND LMS.**

Institutions these days are striving for excellence in learning and training process as well as the knowledge management to achieve competitive advantage in the market and make sure that adequate skills are supplied to participants(Hu, X. et al., 2020).This effort involves integration of mobile learning into current LMS. Some experts said this integration has been step toward flexible learning without constraint of time and distance(Hu, X. et al., 2020). For example, students can engage into learning process at any time they want within a virtual class environment created in online LMS(Hu, X. et al., 2020). Thus, this new learning integration enhances the capability of learning process including ease of access, simplicity and affordability. Also, benefits outweigh costs after the technological advancement in the learning system(Hu, X. et al., 2020).

### **5.4 REASONS FOR RESISTANCE TO USE LMS**

Although the world is moving towards digital era, there are some reasons for resistance to use LMS applications from users some of them are as follows. Resistance from faculty members where they lack face to face interaction between students which is the essence of learning, and using the computer all the time may create distraction that might affect heavily on the results and grades of the participant(Coleman, E., &Mtshazi, S., 2017).Technological factors where internet must be usedin any platform, and unavailability of internet or

faulty internet service providers may cause problems during the learning process on these platforms(Coleman, E., &Mtshazi, S., 2017).Also, though face to face interaction is few, but workload is increased to compensate the time spent to study. Thus, some students complain overloaded with assignments all the time(Coleman, E., &Mtshazi, S., 2017).

### 5.5 TECHNICAL ISSUES IN LMS

The main technical issue for LMS applications is Internet dependency(Aldiab, A., 2019).Having poor or slow internet connection might cause difficulty while taking exams, submitting assignments or downloading/uploading learning content. Also, Some LMS applications do not provide an adequate IT security(Aldiab, A., 2019). The third issue is users and organizations using LMS cannot access the source code and make suitable changes by their own self(Aldiab, A., 2019).

## VI. RESULT OF ANALYSIS

Based on the above analysis, continuous improvement is required to develop effective LMS and cater the increasing demand. Also, these systems should focus more toward providing quality rather than focus on quantity which will definitely make an impact on learners' skills(Kamarga, H., 2018). Although virtual class environment has its own pros and cons, but the effectiveness of face to face interaction cannot be neglected.

## VII. CONCLUSION

Current Learning Management systems have been successful in making breakthrough in learning cycle although each system has its own pros and cons. Organizations analyzed their needs and requirements when choosing the best LMS application for them to be applied. So far, Moodle & Blackboard have shown tremendous success but there is always a space for improvements. Moreover, Mobile learning Integration definitely helped organizations to provide learning and knowledge without constraint of time. Future LMS needs to realign the key objectives of maintaining quality education and delivering knowledge that fulfills needs of various users and different levels of learning.

## REFERENCES

1. Walker, D. S., Lindner, J. R., Murphrey, T. P., & Dooley, K. (2016). Learning management system usage. *Quarterly Review of Distance Education*, 17(2), 41-50.
2. Aldiab, A., Chowdhury, H., Kootsookos, A., Alam, F., &Allhibi, H. (2019). Utilization of Learning Management Systems (LMSs) in higher education system: A case review for Saudi Arabia. *Energy Procedia*, 160, 731-737.
3. C. Dalsgaard, 2014, "Social software: E-learning beyond learning management systems," Published by The European Journal of Open, Distance and E-Learning – EURODL, vol. 3, no. 2.
4. Kasim, N. N. M., & Khalid, F. (2016). Choosing the Right Learning Management System (LMS) for the Higher Education Institution Context: A Systematic Review. *International Journal of Emerging Technologies in Learning*, 11(6).
5. Kostiuchenko, A. (2017). Features of Implementation of a Learning Management System in the Educational Process in a Ukrainian University. *International Journal of Research in E-learning*, 3(1), 76-88.
6. Hu, X., Ng, J., Tsang, K. K., & Chu, S. K. (2020). Integrating mobile learning to learning management system in community college. *Community College Journal of Research and Practice*, 44(10-12), 722-737.
7. Wicaksono, G. W., Juliani, G. A., Wahyuni, E. D., Cholily, Y. M., &Asrini, H. W. (2020, June). Analysis of Learning Management System Features based on Indonesian Higher Education National Standards using the Feature-Oriented Domain Analysis. In *2020 8th International Conference on Information and Communication Technology (ICoICT)* (pp. 1-6). IEEE.
8. Ülker, D., &Yılmaz, Y. (2016). Learning management systems and comparison of open source learning management systems and proprietary learning management systems. *Journal of systems integration*, 7(2), 18-24.

9. NurakunKyzy, Z., Ismailova, R., & Dündar, H. (2018). Learning management system implementation: a case study in the Kyrgyz Republic. *Interactive Learning Environments*, 26(8), 1010-1022.
10. Kc, D. (2017). Evaluation of moodle features at kajaani university of applied sciences–case study. *Procedia computer science*, 116, 121-128.
11. Tawalbeh, T. I. (2018). EFL Instructors' Perceptions of Blackboard Learning Management System (LMS) at University Level. *English Language Teaching*, 11(1), 1-9.
12. Baldwin, S. J., & Ching, Y. H. (2019). Online course design: A review of the Canvas course evaluation checklist. *International Review of Research in Open and Distributed Learning*, 20(3).
13. Sireesha, N., & Rao, K. S. (2020). Teaching to Learn or Learning to Teach-? A Review on LMS.
14. Karagöz, E., Oral, L. Ö., Kaya, O. H., & Tecim, V. (2017). LMS Selection Process for Effective Distance Education System in Organizations. *KnE Social Sciences*, 343-356.
15. Abdullateef, B. N., Elias, N. F., Mohamed, H., Zaidan, A. A., & Zaidan, B. B. (2016). An evaluation and selection problems of OSS-LMS packages. *SpringerPlus*, 5(1), 248.
16. Alghafis, A., Alrasheed, A., & Abdulghany, A. (2020). A Study On The Usability of Moodle and Blackboard–Saudi Students Perspectives.
17. Öztürk, Y. E., & Gürler, İ. (2020). Evaluation of Moodle, Canvas, Blackboard, and Open EdX. In *ICT-Based Assessment, Methods, and Programs in Tertiary Education* (pp. 363-382). IGI Global.
18. Zawawi, B. F., Al Abri, M. H., & Dabbagh, N. (2017, June). Affordance analysis of Google+ features: Advancing teaching and learning in higher education. In *EdMedia+ Innovate Learning* (pp. 283-297). Association for the Advancement of Computing in Education (AACE).
19. Kamarga, H. (2018). Constructing online based history learning: comparison of learning content management system (LCMS) to learning management system (LMS). *Historia: Jurnal Pendidik dan Peneliti Sejarah*, 12(2), 255-273.
20. Coleman, E., & Mtshazi, S. (2017). Factors affecting the use and non-use of Learning Management Systems (LMS) by academic staff. *South African Computer Journal*, 29(3), 31-63.