A Meta-Analysis Study: Barriers to Learning Management Systems in EFL Classrooms

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The aim of the current meta-analysis is to throw the light on the emerging trends of studies between 2013 and 2017 that describe the obstacles in the implementation of Learning Management Systems (LMSs). A meta-analysis of 107 articles, listed on Education Resources Information Centre (ERIC) and Web of Science (WOS), was employed in the present study. Data on the distribution of studies on LMS were investigated according to the year of publication, the most frequent challenges facing English language teachers   incorporating LMS, research method, design, sample groups, data collecting tools, countries and the number of authors. The results reveal that the highest number of studies (N=40, 37.38%) occurred in 2017 with an upward trend over the five years. The most common obstacle in the implementation of LMS in English as a foreign language (EFL) classrooms was discovered as the lack of teacher training (N=32, 29.91%). Moreover, the most frequently applied research method was the quantitative technique (N=51, 47.66%). The descriptive model (N=32, 29.91%) was found as the most frequent research model. In addition, the most common sample group included undergraduate and graduate students (N=46, 42.99%). The most prominent data collection tool pointed to questionnaires (N=47, 43.93%). The conclusion states the implications of the current research and recommendations for further research.

Keywords: blended learning, meta-analysis, LMS implementation challenges, teachers' and students' views

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Tujuan dari meta-analisis saat ini adalah untuk menyoroti tren studi yang muncul antara 2013 dan 2017 yang menggambarkan hambatan dalam penerapan Sistem Manajemen Pembelajaran (LMS). Sebuah meta-analisis 107 artikel, terdaftar di Pusat Informasi Sumber Daya Pendidikan (ERIC) dan Web of Science (WOS), digunakan dalam penelitian ini. Data tentang distribusi studi tentang LMS diselidiki sesuai dengan tahun publikasi, tantangan yang paling sering dihadapi guru bahasa Inggris menggabungkan LMS, metode penelitian, desain, kelompok sampel, alat pengumpulan data, negara dan jumlah penulis. Hasil penelitian mengungkapkan bahwa jumlah studi tertinggi (N = 40, 37,38%) terjadi pada 2017 dengan tren naik selama lima tahun. Kendala yang paling umum dalam penerapan LMS dalam bahasa Inggris sebagai ruang kelas bahasa asing (EFL) ditemukan sebagai kurangnya pelatihan guru (N = 32, 29,91%). Selain itu, metode penelitian yang paling sering diterapkan adalah teknik kuantitatif (N = 51, 47,66%). Model deskriptif (N = 32, 29,91%) ditemukan sebagai model penelitian yang paling sering. Selain itu, kelompok sampel yang paling umum termasuk mahasiswa sarjana dan pascasarjana (N = 46, 42,99%). Alat pengumpulan data yang paling menonjol menunjukkan kuesioner (N = 47, 43,93%). Kesimpulannya menyatakan implikasi dari penelitian saat ini dan rekomendasi untuk penelitian lebih lanjut.

INTRODUCTION

Learning Management System (LMS) became apparent with the proliferation of connectivity and worldwide use of e-learning in education (Balki, 2010). In theory, LMS provides fully online courses in addition to face-to-face teaching. LMS is also known as Virtual Learning Environment (VLE). LMSs are ideal for English language teachers who can integrate content, communication and assessment at the same time (Pina, 2010). Firstly, learners can benefit from appropriate content that consists of audio-visual materials, exercises, hyperlinks and presentations. Therefore, learners are immersed in the online activities that are tailored to their needs. Secondly, online interactions can take two forms of communication (Lamy & Hampel, 2007). In practice, communication can be asynchronous which does not take place in real-time. Asynchronous tools encompass wikis, blogs and discussion boards. Furthermore, student-student and teacher-student interaction could also be enhanced by text chat in real time. Thirdly, assessment could be done objectively by asking learners to prepare e-portfolios and complete online quizzes (Emelyanova & Voronina, 2014). In this regard, prompt online feedback on learners' progress could be given easily. In addition, the password-protected feature of LMSs allows only learners and parents to access the system. Thus, LMS provides a fully secure learning atmosphere with its user-friendly interface and vast number of online resources.

As far as the administrative advantages are concerned, teachers can track down students' attendance and completion of assignments through grading features of LMS (Erben, Bon & Castaneda, 2009). Moreover, teachers are able to make important announcements regarding the assignments by marking the date on the online calendar (Cavus & Zabadi, 2014). In short, learning is organized in order to empower collaboration amongst learners so that they can take responsibility of their learning (Osguthorpe & Graham, 2003).

According to Scott (2015), traditional teaching does not lead to the development of critical thinking skills and learner autonomy. Learners are no longer memorizers but organizers and constructors of new knowledge in the digital era. Therefore, new teacher roles such as facilitators, mentors and moderators have to be redefined and adopted by teachers. Hence, teachers need to be well equipped with web 2.0 applications in order to offer personalized and differentiated instruction beyond the walls of the classroom. Additionally, professional development and training empower teachers to keep up-to-date with the latest

technological tools and provide free practice for them to apply their knowledge in varied contexts. In other words, integrating technology in classrooms will speed up efficient life-long learning when teachers possess high quality of digital skills and appropriate training.

The current study could be regarded as unique because there have not been many meta-analysis studies which investigated the obstacles of adopting Learning Management Systems (LMSs) in classrooms in the last five years. Thus, researchers and English language teachers will be able to reflect on those challenges and produce solutions based on the results. This meta-analysis is also concerned with examining the most frequent obstacles of LMSs, which have direct and lasting impact on the success of blended learning in English language classrooms.

The present study was undertaken to propose a meta-analysis of the journal articles about the obstacles regarding LMS during the period between 2013 and 2017. Thus, this study aims to consider the following questions:

1) What was the distribution of studies between 2013 and 2017 about the challenges of adopting LMS according to the year of publication?
2) What were the challenges facing English language teachers about the implementation of LMS in classes that were studied in the research articles between 2013 and 2017?
3) Which research methods, designs, sample groups and data collection tools were the most frequently applied in the research articles between 2013 and 2017?
4) What was the distribution of the number of countries and the authors in the research articles between 2013 and 2017?

Several studies indicated teachers' and students' positive attitudes towards web-enhanced learning such as promoting learner autonomy, active engagement with the task and increasing self-efficacy (Basaran, 2013; Mohammed, 2015; Pechenkina & Aeschliman, 2017; Sanmuganathan, 2013; Williams & Whiting, 2016). Nevertheless, other studies also pinpointed to the difficulties, i.e. lack of teacher experience, time constraints, financial and technical support, inconsistency between curricula and computer assisted language learning (CALL) materials. (Afrin, 2014; Al-Seghayer, 2016).

Liangxing (2017) presented an empirical analysis of 512 college students' perceptions of massive open online courses (MOOC) through a five-point Likert scale questionnaire in China. Based on the results, the challenges were identified as insufficient target language (TL), digital literacy and management skills related with e-learning. Similarly, another mixed-method study examined 200 undergraduate students' perceptions of LMS in Palestine (Abdallah & Morrar, 2017). The study found that learners had technical difficulties (9%). Learners also (11%) mentioned a great deal of time that could be spent in vain whilst working on computers. In contrast, a quasi-experimental study of 54 undergraduates in Hong Kong offered empirical evidence suggesting that implementing blended learning in paragraph writing fostered learners' knowledge of grammar (Pumjarean, Muangnakin & Tuntinakhongul, 2017).

Emelyanova and Voronina (2017) reported the results of their study of questionnaires of 56 undergraduates in Russia. The researchers determined that learners (46%) were not in favor of blended learning due to lack of training in technology. Within that framework, Ali's (2017) study reflected upon the introduction of LMS, Blackboard, in Saudi Arabia. The study concluded from the questionnaire results that learners (58.5%) required training workshops in order to be confident in using Blackboard.

It could be said that one of the weaknesses of LMS is the issue of plagiarism (Beatty, 2010). Learners' grades on LMS might not mirror their actual language performance since they have the opportunity to consult on a wide range of websites on the internet or let their friends do their coursework. Through his small-scale qualitative study of eight lecturers about

a new web-based instruction tool in Kuwait, Erguvan (2014) listed three main limitations of LMS. First, lecturers (N=5) stressed that learners' true potential of language skills cannot be observed online. Second, lecturers (N=6) mentioned inadequate features of LMS in providing detailed feedback on learners' progress. Last but not least, lecturers (N=5) drew attention to learners' sensitivity about political and religious topics which might discourage them to take part in LMS.

In discussing the integration of LMS into classes, the key issue is to meet the different learning styles and strategies (Cavus & Alhih, 2014). One might argue that differentiated instruction in LMS helps learners to extend learning beyond the walls of the classroom (Pareja-Lora, Calle-Martínez & Rodríguez-Arancón, 2016). The result of a mixed-method study with teachers and students in Iran was an account for the lack of needs analysis to determine the level and interests of learners (Dashtestani, 2014). Moreover, the study depicted lack of online resources, training, high quality internet connectivity and appropriate materials.

In fact, LMSs are learner-centered depending on their nature of providing learners with up-to-date, authentic and interactive materials. According to Toland's, White's, Mills' & Bolliger's (2014) case study of 63 Japanese lecturers' views on LMS, Manaba, authentic materials encouraged communication between learners and instructors. Therefore, learners both obtained and shared knowledge. It was also found from the interviews with teachers that organizing courses and setting up materials were mentioned to be time consuming. Additionally, teachers believed that uploading materials online was a waste of time. Nevertheless, teachers need to encourage students to develop 21st century skills which involve information and communication technology (ICT) literacy, creativity, collaboration, critical thinking, problem solving, social and cross cultural skills (Thouesyn & Bradley, 2011). In all respects, LMS is not simply there to dictate the content of teaching (Lai & Savage, 2013). This means that the aim of LMS is to deliver the content of TL to learners online.

Researchers in many studies address to the obstacles such as lack of knowledge, time, support, materials and digital skills whilst implementing LMS in classrooms (Alturki, Aldraiweesh & Athabaska, 2016; Baskaran & Shafeeq, 2015; Grönlund & Hatakka, 2017; Gunduz & Ozcan 2017; Thapaliya, 2014; Wangru, 2016). Al-Kathiri (2015) questioned the challenges of LMS in Saudi schools through a quasi-experimental study. The results indicated the emphasis of traditional teaching methods instead of e-learning. Another study revealed that the school budget and teachers' reluctance were the factors underlying the barriers to LMS (Almaini, 2013). Above all, Kwok (2015) added to the literature by presenting an analysis of the robot and human teachers from a qualitative study of 13 secondary school students in Hong Kong. Kwok (2015) pointed to the importance of human teachers in terms of meeting the affective, social and academic needs of learners. Furthermore, the researcher added to our understanding that human teachers' facial expressions and gestures provide feedback on the spot and make the learning experience more memorable.

METHOD
This part addresses the research design, the data collection instrument and data analysis. This study adopted a quantitative meta-analysis to evaluate the impact of challenges of LMS. The purpose of meta-analysis is to select, analyze and classify studies systematically and objectively (Ary, Jacobs, Sorensen & Razavieh, 2010). In this regard, researchers can duplicate the study to reach reliable results. A descriptive study was utilized to gather the data. A checklist was prepared to assess the content of each study. A total of 107 articles on

ERIC and WOS databases were obtained. Only articles with full-text access were analyzed in order to fulfill the aim of the study according to the following eligibility criteria:

    i.   The year of publication
   ii.   Obstacles in the implementation of LMS
  iii.   Research method and model
  iv.   Sample groups
   v.   Data collection tools
  vi.   Countries
 vii.   Number of authors

Research Procedures

The present study applied "Learning Management System in teaching English" as key words on two databases in order to reach the articles. Based on the meta-analysis of 107 articles according to the eligibility criteria, the researcher was able to categorize the most and the least frequent data to interpret the findings. Only full-text articles between 2013 and 2017 were chosen for the meta-analysis. Therefore, all the articles were gathered according to the following steps:

1) The issues regarding LMS were examined.
2) Studies published between 2013 and 2017 on ERIC and WOS were selected.
3) A total number of 255 articles were discovered. 148 articles were eliminated according to the following exclusion criteria:
       i.   It was made sure that the sample only contains full-text and in English language.
      ii.   The articles without any details about the issues in LMS, research method, design, sample, data collections tools and countries of research were excluded from the sample.
4) The selected sample was classified into the year of publication.
5) A checklist was prepared to identify the issues, research method, design, sample groups, data collection instruments, countries and the number of authors in 107 journal articles.

Data Analysis

Descriptive statistics of the frequencies and the percentages of the number of articles for each criterion were used to analyze the data. Thus, the data were recorded in Microsoft Excel. Next section illustrates the results with the help of the tables and figures.

FINDINGS AND DISCUSSION

This section illustrates the findings in the light of the seven criteria. The most and the least frequent number of articles were tabulated and described according to the year of publication, the types of challenges about LMS, research methods, design, sample groups, instruments, countries and the number of authors.

The distribution of studies between 2013 and 2017 about the challenges of LMS according to the year of publication

     Table 1 indicates the distribution of 107 published articles on the challenges of LMS according to the years between 2013 and 2017. As illustrated in Figure 1, 40 articles (37.38%) in 2017 can be considered as the most frequent number of articles in comparison

with the total sample (N=107). The second and the third frequent number of articles can be observed in 2016 (N=24, 22.43%) and 2015 (N=23, 21.5%), respectively. There is a tendency for the number of studies to increase sharply over five years. So, the increasing trend in the number of articles which focused on the challenges of LMS reached a peak in 2017. The least frequent studies regarding the challenges of LMS took place in 2013 (N=7, 6.54%). The results about the increase in the number of studies related with LMS are congruous with Lin's & Lan's (2015) study which also found a dramatically upward trend in the number of studies about language learning through virtual reality environments between 2004 and 2013.

The findings of the present study are congruent with Alkraiji's and Eidaroos' (2016) study which pointed to the increasing number of studies about LMS. The researchers stated in their meta-analysis of 52 studies about technology enhanced learning in Saudi Arabia between 2004 and 2015 that the highest number of articles occurred in 2015 (N=11, 21.15%). Additionally, the least number of studies took place in 2004 (N=2, 3.85%). The growing number of research trend in educational technology could be attributed to the advantageous features of technology in enhancing learning.

Table 1: Year of Publication

Year	Frequency	Percentage (%)
2017	40	37.38
2016	24	22.43
2015	23	21.5
2014	13	12.15
2013	7	6.54
Total	107	100

Figure 1: Year of Publication
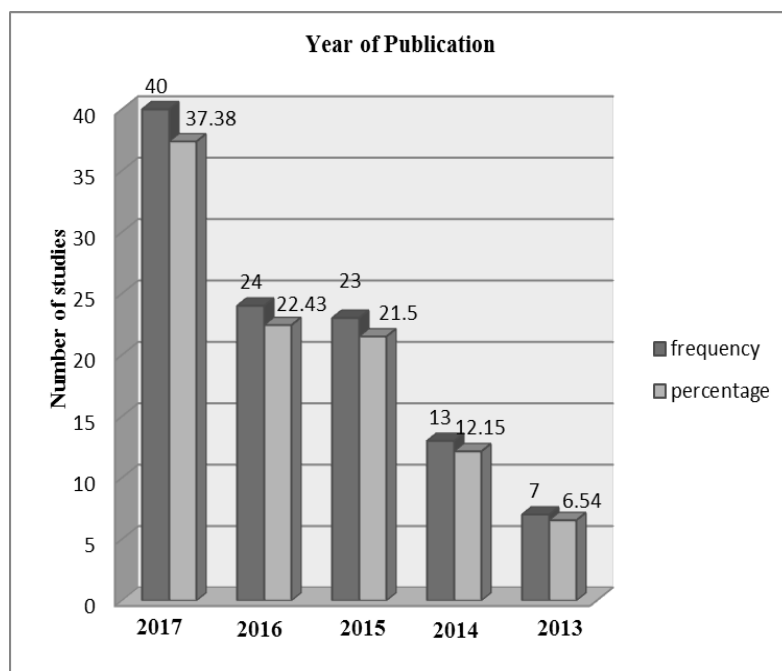
Figure 1: Year of Publication

The challenges facing English language teachers about the implementation of LMS in classes that were studied in the research articles between 2013 and 2017

Table 2 offers detailed information about the most frequent challenges facing English language teachers who incorporate LMS in their classes. The top three most frequent obstacles can be stated as lack of training (N=32, 29.91%), digital literacy (N=19, 17.76%) and online resources (N=18, 16.82%). The results about the challenges to LMS were supported by Bervell's and Umar's (2017) meta-analysis of 31 studies. The results revealed that the top two frequent barriers could be attributed to lack of information communication technology infrastructure and skills training (N=13, 21.7%) and system related (N=8, 13.3%). The preparation of e-content and e-curriculum (N=2, 3.3%) were found to be the least frequent barriers in Bervell's and Umar's (2017) study. Moreover, Sayfouri (2016) indicated technical problems such as low English typing skills and low internet connectivity. The researcher also mentioned non-technical problems such as lack of familiarity with LMS and lack of support in the integration of LMS into the curriculum. It could be said that the researchers' views placed a higher priority to the instructors' opinions about lack of proper training to use LMS. Therefore, if teachers handle the difficulties of LMS effectively through in-service training, they will be able to provide measures to overcome those obstacles to incorporate LMS.

Table 2: Challenges of LMS

	2017		2016		2015		2014		2013		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Training	13	32.5	6	25	6	26.09	4	30.77	3	42.86	32	29.91
Digital literacy	7	17.5	5	20.84	4	17.39	1	7.69	2	28.57	19	17.76
Resources	7	17.5	6	25	4	17.39	1	7.69	-	-	18	16.82
Technical/ infra.	4	10	3	12.5	2	8.7	3	23.08	1	14.29	13	12.15
Time	3	7.5	2	8.33	4	17.39	3	23.08	1	14.29	13	12.15
Maturity	6	15	2	8.33	3	13.04	1	7.69	-	-	12	11.21
Total	40		24		23		13		7		107	100

Research methods, designs, sample groups and data collection tools that are the most frequently applied in the research articles between 2013 and 2017

As could be seen from Figure 2, quantitative research method (N=51, 47.66%) was more frequently applied than the qualitative method (N=32, 29.91%). In addition, Table 3 shows that there was a gradual increase in relation to the number of articles with qualitative method between 2013 and 2017. The least prevalent category was noted as the mixed method (N=24, 22.43%). The current findings about the research method are in line with Bervell's and Umar's (2017) meta-analysis of 31 studies in South Africa. Bervell and Umar (2017) found that the quantitative method (N=25, 80.6%) was more frequently applied than the

qualitative method (N=2, 6.5%). Another study supports the results of the current study that the quantitative method (N=36, 69.23%) was the most prominent category (Alkraiji & Eidaroos, 2016). In contrast, the results of the study about research methods are not in line with those of Lin's and Lan's (2015) study. The researchers found that qualitative method was the most popular method. Creswell (2014) stated that researchers need to implement not only the quantitative design but also the qualitative design in order to consider narrative explanations. Thus, the mixed method will be able to complement the weaknesses of each model and help to see a bigger picture of the results.
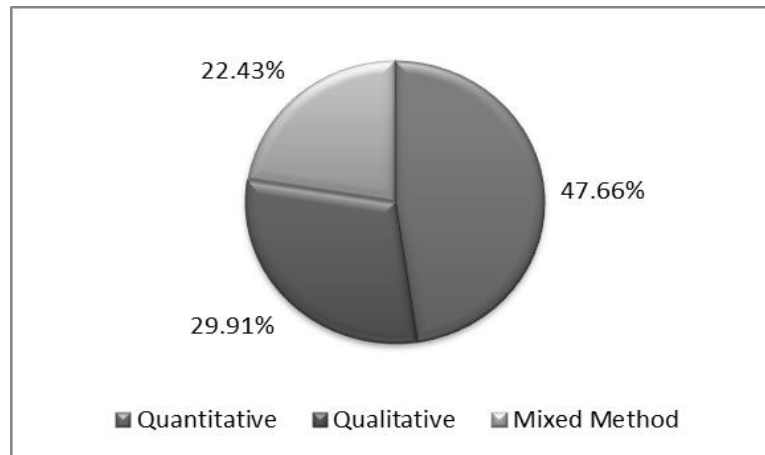
Figure 2: Research method

Table 3: Research Method

	2017		2016		2015		2014		2013		Total	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Quantitative	21	52.5	12	50	7	30.44	7	53.85	4	57.14	51	47.66
Qualitative	9	22.5	8	33.3	8	34.78	6	46.15	1	14.29	32	29.91
Mixed Method	10	25	4	16.67	8	34.78	-	-	2	28.57	24	22.43
Total	40		24		23		13		7		107	100

Table 4 serves an indication of the most frequent research model which was descriptive (N=32, 29.91%). As indicated, the second and the third categories belong to reviews (N=25, 23.36%) and quasi-experimental studies (N=19, 17.76%). It is noteworthy that correlation (N=1, 0.93%) was the least frequent research model. Alkraiji and Eidaroos (2016) highlighted that case studies (N=33, 78%) were the most frequent research model. On the other hand, the results of this study showed that case studies (N=13, 12.15%) were the fifth frequently utilized research methodology. Interestingly, there was an upward pattern in the number of case studies from 2013 to 2016 whereas this number declined moderately by 2017. Moreover, survey studies also maintained a steady increase in the number of articles over five years.

Table 4: Research Model

	2017		2016		2015		2014		2013		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Descriptive	10	25	10	41.67	8	34.78	2	15.38	2	28.57	32	29.91
Review	8	20	5	20.84	7	30.43	5	38.47	-	-	25	23.36
Q-experimental	8	20	2	8.33	4	17.39	2	15.38	3	42.86	19	17.76
Survey	10	25	1	4.16	2	8.7	3	23.08	1	14.29	17	15.89
Case study	3	7.5	6	25	2	8.7	1	7.69	1	14.29	13	12.15
Correlation	1	2.5	-	-	-	-	-	-	-	-	1	0.93
Total	40		24		23		13		7		107	100

Table 5 shows the data for the most frequent sample groups, i.e. undergraduates and graduates (N=46, 42.99%), documents (N=20, 18.69%) and secondary and elementary school students (N=12, 11.21%). The result of the present study was supported by Alkraiji and Eidaroos (2016) who revealed that the most frequent sample group consists of undergraduates (N=31, 59.62%). In other words, the current findings show that research on LMS with lecturers and teachers (N=19, 17.76%) is less frequent than undergraduates and graduates, secondary and elementary students (N=58, 54.2%). Bervell's and Umar's (2017) study also reported similar results that the most prevalent sample group included undergraduate students (N=18, 58.1%). The same study indicated that only six instructors (19.4%) were found out as a sample group in the meta-analysis of 31 studies. The result of the present study is congruous with those of Bervell's and Umar's (2017). The findings indicated that only 11 instructors (10.28%) were chosen as a sample group in 107 articles. In fact, teachers act as guides and facilitators of learning and encourage the use of technological tools in class. Therefore, it is essential and beneficial to consider students' as well as teachers' points of views in any research about the use of technological tools in education.

Table 5: Sample Group

	2017		2016		2015		2014		2013		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Undergrad and grad.	21	52.5	12	50	7	30.43	2	15.38	4	57.14	46	42.99
Documents	6	15	3	12.5	7	30.43	1	7.69	3	42.86	20	18.69
Second. and elem. SS	4	10	2	8.33	5	21.74	1	7.69	-	-	12	11.21

	2	5	2	8.33	2	8.7	5	30.46	-	-	11	10.28
Lecturers												
Ss+ lecturers	5	12.5	3	12.5	-	-	2	15.38	-	-	10	9.35
Teachers	2	5	2	8.33	2	8.7	2	15.38	-	-	8	7.48
Total	40		24		23		13		7		107	100

With reference to Table 6, questionnaires (N=47, 43.93%) were the most prominent category of data collection tools between 2013 and 2017. The second and the third frequent instruments included observations and interviews (N=16, 14.95%) and questionnaires and interviews and documents (N=14, 13.08%), respectively. The least frequent category pointed to interviews (N=6, 5.61%). The findings about the data collection tools are similar with those of Alkraiji's and Eidaroos' (2016) study that found questionnaires as the most frequent category (N=23, 44.23%).

Table 6: Data Collection Tools

	2017		2016		2015		2014		2013		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
Questionnaires	15	37.5	14	58.33	10	43.48	5	38.46	3	42.86	47	43.93
Observation and interviews	9	22.5	3	11.5	1	4.35	3	23.08	-	-	16	14.95
Questionnaires and interviews	5	12.5	3	12.5	3	13.04	1	7.69	2	28.57	14	13.08
Documents	5	12.5	1	4.17	4	17.39	4	30.77	-	-	14	13.08
Tests	4	10	-	-	5	21.74	-	-	1	14.29	10	9.35
Interviews	2	5	3	12.5	-	-	-	-	1	14.29	6	5.61
Total	40		24		23		13		7		107	100

The distribution of the number of countries and the authors in the research articles between 2013 and 2017

Figure 3 displays the distribution of articles according to countries. It could be seen that the most frequent studies took place in China (N=14, 13.08%) whereas the least frequent studies occurred in Belgium, Brazil, Colombia, Greece, India, Israel, Korea, Morocco, North Cyprus, Poland, Portugal, Slovakia, Slovenia, Sweden, Tanzania and United Arab Emirates, (N=1, 0.93%).

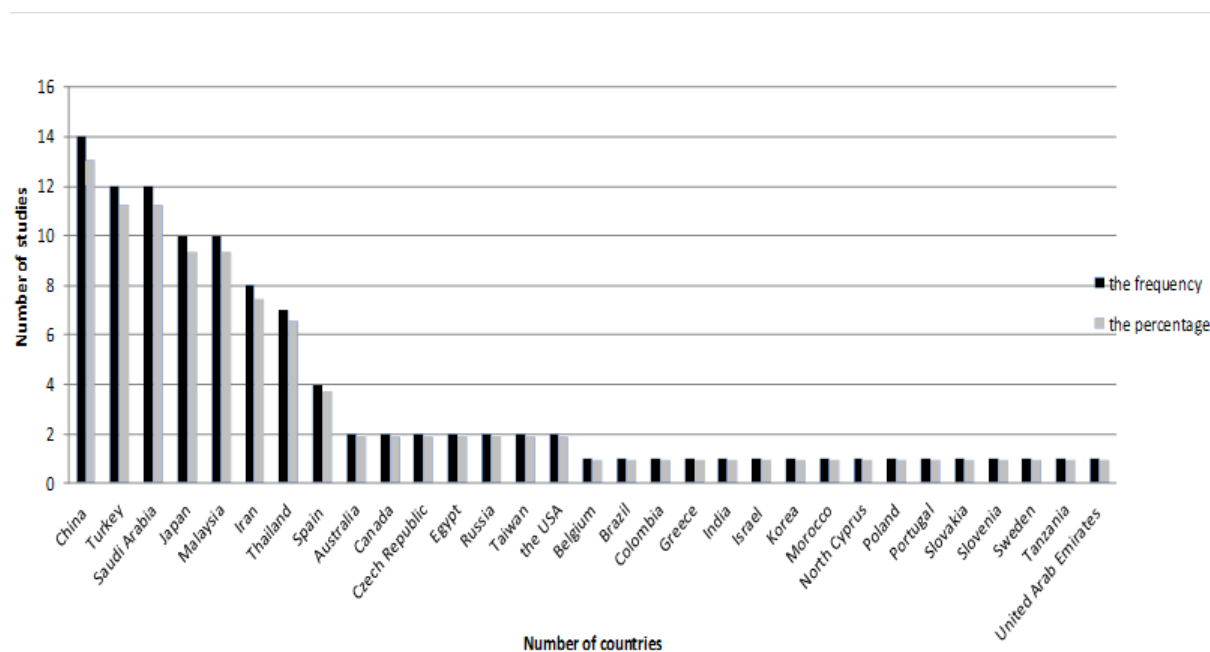*Figure 3: Countries of research*

Table 7 shows the number of authors in the studies according to the year of publication. It is clear that the most frequent category includes only one author (N=52, 48.6%) whereas the least frequent category belongs to five and above authors (N=3, 2.8%). There was an increasing trend for the articles with one and two authors. This means that researchers became more willing to share their ideas and data collection and analysis. Further research needs to consider the distribution of the number of gender, countries and authors. To the best of the researcher's knowledge, there are not any meta-analysis studies that focus on the number of authors and countries of research related with LMS.

Table 7: Number of Authors

	2017		2016		2015		2014		2013		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
1	17	42.5	10	41.67	15	65.22	8	61.54	2	28.57	52	48.6
2	17	42.5	7	29.16	4	17.39	2	15.38	4	57.14	34	31.78
3	2	5	6	25	4	17.39	1	7.69	-	-	13	12.15
4	2	5	1	4.17	-	-	1	7.69	1	14.29	5	4.67
5+	2	5	-	-	-	-	1	7.69	-	-	3	2.8
Total	40		24		23		13		7		107	100

This study found out that there is an increase in the number of recent research which was conducted on teachers' and students' views about educational technology in 2017 (N=40, 37.38%). One of the most crucial advantages of LMS is that it cultivates a positive learning atmosphere and builds learners' confidence about the use of computer and internet skills (Sun & Yang, 2015; Zumor, Refaai, Eddin & Al-Rahman, 2013). In addition, LMSs provide immediate feedback on learners' progress. In this regard, the number of blended courses at Common European Framework for Languages (CEFR) B1 and C1 level has rapidly increased in Japan (Mehran, Alizadeh, Koguchi & Takemura, 2017). Hence, the researchers developed a blended course model for pronunciation, speaking and listening skills. The survey in that study investigated the factors underlying learners' e-learning readiness and the results indicated students' need for technology training.

It is notable that the results of the current study indicated the need for teachers' professional training and students' digital literacy and as barriers to LMS. Jeong's (2017) study of 82 EFL Korean student teachers offered empirical evidence suggesting that subjects (71%) were eager to integrate technology. However, data from the questionnaires and interviews reflected their lack of digital training. Other similar studies concluded that assessment on LMS was difficult to measure the actual performance of the learners because of copying and cheating (Bing, 2017; Zumor, Refaai, Eddin & Al-Rahman, 2013). Apart from the issues with assessment, a recent study in China about the problems related with technology showed that students were reported to have difficulties with HTML skills in peer assessment (Bing, 2017).

Another qualitative study was carried out in Belgium to find out the ICT issues (Smet, Valcke, Schellens, Wever & Vanderlinde, 2016). The results revealed that the most frequent barrier was about school conditions, i.e. infrastructure and hardware. The second frequent barrier was due to teachers' difficulties with the new instructional methods. Instruction time was the third frequent obstacle.

Based on the meta-analysis of the 107 articles, this study found that quantitative research method (N=51, 47.66%) was the most prominent in articles between 2013 and 2017. Bervell and Umar (2017) and Alkraiji and Eidaroos (2016) identified the quantitative method as the most frequent as well. Although quantitative studies enable generalization of the results to a large population, they might ignore narrative details. Researchers can apply mixed methods to understand the phenomena in full rather than conducting only a quantitative or a qualitative study (Creswell, 2014). Furthermore, this study evaluated the most frequent data collection tool and found that questionnaires were the most prevalent category (N=47, 43.93%) whereas questionnaires and interviews formed the third most frequent category (N=14, 13.08). In all respects, triangulation of data increases the validity and reliability of results (Creswell, 2014).

The results of the current study indicated that undergraduates and graduates were the most frequent sample group (N=46, 42.99%). Those results were also supported by Bervell and Umar (2017). According to Rymanova, Baryshnikov and Grishaeva (2015), teachers (66%) reported that they did not have strong ICT skills to manage LMS in Russia. So, instructors' perceptions about LMS are as important as students' perceptions. Additionally, the results of the current study added to our understanding that only 12 secondary + elementary students (11.21%) were involved as a sample group in 107 articles. In reality, more studies need to focus on the introduction of LMS at secondary level. As far as the top frequent countries of research are concerned, China and Turkey employed the top two frequent studies about barriers to LMS and investigated students' and teachers' responses on e-courses. By no means, LMS is a dangerous idea as long as students' and teachers' goals are properly aligned with reliable infra-structure and appropriate level (Steel & Levy, 2009).

CONCLUSIONS

Consequently, the findings of this meta-analysis have shed some light on the articles published between 2013 and 2017, which were analyzed according to seven criteria. The most frequent number of articles on the issue of LMS was on the lack of training (N=32, 29.91%). This number outperformed the issue of digital literacy (N=19, 17.76%). Considering research methods, the most prevalent research was found as the quantitative method (N=51, 47.66%). Furthermore, there was a significant difference between the most frequent model, i.e. descriptive (N=32, 29.91%) and the second frequent model, i.e. quasi-experimental (N=19, 17.76%). In addition, the most prevalent sample group included undergraduates and graduates (N=46, 42.99%). Questionnaire (N=47, 43.93%) was the most widespread data collection instrument over five years. China (N=14, 13.08%) was discovered as the most frequent country of research where most studies of LMS took place. In particular, the most frequent articles were written by one author only (N=52, 48.6%). Additionally, more studies need to focus on exploring and analyzing other aspects related with LMS.

Overall, implementing LMS into traditional classes is based on the idea of constructivist view of language learning (Charoenwet & Christensen, 2016). Within that framework, learners actively construct knowledge from their previous experiences and share knowledge with their peers. LMS enables language to be learned in a socially contextualized environment where learners communicate though web applications to meet their expectations (Rahman, Zamri & Eu, 2017). On one level, both teachers and students need to be technologically adept to experiment blended learning (Adzharuddin & Ling, 2013). Otherwise, teachers with limited digital skills and knowledge about LMS might demotivate learners and act as barriers to meet the realistic needs of learners. Finding the best blend requires quality and control over the technological tools. It is crucial that LMS enhances self-motivation and time management for learners. Nevertheless, LMS can only complement traditional classes. Therefore, more research needs to concentrate on to what extent LMSs can extend the opportunities of learning beyond the classroom. Besides barriers, it is also the question of whether the implementation of LMS fits the purpose, approaches, the context of learning and to what extent teachers and learners feel satisfied with the impact of LMS on their readiness, learning and engagement.

The sample size of this meta-analysis is limited to the articles that were published between 2013 and 2017. Only the articles with full-text were examined for the purposes of the study. The results of the study cannot be generalized to all articles on the other databases published between those years. The sample in this study was selected according to seven criteria so that the study cannot be generalized to all aspects of LMS.

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