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A STUDY ON LEARNING MANAGEMENT SYSTEM (LMS) COURSE LEARNING EFFECTIVENESS AMONG USERS AT WORKPLACE

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ABSTRACT

The purpose of this study is to determine the learning effectiveness of Learning Management System (LMS) Course among users at workplace in the context of user experience. Specifically, to investigate the learning effectiveness through the experiences and satisfaction underwent by coming across the quality factors of LMS. Quality factors of LMS like pedagogical design, interface design, content presentation format, transfer of learning and feedback of learning were considered for finding the opinion differences of the experiences among the users. Data were collected through questionnaire from 474 banking professionals working under both public and private category. The banks chosen were those that had already been running LMS platforms for training their employees. The study found a significant difference in user's opinion on the pedagogical design, interface design, content presentation format, transfer of learning and feedback of learning along with learner experience and learner satisfaction. It is also observed that, there was a significant difference between the male and female users of the LMS platform among all the LMS quality factors concentrated in the study.

KEYWORDS
Learning Management System, Workplace Training, Learner Experience, Learner Satisfaction

INTRODUCTION

Learning management systems (LMS) are frequently used by corporations for training initiatives (Wirtky et al., 2016), and they play an important role in the management of learning in organizations (Dunne & Butler, 2004). These learning systems are information systems (IS) that companies use to deliver, assess, and manage education and training (Islam, 2012); as a result, they are particularly important for human resource departments to ensure the timely and effective delivery of learning content to a large number of people in an organization (Welsh, Wanberg, Brown, & Simmering, 2003).

From USD 247 million and over 1.6 million users in 2016, India's online education market was expected to expand to USD 1.96 billion and around 9.6 million users by 2021. The largest category in 2017 was reskilling and online certifications, which accounted for USD 93

million in 2017 and was expected to reach USD 463 million by 2021. Technical certificates are the most popular type of course, and they are the category that will be driven by the growing need for re-skilling and up-skilling among India's working population (KPMG India & Google, 2017).

As corporations and government agencies install LMS platforms to enhance employee education and training (Oztekin et al., 2010), there is a need to utilize appropriate approaches to evaluate these platforms by measuring their effectiveness so that is possible to improve their quality and, consequently, the learning and teaching process through them.

LITERATURE REVIEW

Al-Busaidi and Al-Shihi (2010) developed a theoretical framework for evaluating instructors' acceptance of LMSs based on the Technology Acceptance Model. They looked at the most important criteria that determine teachers' perceptions of how easy LMSs are to use and how beneficial they are. These considerations are centred on the instructors, the organisation, and the technology: Organizational factors include motivators, technology alignment, organisational support, technical support, and training; technology factors include system quality, information quality, and service quality. Instructor factors include perceptions of self-efficacy, attitudes toward LMS, experience, teaching style, and personal innovativeness.

Beth Rubin, et al. (2013) extended their research on the Community of Inquiry (CoI) framework of understanding features of successful online learning to include the effects of the software used to support and facilitate it. The study looked into how people can use a Learning Management System (LMS) to take actions in an online course. The influence of LMS affordances on the Community of Inquiry and course satisfaction was explained using a model, and numerous hypotheses concerning their links were evaluated. A pilot study discovered that, despite the fact that two common Learning Management Systems featured different features, faculty used and perceived the tools differently. Surveys were given to 605 online students at a large Midwestern university in the following quantitative study. According to regression analysis, perceived LMS affordances predicted student teaching, cognitive, and social presence, and contentment with the LMS predicted course satisfaction.

Tanmay Kulshrestha and A Ravi Kant (2013) did a study on the benefits of LMS in Indian Education examining the awareness levels, degree of familiarity and readiness to accept e-learning environment. They discovered that LMS/E-Learning serves as a means of acquiring knowledge through the use of technologies such as the Internet and Interactive based on traditional methods, allowing for learning over a broad spectrum with more efficiency. They discovered that under the LMS process, professors can submit course materials such as lecture notes, e-books, assignments, quizzes, and mid-semester exams, while students can access the same using their login credentials. They discovered the following advantages of LMS: Contents can be repeated until the learner understands it completely; Multimedia learning methods can be used depending on the learner's receptivity; E-learning is culture independent; Learning is flexible in terms of timings and syllabus completion; Individual problem solving is possible.

Emelyanova and Voronina (2014) investigated stakeholders' perceptions of the LMS's convenience, effectiveness, and usefulness. These researchers stressed the human component approach, claiming that it is a necessary condition for the LMS to succeed. They also mentioned that many learners believe there is a problem with LMS usability. Furthermore, they discovered

that the perceived ease of use of a learning management system (LMS) does not always suggest its value as a learning aid for some students.

Sangjae Lee and Byung Gon Kim (2015) investigated the users' preferential factors of ease of workplace learning in Korean Web-based e-learning systems (WLS) business organizations. A total of 517 employees from five major Korean conglomerate firms completed a Web-based training session and completed the survey questionnaire. Selection of contents, clarity of contents, feedback of learning, controls process, possibility of motivation, and information sharing were found to be the most important factors for ease of workplace learning in WLS, which is consistent with previous studies such as Lim et al. (2005) and Kahai and Cooper (2003), which posited the importance of feedback in subsequent task performance.

OBJECTIVES OF STUDY

- To study the demographic characteristics of the LMS platform users.
- To find the association within the demographic characteristics of the LMS platform users.
- To analyze the difference in opinion towards LMS course learning effectiveness among users' demographics (Gender, Education Qualification, Bank Type, Age, Work Experience, LMS Experience, Designation and Computer Knowledge) and LMS quality factors (pedagogical design, interface design, content presentation format, transfer of learning and feedback of learning, learner experience and leaner satisfaction).

METHODOLOGY

From the investigation of banks that have been already using Learning Management System (LMS) for training their employees, it has been found that out of 885 branches in the region, 594 bank branches are using LMS platform. Therefore, the sampling frame for the study is 2500 bank employees.

Banks has been classified as Public and Private. Classification of the banks into stratas is the first stage, second stage is by applying proportionate random sampling (lottery method) the branches of the banks are selected according to their proportion, and also equal chances were given. In the third stage for the selection of sample units, again random sampling was applied to arrive at a sample size of 500. 474 responses were found to be valid out of 500 questionnaires circulated.

DATA ANALYSIS

Table 1: *Frequency Distribution for Demographic Characteristics of the LMS platform users (n=474)*

Variable	*Category*	*Frequency*	*Percent*
Gender	Male	191	40.3
	Female	283	59.7
Age	18-25	231	48.7
	26-35	135	28.5
	36-45	54	11.4
	46-55	18	3.8
	above 55 years	36	7.6
Educational Qualification	Graduate	294	62.0
	Post Graduate	180	38.0
Designation	Junior Level Management Grade	155	32.7

	Middle Level Management Grade	144	30.4
	Senior Level Management Grade	131	27.6
	Top Level Management Grade	44	9.3
Work Experience	< 1 year	69	14.6
	>= 1 year and < 3 years	101	21.3
	>= 3 years and < 5 years	86	18.1
	>= 5 year and < 7 years	48	10.2
	>= 7 years and < 9 years	75	15.8
	>= 9 years	95	20.0
Experience in LMS	>= 6 months and < 1 year	125	26.4
	>= 1 year and < 2 years	193	40.6
	>= 2 years and < 3 years	70	14.8
	>= 3 years and < 4 years	24	5.1
	>= 4 years	62	13.1
Bank Type	Private Bank	274	57.8
	Public Bank	200	42.2
Computer Knowledge	Average	5	1.1
	Excellent	186	39.2
	Good	152	32.1
	Satisfactory	3	.6
	Very good	128	27.0

Source: Authors Compilation

The table above shows the frequency distribution of the LMS user demographics. Gender has shown that females have the highest frequency value of 283 (60 percent), while males have 191 (40 percent) frequency values. Between users' age distribution, 49 percent (majority) of them come under the 18–25-year age range. Majority (62%) of the users are graduates. Designation level shows that 32% of the users fall under the category Junior level management grade. Majority (21%) of the users' Work experience, range between greater than or equal to 1 year and less than 3 years. Users' experience in LMS shows that most of them (41%) range between greater than or equal to 1 year and less than 2 years. Majority (59%) of the users are from Private banks. Most of them (39%) have excellent Computer knowledge.

Table 2: *Association between demographic characteristics and LMS Experience, Work Experience and Computer Knowledge*

Variables	*Pearson Chi-Square*		*Strength of Association*	
	Value	*p*	*Cramer's V*	*Strength*
*Gender * Work Experience*	23.264	**.000**	.222	Small
*Gender * Experience in LMS*	10.864	**.028**	.151	Small
*Gender * Computer Knowledge*	18.317	**.001**	.197	Small
*Age * Experience in LMS*	284.188	**.000**	.774	Strong
*Age * Computer Knowledge*	54.720	**.000**	.340	Moderate
*Education Qualification * Work Experience*	17.934	**.003**	.195	Small
*Education Qualification * Experience in LMS*	9.545	**.049**	.142	Small
*Education Qualification * Computer Knowledge*	11.194	**.024**	.154	Small
*Designation * Work Experience*	235.558	**.000**	.705	Strong
*Designation * Experience in LMS*	114.702	**.000**	.492	Strong
*Designation * Computer Knowledge*	12.076	.440	.160	Small
*Work Experience * Experience in LMS*	295.471	**.000**	.790	Strong
*Computer Knowledge * Experience in LMS*	73.992	**.000**	.395	Moderate
*Bank Type * Experience in LMS*	83.390	**.000**	.419	Moderate

Bank Type * Computer Knowledge	5.096	.278	.104	Small

Source: Authors Compilation

The above table shows that, there is a significant strong (V=.790) association between work experience of the users and their experience in LMS. There is a significant strong (V=.774) association between age of the users and their experience in LMS. There is a significant moderate (V=.419) association between bank type of the users and their experience in LMS. There is a significant moderate (V=.395) association between computer knowledge of the users and their experience in LMS. There is a significant moderate (V=.340) association between age of the users and their computer knowledge. It is understood from the table that, there exists no association between designation levels of the users and their computer knowledge, and also there is no association between bank type of the users and their computer knowledge.

Table 3: Independent Sample t-Test between Gender and LMS Quality Factors

LMS Quality Factors	Gender	M	SD	T	p
Pedagogical Design	Female	4.22	.516	4.040	**.000**
	Male	4.02	.561		
Interface Design	Female	4.17	.464	3.113	**.002**
	Male	4.02	.570		
Content Presentation Format	Female	4.19	.494	3.108	**.002**
	Male	4.04	.538		
Transfer of Learning	Female	4.16	.530	2.673	**.008**
	Male	4.02	.599		
Feedback of Learning	Female	4.07	.576	2.096	**.037**
	Male	3.94	.700		
Teaching Presence	Female	4.17	.482	3.834	**.000**
	Male	3.98	.564		
Social Presence	Female	4.13	.582	2.420	**.016**
	Male	3.98	.681		
Learner Satisfaction with LMS	Female	4.13	.529	3.563	**.000**
	Male	3.93	.655		
LMS Course Learning Effectiveness	Female	4.22	.535	3.274	**.001**
	Male	4.02	.688		

Source: Authors Compilation

The above table shows the independent sample t-test results between gender of the users and their response on LMS quality factors. There exists a significant difference in opinion between male and female users on their response on 'Pedagogical Design', 'Interface Design', 'Content Presentation Format', 'Transfer of Learning', 'Feedback of Learning', 'Teaching Presence', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale: 'Pedagogical Design', female users have highest mean score (M=4.22). For the scale: 'Interface Design', female users have highest mean score (M=4.17). For the scale: 'Content Presentation Format', female users have highest mean score (M=4.19). For the scale: 'Transfer of Learning', female users have highest mean score (M=4.16). For the scale: 'Feedback of Learning', female users have highest mean score (M=4.07). For the scale: 'Teaching Presence', female users have highest mean score (M=4.17). For the scale: 'Social Presence', female users have highest mean score (M=4.13. For the scale: 'Learner Satisfaction with LMS',

female users have highest mean score (M=4.13). For the scale: 'LMS Course Learning Effectiveness', female users have highest mean score (M=4.22).

Table 4: *Independent Sample t-Test between Education Qualification and LMS Quality Factors*

LMS Quality Factors	Education Qualification	M	SD	t	p
Pedagogical Design	Graduate	4.07	.568	-1.755	.080
	Post Graduate	4.16	.520		
Interface Design	Graduate	4.04	.526	-2.125	**.034**
	Post Graduate	4.14	.544		
Content Presentation Format	Graduate	4.06	.531	-2.448	**.015**
	Post Graduate	4.18	.509		
Transfer of Learning	Graduate	4.05	.570	-1.407	.160
	Post Graduate	4.12	.585		
Feedback of Learning	Graduate	3.96	.629	-1.135	.257
	Post Graduate	4.04	.696		
Teaching Presence	Graduate	4.00	.526	-2.625	**.009**
	Post Graduate	4.14	.553		
Social Presence	Graduate	4.03	.618	-.360	.719
	Post Graduate	4.05	.692		
Learner Satisfaction with LMS	Graduate	3.98	.615	-1.427	.154
	Post Graduate	4.06	.614		
LMS Course Learning Effectiveness	Graduate	4.07	.638	-1.252	.211
	Post Graduate	4.15	.635		

Source: Authors Compilation

The above table shows the independent sample t-test results between education qualification of the users and their response on LMS quality factors. There exists a significant difference in opinion between graduate and postgraduate users on their response on 'Interface Design', 'Content Presentation Format' and 'Teaching Presence'. For the scale: 'Interface Design', postgraduate users have highest mean score (M=4.14). For the scale: 'Content Presentation Format', postgraduate users have highest mean score (M=4.18). For the scale: 'Teaching Presence', postgraduate users have highest mean score (M=4.14). For the scales 'Pedagogical Design', 'Transfer of Learning', 'Feedback of Learning', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness' there is no significant difference among graduate and postgraduate users.

Table 5: *Independent Sample t-Test between Bank Type and LMS Quality Factors*

LMS Quality Factors	Bank Type	M	SD	t	p
Pedagogical Design	Private Bank	4.11	.545	.307	.759
	Public Bank	4.09	.562		
Interface Design	Private Bank	4.08	.536	.122	.903
	Public Bank	4.07	.535		
Content Presentation Format	Private Bank	4.10	.527	.089	.929
	Public Bank	4.10	.525		
Transfer of Learning	Private Bank	4.10	.566	1.315	.189
	Public Bank	4.03	.588		
Feedback of Learning	Private Bank	4.03	.608	1.370	.171
	Public Bank	3.94	.714		
Teaching Presence	Private Bank	4.08	.513	1.383	.167
	Public Bank	4.01	.573		
Social Presence	Private Bank	4.10	.576	2.331	**.020**
	Public Bank	3.96	.726		
Learner Satisfaction with LMS	Private Bank	4.03	.619	.681	.496
	Public Bank	3.99	.611		
LMS Course Learning Effectiveness	Private Bank	4.14	.629	.945	.090
	Public Bank	4.04	.645		

Source: Authors Compilation

The above table shows the independent sample t-test results between bank type of the users employed and their response on LMS quality factors. There exists a significant difference in opinion between private and public bank users on their response on 'Social Presence'. For the scale: 'Social Presence, private bank users have highest mean score (M=4.10). For the scales 'Pedagogical Design', 'Interface Design', 'Content Presentation Format', 'Transfer of Learning', 'Feedback of Learning', 'Teaching Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness' there is no significant difference among private and public bank users.

Table 6: *One Way ANOVA between Age and LMS Quality Factors*

LMS Quality Factors	Age	M	SD	F	p
Pedagogical Design	18-25	4.09	.540	4.544	**.001**
	26-35	4.21	.537		
	36-45	4.11	.460		
	46-55	4.13	.658		
	Above 55 years	3.78	.640		
Interface Design	18-25	4.02	.507	3.544	**.007**
	26-35	4.20	.526		
	36-45	4.14	.455		
	46-55	4.09	.667		
	Above 55 years	3.92	.688		
Content Presentation Format	18-25	4.05	.517	1.962	.099
	26-35	4.19	.511		
	36-45	4.15	.496		
	46-55	4.15	.661		
	Above 55 years	3.99	.576		
Transfer of Learning	18-25	4.08	.524	8.591	**.000**
	26-35	4.16	.598		
	36-45	4.16	.489		

	46-55	4.08	.658		
	Above 55 years	3.57	.656		
Feedback of Learning	18-25	3.97	.642	8.091	**.000**
	26-35	4.15	.587		
	36-45	3.99	.583		
	46-55	4.07	.662		
	Above 55 years	3.48	.822		
Teaching Presence	18-25	4.02	.521	10.616	**.000**
	26-35	4.20	.534		
	36-45	4.14	.340		
	46-55	4.05	.666		
	Above 55 years	3.58	.586		
Social Presence	18-25	4.05	.573	7.806	**.000**
	26-35	4.15	.671		
	36-45	4.10	.602		
	46-55	3.99	.744		
	Above 55 years	3.50	.775		
Learner Satisfaction with LMS	18-25	3.97	.576	3.809	**.005**
	26-35	4.13	.663		
	36-45	4.11	.498		
	46-55	4.03	.694		
	Above 55 years	3.73	.693		
LMS Course Learning Effectiveness	18-25	4.06	.621	6.085	**.000**
	26-35	4.25	.608		
	36-45	4.18	.578		
	46-55	4.04	.677		
	Above 55 years	3.71	.738		

Source: Authors Compilation

The above table shows the one-way ANOVA results between the age of the users and their response on LMS quality factors. For the demographic of Age, results indicated statistically significant differences between the groups for eight of the responses on LMS quality scales: 'Pedagogical Design', 'Interface Design', 'Transfer of Learning', 'Feedback of Learning', 'Teaching Presence', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale 'Pedagogical Design', those aged 26-35 (M=4.21) had higher mean score than others. For the scale 'Interface Design', those aged 26-35 (M=4.20) had higher mean score than others. For the scale 'Transfer of Learning', those aged 26-35 and 36-45 (M=4.16) had higher mean score than others. For the scale 'Feedback of Learning', those aged 26-35 (M=4.15) had higher mean score than others. For the scale 'Teaching Presence', those aged 36-45 (M=4.14) had higher mean score than others. For the scale 'Social Presence', those aged 26-35 (M=4.15) had higher mean score than others. For the scale 'Leaner Satisfaction with LMS', those aged 26-35 (M=4.13) had higher mean score than others. For the scale 'LMS Course Learning Effectiveness', those aged 26-35 (M=4.25) had higher mean score than others. For the scale 'Content Presentation Format', there is no significant differences among the age group of the users.

***Table 7:** One Way ANOVA between Work Experience and LMS Quality Factors*

LMS Quality Factors	*Work Experience*	*M*	*SD*	*F*	*p*
Pedagogical Design	< 1 year	3.91	.549	2.921	**.013**

	>= 1 year and < 3 years	4.16	.418		
	>= 3 years and < 5 years	4.13	.620		
	>= 5 year and < 7 years	4.26	.408		
	>= 7 years and < 9 years	4.11	.572		
	>= 9 years	4.06	.626		
Interface Design	< 1 year	3.88	.554	2.548	**.027**
	>= 1 year and < 3 years	4.15	.367		
	>= 3 years and < 5 years	4.10	.557		
	>= 5 year and < 7 years	4.14	.510		
	>= 7 years and < 9 years	4.07	.546		
	>= 9 years	4.09	.625		
Content Presentation Format	< 1 year	3.93	.575	2.183	.055
	>= 1 year and < 3 years	4.14	.395		
	>= 3 years and < 5 years	4.08	.591		
	>= 5 year and < 7 years	4.21	.461		
	>= 7 years and < 9 years	4.14	.513		
	>= 9 years	4.12	.569		
Transfer of Learning	< 1 year	3.92	.617	3.904	**.002**
	>= 1 year and < 3 years	4.18	.418		
	>= 3 years and < 5 years	4.13	.571		
	>= 5 year and < 7 years	4.21	.518		
	>= 7 years and < 9 years	4.11	.579		
	>= 9 years	3.92	.670		
Feedback of Learning	< 1 year	3.84	.713	2.056	.070
	>= 1 year and < 3 years	4.04	.496		
	>= 3 years and < 5 years	4.02	.670		
	>= 5 year and < 7 years	4.19	.476		
	>= 7 years and < 9 years	4.00	.674		
	>= 9 years	3.92	.779		
Teaching Presence	< 1 year	3.84	.626	4.778	**.000**
	>= 1 year and < 3 years	4.14	.431		
	>= 3 years and < 5 years	4.15	.475		
	>= 5 year and < 7 years	4.21	.338		
	>= 7 years and < 9 years	4.04	.554		
	>= 9 years	3.96	.641		
Social Presence	< 1 year	3.86	.618	3.539	**.004**
	>= 1 year and < 3 years	4.11	.541		
	>= 3 years and < 5 years	4.12	.649		
	>= 5 year and < 7 years	4.20	.574		
	>= 7 years and < 9 years	4.11	.611		
	>= 9 years	3.88	.774		
Learner Satisfaction with LMS	< 1 year	3.83	.638	2.720	**.020**
	>= 1 year and < 3 years	4.11	.510		
	>= 3 years and < 5 years	4.03	.608		
	>= 5 year and < 7 years	4.19	.467		
	>= 7 years and < 9 years	3.98	.704		
	>= 9 years	3.97	.667		
LMS Course Learning Effectiveness	< 1 year	3.87	.708	3.266	**.007**
	>= 1 year and < 3 years	4.20	.538		
	>= 3 years and < 5 years	4.13	.619		
	>= 5 year and < 7 years	4.25	.541		
	>= 7 years and < 9 years	4.14	.607		
	>= 9 years	4.03	.723		

Source: Authors Compilation

The above table shows the one-way ANOVA results between the work experience of the users and their response on LMS quality factors. For the demographic of Work experience, results

indicated statistically significant differences between the groups for seven of the responses on LMS quality scales: 'Pedagogical Design', 'Interface Design', 'Transfer of Learning', 'Teaching Presence', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale 'Pedagogical Design', those work experience ranged between >= 5 year and < 7 years (M=4.26) had higher mean score than others. For the scale 'Interface Design', those work experience ranged between >= 1 year and < 3 years (M=4.15) had higher mean score than others. For the scale 'Transfer of Learning', those work experience ranged between >= 5 year and < 7 years (M=4.21) had higher mean score than others. For the scale 'Teaching Presence', those work experience ranged between >= 5 year and < 7 years (M=4.21) had higher mean score than others. For the scale 'Social Presence', those work experience ranged between >= 5 year and < 7 years (M=4.20) had higher mean score than others. For the scale 'Leaner Satisfaction with LMS', those work experience ranged between >= 1 year and < 3 years (M=4.11) had higher mean score than others. For the scale 'LMS Course Learning Effectiveness', those work experience ranged between >= 5 year and < 7 years (M=4.25) had higher mean score than others. For the scales: 'Content Presentation Format' and 'Feedback of Learning', there is no significant differences among the year categories of work experience of the users.

Table 8: One Way ANOVA between LMS Experience and LMS Quality Factors

LMS Quality Factors	LMS Experience	M	SD	F	p
Pedagogical Design	>= 6 months and < 1 year	3.87	.592	11.978	**.000**
	>= 1 year and < 2 years	4.29	.408		
	>= 2 years and < 3 years	4.14	.511		
	>= 3 years and < 4 years	3.77	.536		
	>= 4 years	4.06	.672		
Interface Design	>= 6 months and < 1 year	3.86	.534	11.146	**.000**
	>= 1 year and < 2 years	4.22	.401		
	>= 2 years and < 3 years	4.14	.510		
	>= 3 years and < 4 years	3.83	.682		
	>= 4 years	4.09	.684		
Content Presentation Format	>= 6 months and < 1 year	3.90	.571	9.083	**.000**
	>= 1 year and < 2 years	4.23	.373		
	>= 2 years and < 3 years	4.14	.474		
	>= 3 years and < 4 years	3.88	.769		
	>= 4 years	4.15	.641		
Transfer of Learning	>= 6 months and < 1 year	3.93	.588	10.233	**.000**
	>= 1 year and < 2 years	4.25	.429		
	>= 2 years and < 3 years	4.11	.556		
	>= 3 years and < 4 years	3.80	.683		
	>= 4 years	3.88	.748		
Feedback of Learning	>= 6 months and < 1 year	3.87	.708	10.071	**.000**
	>= 1 year and < 2 years	4.15	.522		
	>= 2 years and < 3 years	4.12	.479		
	>= 3 years and < 4 years	3.57	.705		
	>= 4 years	3.75	.862		
Teaching Presence	>= 6 months and < 1 year	3.89	.574	11.146	**.000**
	>= 1 year and < 2 years	4.22	.427		
	>= 2 years and < 3 years	4.12	.458		
	>= 3 years and < 4 years	3.89	.515		
	>= 4 years	3.85	.696		
Social Presence	>= 6 months and < 1 year	3.87	.560	17.168	**.000**

	>= 1 year and < 2 years	4.27	.502		
	>= 2 years and < 3 years	4.13	.574		
	>= 3 years and < 4 years	3.58	.763		
	>= 4 years	3.75	.897		
Learner Satisfaction with LMS	>= 6 months and < 1 year	3.77	.711	12.072	.000
	>= 1 year and < 2 years	4.19	.467		
	>= 2 years and < 3 years	4.13	.476		
	>= 3 years and < 4 years	3.74	.556		
	>= 4 years	3.92	.756		
LMS Course Learning Effectiveness	>= 6 months and < 1 year	3.91	.712	13.074	.000
	>= 1 year and < 2 years	4.31	.458		
	>= 2 years and < 3 years	4.17	.536		
	>= 3 years and < 4 years	3.74	.628		
	>= 4 years	3.90	.818		

Source: Authors Compilation

The above table shows the one-way ANOVA results between the LMS experience of the users and their response on LMS quality factors. For the demographic of LMS experience, results indicated statistically significant differences between the groups for all of the nine responses on LMS quality scales: 'Pedagogical Design', 'Content Presentation Format', 'Interface Design', 'Transfer of Learning', 'Feedback of Learning', 'Teaching Presence', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale 'Pedagogical Design', those LMS experience ranged between >= 1 year and < 2 years (M=4.29) had higher mean score than others. For the scale 'Interface Design', those LMS experience ranged between >= 1 year and < 2 years (M=4.22) had higher mean score than others. For the scale 'Content Presentation Format', those LMS experience ranged between >= 1 year and < 2 years (M=4.23) had higher mean score than others. For the scale 'Transfer of Learning', those LMS experience ranged between >= 1 year and < 2 years (M=4.25) had higher mean score than others. For the scale 'Feedback of Learning', those LMS experience ranged between >= 1 year and < 2 years (M=4.15) had higher mean score than others. For the scale 'Teaching Presence', those LMS experience ranged between >= 1 year and < 2 years (M=4.22) had higher mean score than others. For the scale 'Social Presence', those LMS experience ranged between >= 1 year and < 2 years (M=4.27) had higher mean score than others. For the scale 'Leaner Satisfaction with LMS', those LMS experience ranged between >= 1 year and < 2 years (M=4.19) had higher mean score than others. For the scale 'LMS Course Learning Effectiveness', those LMS experience ranged between >= 1 year and < 2 years (M=4.31) had higher mean score than others.

Table 9: *One Way ANOVA between Designation and LMS Quality Factors*

LMS Quality Factors	Designation	M	SD	F	p
Pedagogical Design	Junior Level Management Grade	4.01	.536	4.356	.005
	Middle Level Management Grade	4.19	.509		
	Senior Level Management Grade	4.07	.633		
	Top Level Management Grade	4.27	.394		
Interface Design	Junior Level Management Grade	4.03	.539	2.331	.074
	Middle Level Management Grade	4.12	.532		
	Senior Level Management Grade	4.03	.582		
	Top Level Management Grade	4.23	.305		

Content Presentation Format	Junior Level Management Grade	4.01	.559	3.061	**.028**
	Middle Level Management Grade	4.16	.499		
	Senior Level Management Grade	4.10	.545		
	Top Level Management Grade	4.23	.367		
Transfer of Learning	Junior Level Management Grade	4.06	.560	2.052	.106
	Middle Level Management Grade	4.12	.550		
	Senior Level Management Grade	4.00	.654		
	Top Level Management Grade	4.22	.424		
Feedback of Learning	Junior Level Management Grade	3.95	.658	5.203	**.002**
	Middle Level Management Grade	4.04	.568		
	Senior Level Management Grade	3.88	.776		
	Top Level Management Grade	4.30	.358		
Teaching Presence	Junior Level Management Grade	4.04	.588	2.331	.074
	Middle Level Management Grade	4.09	.473		
	Senior Level Management Grade	3.98	.587		
	Top Level Management Grade	4.20	.366		
Social Presence	Junior Level Management Grade	3.97	.681	3.130	**.025**
	Middle Level Management Grade	4.12	.575		
	Senior Level Management Grade	3.97	.709		
	Top Level Management Grade	4.23	.482		
Learner Satisfaction with LMS	Junior Level Management Grade	3.96	.623	4.598	**.003**
	Middle Level Management Grade	4.11	.526		
	Senior Level Management Grade	3.90	.727		
	Top Level Management Grade	4.20	.364		
LMS Course Learning Effectiveness	Junior Level Management Grade	4.01	.676	4.804	**.003**
	Middle Level Management Grade	4.21	.571		
	Senior Level Management Grade	4.02	.690		
	Top Level Management Grade	4.30	.420		

Source: Authors Compilation

The above table shows the one-way ANOVA results between the designation levels of the users and their response on LMS quality factors. For the demographic of Designation, results indicated statistically significant differences between the groups for six of the responses on LMS quality scales: 'Pedagogical Design', 'Content Presentation Format', 'Feedback of Learning', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale 'Pedagogical Design', those fell under Top Level Management Grade (M=4.27) had higher mean score than others. For the scale 'Content Presentation Format', those fell under Top Level Management Grade (M=4.23) had higher mean score than others. For the scale 'Feedback of Learning', those fell under Top Level Management Grade (M=4.30) had higher mean score than others. For the scale 'Social Presence', those fell under Top Level Management Grade (M=4.23) had higher mean score than others. For the scale 'Learner Satisfaction with LMS', those fell under Top Level Management Grade (M=4.20) had higher mean score than others. For the scale 'LMS Course Learning Effectiveness', those fell under Top Level Management Grade (M=4.30) had higher mean score than others. For the scales: 'Interface Design', Transfer of Learning and 'Teaching Presence', there is no significant differences among the designation levels of the users.

Table 10: *One Way ANOVA between Computer Knowledge and LMS Quality Factors*

LMS Quality Factors	Computer Knowledge	M	SD	F	p
Pedagogical Design	Average	3.60	.713	13.323	**.000**
	Excellent	4.31	.370		
	Good	4.02	.598		
	Satisfactory	3.67	.577		
	Very good	3.93	.610		
Interface Design	Average	3.63	.573	11.357	**.000**
	Excellent	4.27	.453		
	Good	3.98	.519		
	Satisfactory	3.58	.722		
	Very good	3.94	.578		
Content Presentation Format	Average	3.43	.401	14.144	**.000**
	Excellent	4.30	.428		
	Good	4.00	.526		
	Satisfactory	3.83	.289		
	Very good	3.96	.561		
Transfer of Learning	Average	3.76	.767	11.677	**.000**
	Excellent	4.28	.478		
	Good	3.97	.526		
	Satisfactory	3.47	.924		
	Very good	3.93	.656		
Feedback of Learning	Average	3.67	.624	6.572	**.000**
	Excellent	4.17	.525		
	Good	3.86	.692		
	Satisfactory	3.44	.962		
	Very good	3.91	.719		
Teaching Presence	Average	3.63	.582	6.293	**.000**
	Excellent	4.20	.482		
	Good	3.96	.508		
	Satisfactory	3.94	.096		
	Very good	3.97	.612		
Social Presence	Average	3.72	.701	7.502	**.000**
	Excellent	4.23	.579		
	Good	3.96	.623		
	Satisfactory	4.00	.000		
	Very good	3.88	.706		
Learner Satisfaction with LMS	Average	3.73	.723	12.244	**.000**
	Excellent	4.24	.457		
	Good	3.94	.580		
	Satisfactory	3.44	.962		
	Very good	3.81	.735		
LMS Course Learning Effectiveness	Average	3.70	.671	8.669	**.000**
	Excellent	4.30	.527		
	Good	3.95	.627		
	Satisfactory	3.83	.289		
	Very good	4.01	.722		

Source: Authors Compilation

The above table shows the one-way ANOVA results between the Computer knowledge of the users and their response on LMS quality factors. For the demographic of Computer knowledge, results indicated statistically significant differences between the groups for all of the nine responses on LMS quality scales: 'Pedagogical Design', 'Content Presentation Format',

'Interface Design', 'Transfer of Learning', 'Feedback of Learning', 'Teaching Presence', 'Social Presence', 'Leaner Satisfaction with LMS' and 'LMS Course Learning Effectiveness'. For the scale 'Pedagogical Design', those possessed excellent computer knowledge (M=4.31) had higher mean score than others. For the scale 'Interface Design', those possessed excellent computer knowledge (M=4.27) had higher mean score than others. For the scale 'Content Presentation Format', those possessed excellent computer knowledge (M=4.30) had higher mean score than others. For the scale 'Transfer of Learning', those possessed excellent computer knowledge (M=4.28) had higher mean score than others. For the scale 'Feedback of Learning', those possessed excellent computer knowledge (M=4.17) had higher mean score than others. For the scale 'Teaching Presence', those possessed excellent computer knowledge (M=4.20) had higher mean score than others. For the scale 'Social Presence' those possessed excellent computer knowledge (M=4.23) had higher mean score than others. For the scale 'Leaner Satisfaction with LMS', those possessed excellent computer knowledge (M=4.24) had higher mean score than others. For the scale 'LMS Course Learning Effectiveness', those possessed excellent computer knowledge (M=4.30) had higher mean score than others.

FINDINGS

- The first objective was to study the demographic characteristics of the LMS users. Almost 60% of users are female. 49% of the users were between the age category of 18-25. Majority of the user's education qualification was undergraduate (62%). 33% of the users fell under the Junior Level Management Grade in their designation level. Under Users' experience in LMS, most of them (41%) ranged between greater than or equal to 1 year and less than 2 years. Majority (59%) of the users are from Private banks.

- The second objective was to find the association between the demographic characteristics of the users and the LMS quality factors. Analysis of the results revealed that, there is a significant strong association between work experience of the users and their experience in LMS and also between age of the users and their experience in LMS. It is also evident from the results that, there exists no association between designation levels of the users and their computer knowledge, and also there is no association between bank type of the users and their computer knowledge.

- The third objective was to analyze the difference in opinion towards LMS course learning effectiveness among users' demographics (Gender, Education Qualification, Bank Type, Age, Work Experience, LMS Experience, Designation and Computer Knowledge) and LMS quality factors (pedagogical design, interface design, content presentation format, transfer of learning and feedback of learning, learner experience and leaner satisfaction). There was a significant difference in user's opinion on pedagogical design of LMS among gender, age, work experience, LMS experience, designation and computer knowledge. There was a significant difference in user's opinion on interface design of LMS among gender, age, education qualification, work experience, LMS experience and computer knowledge. There was a significant difference in user's opinion on content presentation format of LMS among gender, education qualification, LMS experience, designation and computer knowledge.

There was a significant difference in user's opinion on transfer of learning of LMS among gender, age, work experience, LMS experience and computer knowledge. There was a significant difference in user's opinion on feedback of learning of LMS among gender, age, LMS experience, designation and computer knowledge. There was a significant difference in user's opinion on teaching presence of LMS among gender, age, education qualification, work experience, LMS experience and computer knowledge. There was a significant difference in user's opinion on social presence of LMS among gender, age, bank type, work experience, LMS experience, designation and computer knowledge. There was a significant difference in user's opinion on satisfaction with LMS among gender, age, work experience, LMS experience, designation and computer knowledge. There was a significant difference in user's opinion on LMS course learning effectiveness among gender, age, work experience, LMS experience, designation and computer knowledge.

SUGGESTIONS

- Learners' personal learning preferences must be obtained in order to personalize their learning experience.

- The feedback of learning should all be addressed and considered while presenting the next course content.

- Keeping transfer of learning in mind, course content creators must construct course profiles in a way that they can be mapped to learner needs resulting in using the knowledge acquired in their daily operations.

- Developers must take great care when creating LMS to ensure that learners have the ability to customize the user interface and navigate through learning materials and content at their leisure.

CONCLUSION

Learning Management Systems (LMS) have been the main vehicle for delivering and managing e-learning courses in educational, business, governmental and vocational learning settings. Since the mid-nineties there is a plethora of LMS in the market with a vast array of features.

The increasing complexity of these platforms makes LMS evaluation a hard and demanding process that requires a lot of knowledge, time, and effort. Nearly 50% of respondents in surveys conducted by Panagiotis Zaharias and Christopher Pappas (2016) have indicated that they seek to change their existing LMS primarily due to user experience issues.

To analyze the above user experience issues, this study concentrated on the LMS quality factors those proved the LMS course learning effectiveness among its users. It is still necessary to

modify the LMS quality factors to the needs of individual learners in order to make learning enjoyable and achieve desired learning outcomes.

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