# The Influence of Modern Computer Educational Methods on Business Environments in the Field of Administrative Work

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## ABSTRACT

Online LMS is completely a computer-based system which is supporting all the universities to provide education through computer-based and much easier for the students who are eager to earn a degree from distant places. Online learning management system facilitates the universities with quality education and training to their students. This paper provides an analysis and evaluation of the current and prospective expectations, complexity and credibility of online learning management systems. The main purpose of learning management systems is to ensure the availability of learning content is enhanced over the Internet to guarantee its accessibility wherever there is an internet connection. Methods of analysis include intensive research investigation, from three perspectives, educational institutes, students and employers. The LMS characterize various disadvantages in terms of quality of education, usability and accessibility. The research finds the prospects of LMS in its current position are uncertain. The major areas of weakness require further investigation and remedial action by educational institutes.

Keywords: online learning, management, system, educational, institutes, education, quality, accessibility, complexity, training, research, investigation, network, training, university, internet, technological, centralized, horizon, digital, interactivity, teaching, staff, content, platform, analytics

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**Executive Summary**

This paper provides an analysis and evaluation of the current and prospective expectations, complexity and credibility of online learning management systems. Methods of analysis include intensive research investigation, from three perspectives, educational institutes, students and employers. Results of our investigation show that all three entities are having difficulty with LMS as well as doubts about the outcomes of online education. In particular, LMS performance is poor in the areas of quality of online education, technical complexity and social/soft skills of students.

The research finds the prospects of LMS in its current position are uncertain. The major areas of weakness require further investigation and remedial action by educational institutes.

**Recommendations discussed include:**
- Use outsource/offshore in order to get multi skilled team.
- Formulate a workable method of collecting and analyzing the ideological contributions of various stakeholders.
- Awareness of all available LMS so that various institutions can deliberate on the best fit.
- Users and developers need to have more forums in which they collaborate on information relevant for the development of better LMS to suit learning objectives.
- Improving on the current user interfaces to accommodate usability and user acceptability.
- Enhancing the three main factors: effectiveness, ease of use as well as quality of learning to ensure the objectiveness of all LMS.

**Limitations of the project:**
The report also investigates the fact that the analysis conducted has limitations. Some of the limitations include:
- Lack of time, the research timeframe limited our ability to investigate each factor intensively.

- Lack of Knowledge and manpower, this ramify topic covers many different study fields, which required intensive investigations in order to get a full picture of it, however, the lack of manpower limited our ability to research the topic deeply.

## INTRODUCTION

In the early 1990's, the LMS software systems saw a major change. This is when the computers began having network access and the information could then be shared across multiple computers and share the job load and enhance the software. The mid-1990's saw the biggest change in LMS applications, and that occurred at the dawn of the Internet. Now, human resources could expand their capabilities and develop companywide training modules and monitor them across an entire organization, rather than just through a local network (Evolution of Training Administration Technologies (LMS), 2015).

A university implementing the Learning management system finds the reviews from the students and professors to make a necessary elements which could make online learning management system much better and convenient for both the instructors/universities and the students. This online LMS is completely a computer-based system which is supporting all the universities to provide education through computer-based and much easier for the students who are eager to earn a degree from distant places. Online learning management system facilitates the universities with quality education and training to their students. Universities must be capable of providing the required facilities and able to bare cost of handling all the students and faculty members with stable server.

Some requirements a university or organization always want to maintain is the learning management system cannot be down anytime during the exams and easily accessible from anywhere Internet is provided. The university chooses the LMS based on the 24/7 availability throughout 365 days which is important for the students and instructors to choose online LMS. Our group in assessing the online learning management system found that there are many measurements which play a key role in LMS like having all courses in a single plan, a modern reliable system that we can access from mobile device, having consistent system. We thought it could be better having an additional feature added to the students with disabilities to access the



LMS. Designing the interface user friendly for all the category of students, designers and everybody to access the course material easily is important.

One of the most significant developments in universities in information technology segment is the use of Learning Management Systems (LMS). LMS facilitates e-learning too. Thus, with the onset of e-learning, many people started continuing their studies further, even though they just have the night time to study. LMS is now highly accepted in almost all universities in United States. LMS was aimed mainly in maintain the course syllabus, assignments and everything easy so that nobody forgets deadline for assignments, the things have to include in that particular assignment, etc. LMS made the lives of teachers and students easy by providing their personnel account and keeping all the details there so that even some personnel comments will be in between student and professor. Online LMS. Furthermore, even sometimes exams are conducted here. Thus, a lot of facilities became open for us through LMS.

But when there is a lot of facility opens up for people, there starts misuse of it too. This happened with LMS too. Many people started cheating in the exams. Some even copy others materials. This raised flag against the credibility and authenticity of the study. Some even don't believe that online education is

Another important aspect of learning management systems was the further integration of them into other core human resources needs. For instance, in 2006, talent management software got itself integrated into the LMS systems. The companies added performance management and development planning tools to their systems in order to cater to more clients and provide more services. These forever changed the LMS software company's models (Bersin, 2013).

University needs to make sure the LMS implemented should be secure and reliable and maintain the confidentiality, integrity and availability of student and faculty information. The resource must be flexible enough to facilitate learning both online and blended classes. LMS that is well maintained with all features must enhance the students learning experience must be very user friendly for the instructors and should be maintenance free to the administrators.

**Problem Statement**

In this era where everybody has an aspiration to study and to take degree as far as they can, online Learning management system has been a boon for those, who doesn't have time to attend the classes or for people who live far away from the university but just the desire to study further. However, there has been many problems that has been noticed when an online learning system is chosen and our project wants to make a framework assessing the online learning management system

**Project life cycle**

In our project we wanted to assess the elements of the online learning management system, as we cannot make our own learning management system, which is way too costly but we would like to take some reviews from the students and instructors and prepare a framework of the elements required for an updated learning management system along with the new technology.

**No Direct communication with instructors/ professors**

In online course, we don't have direct communication with the professor; rather we have to be in touch with the professor, if we have any doubts. It has many limitations like if we have one or two doubts, professor can reply us back the doubt in more simple language. This will make the learners not study the complete syllabus at all. They just sometimes go with the material of the chapters provided by the instructors or sometimes do not even see the materials posted. The end result may be that students won't even have any idea about what chapter deals with or what it says. Making the online meeting compulsory like face-to-face meetings, we solve problems to some extent.

**Complicated for both the professors and students**

Since professor is not teaching, some students doesn't understand the concept clearly if it has some twisted meaning or it is difficult to understand. This created a lot of confusion in the minds of the students. The instructors need to deal with all the learning managements systems, as they need to get adapted to new learning management system as they change the universities. This confusion remains in the minds of students as the students doesn't have the professor physically to clear their doubts and the confused students become very tensed whenever there is any assignment in that particular subject and thereby making the online education a bad choice. Professors need to learn the LMS thoroughly in order to make it user friendly both for the professors and students and to post the material, discussions, schedule the calendars etc. It's really complicated for the instructors to follow every LMS and post everything needed on time, assigning tasks online, being tech savvy for managing the LMS online.

**Answer Framing**

When students/learners have an option to Google the question and find the answer or concept about what the question asks for, then many go for a shortcut and frame the answers about what they understood through Internet. It might be possible that what the question asks for is not given in the Internet properly, but in the book. Thus, students can frame the answers that are not what asked. So reading is very important for everyone who takes the online courses.

**Meeting the Universities Expectations**

Understanding the students and instructors requirements is the most important step, because LMS is a central technology component of teaching and learning. The university finds out how the students and faculty feels about the present LMS and what all features need to be evaluated. Our study revealed that the entire faculty used LMS as an online repository for syllabus, lecture slides and assessment activities that instructors post to the students in classroom. Also the instructors do not have any input on the design of the LMS selected by the university.

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**Credibility**

Many organizations raise a red flag against the quality of education in online course. Some even say that online education is not as credible as tradition class learning method and employer even sometimes doesn't allow online students to come up to interview level. They reject candidate saying they have some issues of trust in online education.

**Purpose**

The Purpose of our study is to improve the online learning management system with required changes. Our focus would be more on evaluating the existing learning management system and making required changes for making too convenient to the students and the professors. Our main goals will be to notify the issues like the need for online learning management system, making improvement in the learning management system and also finding values of the learning management system. Our team discussed to answer all the questions and problems facing in online learning system, so that we could make better decisions in making an online learning management system more convenient for the students which helps us to make a better learning management system.
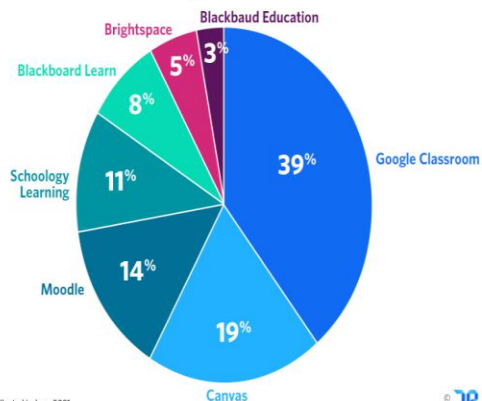
Online Learning Management system provides us with many features, helping the instructors balancing the class and the assigned works better. This software can organize the students into different groups for assigning the projects and assignments. It saves time for both the instructors and students in submitting the assignments and grading too, which makes easy to track for the instructors. Online Learning Management systems are widely accepted by institutions throughout U.S, fulfilling the increasing demands for effective, education and training.

Online Learning Management system is convenient to both distant learning students and also for on campus students. This software helps instructors tracks the students' progress and assesses individual grades. LMS gives flexibility to both the on campus and distance-learning student to see the recorded lecture online. Sometimes online LMS needs extra attention for students who need assistance. There are online calendars to remind the due dates for submitting assignments and also can schedule us.

Online LMS handles any number of delivery modes and have the capacity of enrolling the students, helps in the registration & records department along with the transcripts available online. It also makes the students view their holds if they have any to take necessary steps. This system supports scheduling online classes and preparing reports. Instructors take the advantage of LMS by incorporating evaluation process, assessing the students' progress and the testing capabilities. This whole study suggests us to make our own learning management system, through which the university can customize and implement its options making it easy for online LMS learners. One issue with this is there needs to be a team who monitors the whole system throughout, without any security issues. When a university has its own LMS there are chances of the university beating its competitors by improving their own version of LMS which is easy for their students and can have a complete control over the application avoiding the extra fees for maintenance and stuff. This also gives the university a chance to earn some money by selling their version of LMS to other universities or coaching places.

There are some direct interaction classes we can schedule in LMS which makes collaboration simplify learning. This software supports audiovisual and text formats. It is very convenient for students and instructors to upload and view files, where uploading a media file can be done easily in LMS through Kaltura media. Immediate presentation of the files on the LMS website is done soon after uploading. The instructors have all the facilities to change the design and content the LMS as they want and also the students can change design and view of the contents, as they want. Any changes made by the professors are done according to student's requirement. Professors can reduce their effort and save time by saving the courses for the next semesters. Professors have a choice of attaching external sources or links to the LMS and collaborative



**Market Share of Top LMS Software in 2021**

Blackbaud Education
Brightspace
Blackboard Learn
Schoology Learning 11%
Moodle 14%
Canvas 19%
Google Classroom 39%
5% 3%
8%
*Radius platform data collected in June 2021*
© TrustRadius

tools as they help in giving more information and views for the learners. Improve online Learning management system must need many efforts, issues and looks. It is very necessary to have learning management system which can meet both the professors and students necessities, which works good in long term.

**Research Questions**

    1.   Will fulfilling the students/instructors requirements and update latest technology in the learning management system make any change in the LMS adoption?

    2. Will improving the quality of learning management system increase the credibility standards of the student?

    3. Can the Complicated technology in LMS get any better for the professors and students usage?

### Scope

With rapid growth in network and share technologies, online education becomes the cornerstone of this era. The benefits that online education over is unquestionable. The number of educational institutes that provide e-learning is increasing; blended classes begin design in response to the expanding demand for online education. However, the quality of online education is dubious. Several organizations across the world question the credibility of online education and do not accept its certifications.

Quality is a fuzzy word. It means different things to different people, in our paper; we will focus on quality of faculty training, quality of planning and quality assurance. First of all, quality of training, many professors need training on how to use learning management systems for online education and how necessary to maintain the same quality till the end. Also, quality of training will improve productivity improvement and broaden your knowledge.

Second, quality of planning plays a very important role, as the planning stage is the main role of the project from which the views and opinions are taken into consideration for the achievement of the project. Quality planning does not only improve streamline the project but also improves productivity. It is focused to reach the requirements.

Finally, quality assurance appears in a play in terms of ensuring that the work is running as planned. It checks for any situations that may arise that need correction. It could be anything from professors not performing well in the project. The main part of quality assurance is to make sure that the professors use LMS as required.

As a result, several worldwide calls demand for enhancing and ensuring quality in online education. In our opinion, the low quality education occurs because the poor performance of the current LMS. This paper is important because it focuses on the shortcomings of the current learning management systems, and its role on providing low-quality education. We believe that in order to improve the quality of the online education, we need to fix the method and the media that educational institutions use to provide e-learning.

In our project, we aim to tackle the shortcomings of existing learning management systems and how those weaknesses impact the outputs quality of the online education. We will try to explain the reasons behind the rejection of online education in some organizations.

The project covers all LMS elements (software, hardware, people, data, communications, and so on). Moreover, the project attempts to explain how these elements interact with each other's in order to improve the quality of online education.

### Limitation

During the process of developing the project, we faced two main obstacles, which limited our ability to investigate the project deeply. First, lack of time, the research timeframe limited our ability to investigate each factor intensively. In addition, there is no enough time to conduct an updated comprehensive survey to determine the output of the current online education quality. Therefore, we forced to use pre-prepared surveys in order gain a full picture of the current situation.

The second obstacle is the lack of knowledge and manpower. This forked topic covers many different study fields, which required intensive investigations research. Moreover, the size of the project needed more manpower from different areas and background with various expertise in order to finish the project on time.

### Assumptions

Improving of the learning management system must be implemented in a short period if a university decides to apply it.

We safely made several assumptions in our project. The first assumption is that we assumed all surveys we used in our project were completed honestly, not to weigh results.

Also, we assumed that all organizations that provide online education are using some sort of LMS and their faculty has experience with online teaching.

We assume that LMS will improve online education to help students getting a good knowledge.

Our team assume that IT's department will be able to cooperate with us to implement our goals to apply the best-practice in LMS.

## LITERATURE REVIEW

The goal of our project is to specify the framework of online learning management system. From the past years, little software is used for combining the complex databases and modern frameworks for managing the curriculum, learning materials and others. This latest technology is nothing but the learning management system (LMS). This system has become a powerful tool for organizations, which offer training, schools extension. This is also implemented by the organizations that have ideas for continuing education for its workforce. These LMS have a major impact on the institutions and classrooms as well with the improved technological and market forces.

The Learning Management System provides the users to manage its continues use for a longer period of time. This system has the capacity to balance its technical functionality and ease-of use, as it provides a modern and simple interface.

### ISSUE 1: LMS failure to meet the Expectations

Our review on the surveys found that overall, satisfaction with Blackboard is reasonably high. Although there are parts of the Organization or institution that still want more functionality; many teaching staff report that Blackboard meets their needs of a LMS and they would not welcome change. Despite the reasonably high levels of satisfaction, however, there are issues with the use of Blackboard that need to be resolved. Blackboard is efficiently supported by a very small team which is set up to provide a single system used in a standard and simple manner across a wide customer base (University Of Otago: Information Technology Services, 2013). This team is simply not resourced to provide a wider and more comprehensive service. In the course of the review, we found a few excellent instances of Learning Management System use; and that the consistent element in the provision of the excellent service was appropriate resourcing and managing. Regardless of the system used (whether Blackboard, Moodle or Ocean Browser) a superior and tailored service is possible where additional resource is provided.

There are clearly gaps in the service provided. There is a need for:
- More support for teaching staff who wish to use the advanced features of Blackboard or any other LMS.
- More support for teaching staff who wish to use alternative tools to support their teaching practice.
- Better information about the services available to academic departments

Universities or Organizations are willing to spend a lot on buying the online learning management system which is supportive to the easy adoption of learning management systems. But these learning management systems provided by different companies have their own features and have their own flexibility (Carter, 2011). One of the crucial steps in implementing the learning management system is to find out the organization or institutions requirements while implementing, as it is an important component for online learning management systems. Usually researches are made to see how the employees and students feel about the online learning management systems compared to the current teaching methods (white & Larusson, 2010). Most of the surveys specified that most of the faculty used LMS for posting the assignments, quizzes and other required documents through the online learning management systems. Also the surveys found out more concern from the instructors and professors, as they do not have any control on the LMS which means there was no input or selection from the instructor in choosing the LMS. I believe the professors need more technological knowledge on the LMS, to make it easier for their courses. Sometimes the instructors insist more on physical presence and effectiveness face to face, but some people think there is presence and attention in online teaching as well.

The use of new tools should be coordinated by a centralized service to ensure that innovations are made available across the wider organization. In terms of new tools on the horizon we noted that:

1. The future of LMS will be in smaller and more targeted 'apps' rather than large-scale platforms.
2. eTextbooks or Personal Learning Experiences (PLEs) are digital products and services that engage students through interactivity and offer teaching staff choice in content, platforms, devices and learning tools. This is an emerging technology giving students access to their course materials anytime, anywhere – on their desktops, laptops, tablets or mobile phones.
3. Learning analytics is an emerging field which offers a great deal of potential for Universities. Integration between LMS and the Student Management System will be critical to leveraging these analytics.

Using Learning management system in academic institutions and organizations has become an essential thing. Instructors or professors adapting to the learning management system are the main reason for the success of the technology, but its future is all dependents on the students or learners adopting it easily and continuously. The important factors for the success of LMS are perceived usefulness, perceived ease of use, and user satisfaction from the learner's perspective (McLean, 2005). These factors are related to the major entities of learning management system adoption with characteristics such as

- Student elements like computer anxiety, technology experience, personal innovativeness, and self-efficacy
- Instructor elements like system quality, information quality and service quality.
- Classmate elements like attitude and interaction,
- Course elements like quality and flexibility
- Institution characteristics like management support and training.

Looking at the surveys of the students or learners, the results show that the above factors are important for the success of learning management system other than the management support, self-efficacy and instructor responsiveness. All the success elements are important for the student's usage of LMS in both online and blended learning (Ronald McNeil, 2009). Team members in a group need to be a part of the project progress, if not there is a chance of complete misunderstanding in expecting something different from what is developed, which results in the product which is unwanted. Reaching the expectations and managing them is an important step.

Our main context here is the online learning management system; learners view is considered more who makes use of the learning management system. Therefore the instructors choosing the online learning management system must have a thorough experience in LMS for learning. The LMS implemented by the instructors need an examination of the level of concentration in the materials that is how the materials are presented in the LMS and what the outcome from learners is. The survey conducted from the students experience on learning management system is taken into consideration for any improvements. Our findings from surveys will include university students with at least one semester's experience of learning through LMS. The survey has the participants divided into three groups through random sampling, and provides a one-hour, hands-on demonstration of the program. The program will involve an LMS-based learning task, during which participants will understand a case and complete a quiz. For this purpose, each group will get a different interface of the LMS, each associated with varying levels of flow. Then we will request them to complete a questionnaire survey including measures of the various constructs of LMS model. The questionnaire is designed with items validated in earlier studies. Finally, a pilot study will be conducted involving graduate students. All these steps will establish the instrument's reliability. Various structural models – social-cognitive component, expectation-confirmation components, flow component, and interaction components – will be compared. These will be evaluated for validity using structural equation modeling approach. The comparative strength of the models will then establish the validity of the proposed model. (Babu, 2008)

### Issue 2: Credibility, Quality and Acceptance

Regardless of the enormous benefits of online education, many organizations still question the suitability and credibility of online degrees for real world professions (Hockridge, 2013).The increasing number of institutions offering online education does not intercede for online degrees. According to eLearners.com, there are nearly 200 accredited U.S. institutes that offer online degrees in all level and fields (elearners.com, 2015). However, a national survey conducted by Adams and DeFleur (2005) stated that there are around 678 nonresident degree programs available online, only a handful of these are fully accredited or taught by recognized institutions (p72). Many organizations raise a red flag against the quality of education in online courses. Some even say that online education is not as credible as tradition classes learning method and employers even sometimes don't allow online students to come up to interview level. They reject candidates saying that on-campus degrees are better than off-campus degrees for many reasons (Sadik, 2013).

First, the online degrees have suffered some of its credibility because the misbehavior for-profit institutions. As the number of online students growing, some profit institutions put away some of their enrollment qualifications in order to gain some benefits (Adams & Eveland, 2007). In their paper, Adams and DeFleur return the reason behind this to several critics point to news articles concerning federal funding scams for online educations. Web sites that sell fake degrees, and ethical problems associated with using degrees obtained from unaccredited institutions (2005). These spread news stories increased the general sense of suspicion toward online degrees. In addition, these misstep behaviors resulted in low quality in online educations, which in turn affect the credibility of properly accredited online organizations that offer online programs.

Second, the belief in society those online degrees are unequal to the face-to-face degrees. A survey conducted by Sadik aimed to answer why online degrees are not equal to the traditional education. He asked 479 participants from different business sectors to fill the survey. After analyzing the results, Sadik found that e-learning consider as inferior to traditional education, and degrees earned online are not similar to ones obtained in traditional settings in terms of credibility and quality (2013). Many reasons behind the 479 participants negative judgment. For example, they argued that there is no interaction between students and instructors, and admission regulations are not strict as in traditional education, and quality of learning outcomes (Sadik, 2013).

In addition, students also think that online education is not similar to the face-to-face learning. In his paper, Hockridge stated that many participants to his questionnaire and interview questions raised concerns about the lack of physical presence or face-to-face contact in e-learning (2013). He said that after analyzing the results there was a nearly unanimous agreement there is something different about physical attendance. The participants said that physical communication allows for something unique that cannot be replicated online.

They argued that online interaction lacks a certain quality of presence, and it is harder to pick up body languages such as verbal and visual clues. Other participants noted some difficulties with online interaction. They said that online education could be more time-consuming and require more preparation and effort for both instructor and student. Also, they mentioned how difficult it can be to facilitate, and there is less scope for spontaneity and informal interactions. (Hockridge, 2013).

Third, the quality of online education has been in place for questioning for a long time. Many organizations whether they are governments, profits or non-profits organizations is skepticism of the quality of e-learning outcomes. In his paper, Improving the Tracking of Student Participation and Effort in Online Learning, Douglas (2010) argued that instructors get more support for using learning management systems (LMS) for designing and operating their courses. While assuming students come to the course with the right set of attitudes and behaviors. Douglas added to his argument that in order for students to success they have to more put effort into their learning. Then, he continued explaining how students may not be in the correct psychological frame of mind for learning or may they unaware of the level of effort required. As a result, students may fail the course or graduate with low-quality education (p.173-174).

In the same paper, Douglas (2010) stated that LMS may lack tools for measuring students performance in classes. He said, in the traditional education, there is a strong relationship between attendance classes and high performance (p.174). Douglas showed a study conducted by Chen and Lin in 2008. The study found that there is performance improvement between 9.4 and 18 percent in exams for students who attend classes (Douglas , 2010). He said that LMS has tracking performance systems that is hard to use or not being used by instructors. In addition, Douglas added tracking performance system is not accurate in tracking student's activities. One of examples he provided was that students may login into the LMS to watch a lecture and at the same time they watch T.V. Inefficiency in LMS tracking system resulted in poor quality education since there is no easy way to measure the right performance for students (2010).

The above reasons have its impact on the credibility of online degrees. Online degrees have been suffering little credibility among organizations (employers, academic, society), and e-degree holders faced difficulty getting jobs in some places. In his survey to measure the acceptance of online degree among employers, Sadik found that the concern surrounding e-learning credibility are rigor, mentoring, reputation of the university, accountability, assessment standards, and the challenges to the culture and traditions. Talking in number, there were 479 participants from different education and industry backgrounds.

The survey showed a contrast between participants. Even though, (62.50%) of the participants strongly agreed on the benefits of the online education to solve a lot of educational problems, and (71.25%) said that e-learning may increase access to education and knowledge. (83.13%) of the participants argued that it is much easier to apply for online admission, and (62.50%) said it is easy to cheat on online classes, and (90.24%) said that online students may scarify many aspects of residential education. Lastly, (91.13) respondents strongly agreed and said they prefer to hire a graduate with a conventional degree in a position in their organizations (2013).

To understand the issue of acceptability of online degrees, Sadik asked the participant what their most concerns are. Their responses were those regulations of admission in online learning programs, the originality of students' assignments and course work, and the problem of dishonesty. One of the respondents said, "Acceptability of an online degree depends on the reputation of the university conferring the degree. I cannot accept a degree from any online university and many of them sell fake degrees nowadays." Another participant reported, ""I do not trust the work performed by online students in this kind of online studies. Fraud and counterfeit are very easy and even perhaps anyone can do the work on behalf of the student." (2013).

Another issue reported by respondents such as the quality of online teaching practices, learning resources and the face-to-face interaction between the students and the instructor (Sadik, 2013). Some of the respondents think that the interaction between classmates and teachers is an essential part of learning, and this miss-interaction affects the quality of online education. A participant argued the communication skill by saying "Online students lose the experience of team working and the ability to learn from each other. This experience is useful in many work environments and employers prefer graduates who have them" (Sadik, 2013).

Several big issues are always raised when online education discussed. One of these issues is cheating. When participants in Sadik survey compared between online and traditional education, they would indicate that cheating is their most concern (2013). They believe that online learning makes cheating much easier because the absence of physical monitoring between students and instructor. Also, they said that online learning lack the ability to verify the identity of online students, and anyone can work on his or her behalf (Sadik, 2013).

In addition to cheating, the lack of communication and exchange of knowledge with other students come in as the second concern. As it shown above, many participants feared that online students would lack communication skills and teamwork, which is a highly demanded skills for employers (Sadik, 2013). In their research Erden and Tekarslan, showed that an interview survey conducted by Seibold. Seibold interviews with six HR managers and all of them agreed on that online education might not add to the development of verbal communication and teamwork skills (2014).

**Issue 3: Impact of technology**
Technology has had an impact on every angle of life and function since the start of time.  As the technology that we use grows more and more advanced, there are new and innovative ways to use technology to improve our lives and better our systems.  Learning Management Systems, or LMS, have had their changes over the years, but the impact of technological advances has seen vast improvements recently in the way that we learn and educate.

*Cloud Based Systems*
The cloud has taken over the business world in many aspects, and learning management systems are not exempt from those changes.  With the addition of the cloud, learning management systems can perform massive tasks without the need for a private server and staff to run and manage it.  Cloud computing is cheap, it is quick to implement, and it lowers the total cost of ownership for software and hardware alike, especially when considering constant upgrades and depreciation costs. Further, cloud computing offers the ability to constantly switch and adapt based on industry trends or organizational needs (Gautam, 2012).

The fact of the matter is, the technology industry is always changing.  Keeping up with technology is difficult and expensive, but some companies have made strides to make it easier for end users.  For instance, Pearson, Instructure, LoudCloud, Schoology, and ItsLearning are all examples of companies that have developed cloud based learning programs. The benefits of these are not just the low cost and protection from the volatility of the market, but also the ease of use for instructors and customization that is available.  These software programs are great because instructors can just pick and choose what they need, customize it, and then implement it.  Most of these have easy reporting tools and can tie into other human resources software as needed (Is There a Future for Learning Management Systems, 2012).
*Web 2.0*

A discussion of the impact of technology on learning management systems would be incomplete with the discussion of Web 2.0.   TO better understand, Web 2.0 is the concept of the web being used for more than just a bunch of pointless website, it is the idea of the web as a platform (O'Reilly, 2005).  The biggest change of Web 2.0 was the collaboration of users and the sharing of information.  In the earlier days, website like Britannia dominated the encyclopedia world, but now that website is almost never used and instead more people turn to Wikipedia as a source for quick information.

Learning management systems also benefited from the perks of Web 2.0.  Through the collaboration of users, and also the technology available at the time, more and more software was developed.  With application programming interfaces, such as Flash Player, the learning management system designers can now easily develop software needed for learning systems. Not just that, but also users committed to the learning culture and development of mankind, have created free software and training modules available to all people, that enterprise users can also take advantage of (Lee, 2015).

YouTube is a great example of training website available.  Users can utilize this software, free of charge, for both commercial and personal usage.  Through this online video hosting websites, companies can post training videos or share videos for their employees.  Many channels exist on there that provide free videos offering helpful training topics ranging from ethics to detailed mechanical processes.

There is more, besides the loads of free websites available in training courses, there is learner-generated content that provides great resources.  For instance, W3Schools is a faceting website where users can login and learn a variety of programming languages designed for the web.  The website is free to use, and has courses in all aspects of web development available, and even has useful tools such as a live HTML editor so users can test and practice their new knowledge, while proceeding down a course.

There is even free websites available to learn a language, learn how to cook, and much more. So, the important thing to note here is that Web 2.0 has provided a vast variety of different learning modules for anything that a user could potentially desire to know. Through the collaboration of learners and those willing to teach, the Internet has provided resources on anything that a person may ever need to learn.

*Hardware*
A quick overview of hardware advancements is critical to the analysis. First and foremost, the major technology is the personal computer. This is in the core of the systems in general and where the design and development takes place all the way to the end user usage. The changes in PC technology has allowed for users to not only access core files, but now can take entire courses on a computer. Other hardware that can be used now is devices such as Tablets. But somehow some LMS doesn't work in all aspect ratios. Although they are often most commonly used in primary and secondary education for educational needs, there are still more and more companies using them to roll out training modules to end users. This allows them to save money and make the training more hands on and location based.

*Internet and Telecommunications*
The Internet and telecommunications has already been proven as the biggest change to LMS. With the introduction of the Internet, LMS grew by leaps and bounds and can achieve all of the things that they do now. Cloud based software requires the Internet in order to be useable and further Web 2.0 would not even exist. The massive amount of free or affordable training solutions is available due to the wide usage of the Internet as a business and learning tool. But the biggest challenge LMS faces in this digital era too is the power outage or in case of natural disasters.

## METHODOLOGY

The focus of this paper is to find the problems LMS is facing in delivering a quality education to students, especially for online courses. Though it was believed to be as a boon for education and thought, as it would solve problems for many people, but somehow landed in a position where some organization didn't even accept that degree (Willing, 2001). Our team investigated a lot of journal articles and found that there are many problems LMS is facing now days. Out of the many factors, the first factor which was the quality of education. Since when we talk about quality, the first and foremost thing that comes into picture is cheating (Ravenscroft, 2001). One of the best way our team analyzed based on the research results and what we believe that would be a perfect solution was to implement software like 'Examity' which is online monitoring of examinee. Secondly, the issue we came up is that of communication, where it is believed that online students are not as good as communicating with others as on-campus students (Garison, 2000). In order to find a solution to the problem we had a discussion with our professor and discussed how we can solve the solution of the problem. After visualizing the problem completely, we found that we can have group meetings where students have to chat together for any group assignment.

Also we found that some teachers were not able to handle LMS completely as they are not that familiar with computers or with LMS (especially a professor of accounting or statistics usually don't know much about computers), which is difficult for them to operate. Also, when professor moves from one university to another, it is possible that there is different LMS used in those universities. Thus, that professor again lands in that difficult situation (Carter, 2011). In order to avoid that situation, every LMS comes with its tutorials or seminars both for professors and students. But sometimes, out of the sake of laziness we tend to avoid those seminars. After analyzing this situation, our team after discussing with professor and taking ideas from journals, finally found a solution as no matter what, first thing which should be provided either to student or professor is to give tutorial or online seminar so that they can understand LMS properly and utilize it to its core (Oliver, 1999).

## RESULTS AND DISCUSSION

The interviews conducted on students and teachers revealed substantial information concerning Learning Management Systems. The individual replies for each participant was unique from another but there was a commonality in the aspects that were noted as significant. The satisfaction of an LMS user was key to the effectiveness of the desired learning objectives. However, satisfaction was highly dependent on the LMS design, user interface, navigation, controls, keyboard shortcuts and content, the easier an interviewee was able to use a particular LMS, the higher the probability that their learning objectives were met. Teachers and trainers indicated that they highly regarded a Learning Management System by the effectiveness through which they were able to teach their students. Communication was also very important for all interviewees in that they rated a Learning Management System highly if its design provided easy and effective communication between student and teacher.

Availability and run time were other important aspects that determined the effectiveness and acceptance of a certain LMS (Kenneth , 2006). Particularly, all these factors were dependent on the design process and the user involvement during development. Developers who were part of this research indicated that the most significant challenge was the incorporation of user expectations during the design phase. Developers indicated that users offered a myriad of opinions, ideas and expectations that it was rather difficult to come up with a product that satisfied all user opinions in one Learning Management System. However, as noted below some LMS such as Canvass seemed to exceed several customer expectations despite complaints that are always present.

### Satisfaction

It was noted that Learning Management Systems were yet to garner the desired effects on their users due to compatibility issues, unfriendly user interface and difficulty in operation (White & Larusson, 2010). Below is a graph that signifies the satisfaction rate:

Notably, Learning Management Systems have a significant following but also indicate a 24 percent dissatisfaction reaction. The number of dissatisfied users was only a fraction of those satisfied by LMS but it was still a worrying statistic in that the target was 100 percent acceptance. The findings indicated the increased need for a more inclusive system design process that extensively incorporated user feedback and participation.

Despite the various challenges that Learning Management Systems have, it was important to note that significant effects to learning in the institutions that incorporated the technology (Caly, 2009).

### Free Flow of Ideas

Learning Management Systems helps open channels between the various groups in an institution especially between a school's management, teachers and their students in relation to education (Caly, 2009). In some cases, Learning Management Systems have enabled an open policy in the institutions wherever educational matters are concerned (White & Larusson, 2010). The institutions actually stated that the many ideas coming through their Learning Management Systems portal generated significant learning strategies that have improved operations between teachers and students. The Learning Management Systems portal helps in the flow of information and ideas freely between the entire fraternities concerned with student education. Thus, Learning Management Systems technology brings about an ideal situation where ideas pass from one area to another with ease, which leads to insight and innovation by the institution.

### Timely Information

Learning Management Systems initiatives have helped the learning process to ensure that the right information gets to the right people at the right time (White & Larusson, 2010). Through the educational portals that many institutions of learning have established, information is easily and quickly relayed from the teacher to the class in which it is required. This ensures that the learning resources are available and readily accessible at the moment the students need it. Therefore, the learning outcomes and targets set for each class are achieved effectively and on time. The teacher is also able to make vital decisions affecting the student's learning without taking long periods.

### Improved Student Discussion and Learning-Related Communication

Introduction of Learning Management Systems in the learning process has helped improve the communication mode in the institutions (Caly, 2009). Students and the school's teachers are now able to communicate more freely especially through the established communication forums. Learning Management Systems usually have forums through which students can discuss certain relevant topics and involve their teachers in instances that need clarification. An essential characteristic of the Learning Management Systems is that these discussions and teacher assistance can be achieved from home or other different locations. Students and teachers are no longer confined within the forum walls of a classroom. Learning Management Systems have literary enabled formal learning to occur anywhere in the presence of the internet (Caly, 2009). Some of the systems are compatible with mobile devices such as smart phones and tablets.

### Content Consistency

Learning Management Systems has been known to bring about consistency in that the documented learning materials are constant in nature unless the school administration makes a formal change (Caly, 2009). Current students learn what their predecessors learnt a fact that allows inter level interaction in terms of education. It is noteworthy that an older student can easily support a younger colleague on a particular topic exactly as the younger requires. This is especially so in the student's learning process as guided by peers who have passed their level of education. It is important to emphasize that consistency is very important in an individual's formal educational process. Frequent alterations in a learning process could be detrimental to learning quality and cause possible failure in related topics. Analysis of data collected from various sources and Learning Management Systems installations has enabled students to continue learning in ways that are

consistent and geared to the improvement of education provision in institutions (White & Larusson, 2010). Learning Management Systems facilitates better and more informed debates that bring about consistency in various educational topics.

### Student Participation

Learning Management Systems is also important since it allows involvement of students in a school's learning strategies as well as eliciting personal learning process targets. In some cases, the school is able to take in students' views and suggestions concerning their learning methods. Student participation helps to improve learning quality and efficiency. Student feedback is a vital tool in a teacher's attempt at improving their teaching approaches. Learning Management Systems has enabled students to take part in learning growth plans by giving suggestions, compliments and complaints and by generally being open with their teachers and school administrations. Information from the students is then used in formulating of learning strategies with the aim of improving education (White & Larusson, 2010). It also means that students are involved in action learning which has a proven advantage over traditional classroom learning.

The information and technology effects of Learning Management Systems in various institutions as noted above are somehow related. The Learning Management Systems portal is a technological tool used by the schools to facilitate information sharing between teachers and their students in an effort to enhance formal learning processes. Thus, the technological effects on learning management implementation help in easier information dissemination for teachers and students (Kenneth, 2006).

Apparently, all authorized individual accesses learning and development resources through a Learning Management Systems portal. An increase in technology impacts on Learning Management Systems will automatically lead to an increase in educational access, issues and challenges as more information will be collected, analyzed and used to identify improvement possibilities. It is vital to note that Learning Management Systems require training for both teachers and students prior active implementation of the technology in any particular institution (White & Larusson, 2010).

### System Development and Design in Relation to LMS Effectiveness

It is very essential to note that the effectiveness of Learning Management Systems significantly depends on the system development of the portal and its structures. Effective system development is therefore vital to the success of these portals and requires significant consultation, research and design quality.

The graph below indicated the effectiveness and acceptance of various Learning Management Systems in terms of various factors such as user interface, course content and student learning among others (White & Larusson, 2010). This was a way of indicating the significance of content, design and operability of Learning Management Systems. It was notable that Canvas LMS exceeded expectations in many ways as opposed to Moodle and Blackboard. Notably, Blackboard indicated a lot of design issues that affect its capabilities in meeting user expectations and LMS objectives.

The traditional system development process is renowned for its biasness towards the technical mechanisms such as process capabilities, knowledge sharing abilities, software development methodologies and tools (Fadeyev, 2009). Such an approach has always been characterized by the system developers solely designed technical systems that only meets specific user needs. Because of such an approach, it was a common occurrence to find a large portion of a system's total development budget and time being spent after the implementation in the further refinement of system requirements and dealing with the system baggage associated with bugs. The uncertainties and imperfections associated with such an approach have been because of system developers and managers solely relying on their technical abilities in the system development process (Fadeyev, 2009). The system development process can be improved by creating a joint optimization system that involves the maximization of both the system managers' technical and social abilities.

Joint optimization refers to the ability of accomplishing tasks using both the technical and social elements that are involved in the specific task (Fadeyev, 2009). The key in achieving a workable joint optimization strategy is in designing the task so that both the technical and social elements yield positive outcomes. Achieving a joint optimization strategy in the system development process has been deemed as a complicated task due to the underlying need to include multiple skills within the system development environment and the dynamic interrelationship between these skills.

Despite the associated challenges, the achievement of joint optimization in the system development process is mandatory. It has always been argued that the system development process is a core technical area that requires only solid analysis and programming skills. In the event that a developed system does not meet its purpose, the same programmers would just be called in to fix the bugs and throw back the system back to the users (Cynthia & Davi, 2010). Such an approach has further been advocated for because of the deemed un-sustainability of both the technical and social aspects of work in a similar

workplace leave alone a similar project. Such a strained relationship between the two requirements for joint optimization has further been boosted by the stereotypes propagated against geeky system developers as people with limited social capabilities.

If the traditional approach is allowed to persist in the development and management of Learning Management Systems, then the resultant approach would always be systems that have shot way over their budget and still incapable of meeting the user needs. The involvement of the system developers and managers' social abilities and technical skills has come to be known as a socio-technical approach in the system development process. The socio-technical approach to system development is that which recognizes the joint relevance of both people and technology in the system development process (Cynthia & Davi, 2010). It recognizes the unavoidable interaction between people and the system and it's based on the firm believe that ultimately, any system is developed for human use. Thus, the joint optimization of the expected multi skills of the system developer and project manager in interacting with the probable users of the system and their technical skills in the system development life cycle is the only way through which the system development process can be improved.

An appropriate model for the application of joint optimization in improving the system development process will include a comprehensive assessment of the existing development process (Kenneth , 2006). To start it off, the system design process is itself a social process in equal measure to the requisite technical process. The system design process begins at the point where the system requirements are defined. The trend in system development has been to view the system requirements as the technical requirements of the system. To a system developer or manager, system requirements would literally involve such things as the server capacity or model, database modeling and the system's programming language (Kenneth, 2006). The system requirements have to be relooked to include a phase where the system costs and benefits are refined and the user requirements are outlined (Cynthia & Davi, 2010). Such is the required social process in the system design procedure.

Another assumption that many Learning Management System developers and managers have regarding the development of Learning Management Systems is that the traditional system development life cycle is the most appropriate way to develop most systems. The methodologies in the system development life cycle are important tools in the development of Learning Management Systems (Kenneth , 2006). It has often been argued that it is the most effective way to guarantee a quality product out of the system development process. System developers believe that a slight diversification from the traditional system development lifecycle would sabotage the entire process (Cynthia & Davi, 2010). Such thoughts are imparted on prospective system developers and managers very early into their career journey. In most instances, it is the only system development approach that is taught in a typical system development class. Alternative approaches to system development that includes more social procedures should thus be explored to improve the development process.

An appropriate development procedure that by default involves joint maximization includes the evolutionary development process where the system is developed through an iterative approach that is designed to address the critical problems of throughput and classification of user requirements (Kenneth , 2006). Incomplete pieces of the system which are however usable are deliverable to the users in a series of short rapid iterations. The system developers are thus able to deal with the emerging social-technical challenges as they arise before the ultimate system is finally deployed (Cynthia & Davi, 2010). The most challenging social aspect of any Learning Management System is the provision of user support and the response to queries.

In the traditional SDLC, system managers and developers are only able to provide user support services after the entire system has been developed and deployed. They are not able to figure out the likely challenges that the users might experience from using the system unless the system has been concluded and tested by the users (Cynthia & Davi, 2010). The approach in evolutionary development is very different because the users are involved every while in the system development procedures. Their expected challenges are easily documented and the appropriate support systems are documented and implemented before the system is finally deployed. Developers noted that good teaching management systems are never achieve because of a good technology nor the SDLC, good systems are about the users (Cynthia & Davi, 2010).

### Interface Design

User interface design is a crucial aspect in system design for the development of an efficient and effective human computer interaction (Fadeyev, 2009). As technology improves, so does an aspect of design as well as their development. Most Learning Management System developers indicated that the fundamental goal in system design is to make the system as usable as possible with the application of the quality of simplicity. Simplicity as it is found in research is an aspect thrived for by designers in user interface design. Interface techniques are therefore vital in the development of user interfaces void of complexity and difficulty during operation by anyone interacting with the system (Fadeyev, 2009). Most Learning Management System users disclosed that user interface is declared effective by the determination of how well they

interacted or figured out how to operate the device or system. The simpler it is for the user to use the LMS, the higher they rated the interface and system. An interface void of clutter is an interface that the user finds as user friendly, thus an excellent user interface.

### Interface Navigation in Relation to LMS Effectiveness

It is also very important that the designers include the provision of keyboard shortcuts in the user interface design (Fadeyev, 2009). As indicated earlier in the paper simplicity in a user interface is an essential aspect for the design development faces. Keyboard shortcuts enable the user to switch between sections of the system as changes occur to view whatever content he or she so pleases. This technique effectively advances the users' workflow consequently easing their interaction with the system via the user interface; in this case a graphical user interface to complete their tasks (Fadeyev, 2009). These shortcuts should however be rather obvious in that shortcuts for related actions such as 'previous' and 'next' should be next to each other in order to ease navigation. Implementing this technique this way allows reuse and tolerance on the part of the user.

### Controls in Relation to LMS Effectiveness

Use of hover controls is another crucial user interface technique that easily and efficiently enables the user to easily understand the system (Fadeyev, 2009). Hover controls reduce the number of visible controls that would otherwise distract and subsequently confuse system users. It also helps to prioritize controls in that only high priority controls are visible while less priority controls can only be accessed by hovering over the visible controls. Ease of access is therefore achieved by use of this technique.

## RECOMMENDATIONS

Programming skills and their intellectual values should not be discarded; they should just be blended with an appropriate amount of socialization skills if the system development process is to be improved. Socialization is a function of one's upbringing, their support system and their experience. The most recent trend in software and system development process is offshoring. This is whereby the system development process is split between developers in different geographical areas involving offshore team members. A learning management system developer in the United States would be responsible for the system design procedure yet a programmer in India would do the coding. According to research results, the use of a multi skilled team in the LMS development process was found to be positively correlated to the performance measures under study and as well as the systems development process maturity level. It will also ensure that most of the challenges in the current LMS are eliminated for a better effective and acceptable learning tool.

The capabilities of the system development process can only be improved by adapting a more holistic approach to system development that involves. The holistic approach is that which looks at the system development process from a socio technical perspective. The system development process should be viewed as a collaborative process that is embedded in a technical and social subsystem. It is quite essential that developers formulate a workable method of collecting and analyzing the ideological contributions of various stakeholders. The most relevant stakeholders in terms of users include students, teachers, institution administration personnel and platform developers. It would become easy to meet user expectations as well as exceed them while incorporating social aspects to the LMS.

It is also recommended that effective awareness be conducted over the use of all available learning management systems so that various institutions can deliberate on the best fit. It is important to note that most schools have varied IT equipment and software. This means that the most appropriate LMS for a particular school may not be applicable in another. However, it would be more appropriate for developers to focus on the development of LMS that is can run on multiple platforms and is compatible with all common hardware and software. Extensive research is however needed on the development of learning management systems as the education sector grows and changes in various aspects as technological advances are achieved on a daily basis.

Users and developers need to have more forums in which they collaborate on information relevant for the development of better LMS to suit learning objectives. Institutions should also be encouraged to adopt LMS in their education dissemination. This will encourage diversity of enrollment from all over the world. It also enhances distance learning and e-learning programs that enable the availability of education to regions challenged in terms of accessibility.

The increased popularity of LMS has made developers to be highly dependent on client feedback and thus have to continuously reinvent themselves as social learning systems. The disparity between relevance and rigor as pointed out earlier is a wakeup call for management researchers who should endeavor strives to make their research relevant to the target field whether it is management or otherwise as earlier observed. To bridge the gap between relevance and rigor, it is desirable for both the aspects under research and the researcher ultimately belongs to the same social system. It is now clear

that without the social aspects in system development many clients are unsatisfied with the LMS features, characteristics and effectiveness.

Essentially, LMS designs are expected to improve exponentially with the advancement in technology, research and information availability. It is important that developers improve on the current user interfaces to accommodate usability and user acceptability. Effectiveness, ease of use as well as quality of learning, are the three main factors that need enhancement to ensure the objectiveness of all LMS. LMS will grow in scope and usage only after these design issue are addressed through the collaboration of all stakeholders during the requirements stage as well as the design phase.

## CONCLUSION

Learning management systems are definitely an effective way of diversifying the learning process in schools and at home. In the research report, we noted that there were various aspects of Learning management systems that affected its effectiveness, acceptance and usability. The main purpose of learning management systems is to ensure the availability of learning content is enhanced over the Internet to guarantee its accessibility wherever there is an internet connection. The various and most commonly used LMS include Moodle, Blackboard and Canvass. Each LMS has its own levels of effectiveness, acceptability, usability and accessibility. Many LMS users seemed to advocate for Canvass, as it seemed to exceed most of their expectations. Apparently, Canvass is very easy to use in that its user interface is friendly to users and it exhibits a high level of compatibility with all operating systems and other relevant platforms an information process. It is therefore important to emphasize that the user interface of learning management systems is vital for it to achieve desired goals and command a high acceptance rate.

It is important to conclude that many institutions implementing the Learning management system need to welcome the reviews from management, students and trainers with the aim of identifying the effectiveness of their learning portals and the changes that may be imminent. Also, some of the most significant technological advancements in universities related to information technology segment is the incorporation of these Learning Management Systems (LMS).

LMS are particularly striking to universities since they facilitate e-learning and distance learning programs that attract more students to enroll without the necessity of physical infrastructure. In addition, with the introduction of e-learning, many people started to continue with their studies in terms of postgraduate programs more than they did before LMS. This was specifically because of the accessibility and flexibility that LMS offers in that working professionals can enroll in programs that they can study without having to physically be in a classroom.

LMS is now significantly accepted in almost all institutions within the United States and in most countries around the world. LMS was also aimed at maintaining the consistency of the course syllabus. It is now easier to give and submit assignments and ensure that students and teachers maintain stipulated schedules. The consistency aspect enables every user to have a point of reference for all past and current course activities. Learning management systems have increasingly made it easy to conduct learning activities at school a well as manage content at a personal level for both teachers and students. Incredibly, teachers can conduct exams through the LMS where in some cases; students get their results instantly upon completion. In conclusion, we note that LMS defines the next level of formal learning where physical classrooms will not be relevant for effective learning.

However, the LMS characterize various disadvantages in terms of quality of education, usability and accessibility. LMS are specifically dependent on the presence of a network and other information communication technology resources. In their absence or ineffectiveness, the LMS cannot operate as required and will fail in the delivery of its expected objectives. Second, these systems need to be user friendly in terms of design and user interfaces. Otherwise, they become difficult to use which results to unmet expectations and ultimate rejection from users. The quality of education is also a contentious issue that surrounds LMS technology as they are expected to offer the same and better service as a teacher in a classroom. It was also noteworthy that many research participants who had used Learning management systems or were enrolling into a school, were very excited about the portals. We quickly concluded that the unacceptability of LMS in most cases was not because of resistance to change but rather because of difficulty in using the portals. LMS users want to access a portal and get the information needed as quickly and accurately as possible. A teacher does not want to post an assignment or course notes over an LMS only for his or her students to fail in accessing it as expected. Real time accessibility is also very important in that communication and information uploads and downloads should be timely and available whenever needed. For the improvement of the development of LMS however, it should be acknowledged that as much as a comprehensive social-technical approach to system development is the way to go, the requisite social skills are not usually taught in a typical computer science or information technology class. The social aspect of computing is often left out in most academic

syllabuses. Degrees in computer sciences and information technology are getting more and more biased towards the programming element of the system development life cycle.

Learners and graduates are keener to learn to program in almost all functional languages and to analyze systems for complexity and other parameters. The folly of such an approach is that even the tutors have very little idea of the experience in real world computing. This has been precipitated by the little contact that academic instructors have continuously kept with industries. This is however about to change as some academic institutions are setting up collaborative programs with computing and information system industry leaders.

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