Motivational Factors that Influence the use of MOOCs: Learners' Perspectives
A Systematic Literature Review

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Abstract: Massive Open Online Courses (MOOCs) have become an important environment for technology-enhanced learning (TEL) where massive numbers of users from around the world access free, online-based, open content generated by the world-class institutions. Understanding learner's motivations for using MOOCs is essential for providing successful MOOC environments. This paper presents a comprehensive picture of the literature published between 2011-2016 and pertaining to the motivations that drive individuals to use MOOCs as learners. We examined the classifications of papers, theories used, data collection methods, motivational factors proposed and geographic distribution of participants. Findings demonstrate that the related literature is limited. Several papers adopted technology acceptance theories. Quantitative survey was the favoured method for researchers. Key motivational factors were learner-related (which are divided into personal, social and educational / professional development), institution and instructor-related, platform and course-related and perception of external control/facilitating conditions-related. The identified studies focused only on few geographic regions. Such findings are important for uncovering the directions in the literature and determining the current gaps that can be addressed in the future.

1 INTRODUCTION

Massive Open Online Courses (MOOCs) offer people worldwide the chance to improve their education free of charge with no commitment or prior requirements. MOOCs are gaining wide-spread attention and are rapidly changing the attitude towards TEL. Since 2008, the number of higher education institutions that provide MOOCs has increased rapidly. It is reported that in 2015 there were around 4,200 courses offered by 500 institutions while the total number of learners who registered in MOOCs reached 35 million (Shah, 2015).

Barak et al. (2016, p.50) defined motivation as "a reason or a goal a person has for behaving in a given manner in a given situation". In MOOCs, there is a diversity in motivations among learners to use MOOCs as a result of the open nature of MOOCs, which allows anyone to participate (Kizilcec et al., 2013; Bayeck, 2016). Investigating such motivations offers insights for MOOCs providers into the possible solutions for improving their services in order to increase learners' engagement, satisfaction, completion rate, as well as meet their needs and requirements.

There is a lack of systematic synthesis of literature pertaining to factors motivating learners to use MOOCs. The purpose of this paper is to present a comprehensive and systematic review of the literature related to this topic so as to highlight the current research directions and gaps that can be addressed in the future. To address the gaps in the literature, we pose the following research questions (RQ):

RQ1: What are related papers? How can the papers be classified?
RQ2: What theoretical frameworks and reference theories have been applied to study the topic?
RQ3: What data collection methods have been used by related papers?
RQ4: What key motivational factors were proposed in existing studies?
RQ5: What is the participants' geographic distribution in the related studies?

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The reminder of this paper is structured as follows: Section two highlights the related work. Section three outlines the research method. Section four describes the findings while section five illustrates the discussion. Finally, conclusion is presented in section six.

2 RELATED WORK

This section summarizes prior literature synthesis that were focused on identifying the motivational factors affecting learner's intention to use MOOCs.

Only two literature synthesis pertaining to the topic were found. Hew and Cheung (2014) aimed to identify the learners' and instructors' motivations and challenges of using MOOCs. They also suggested future issues that need to be resolved. This work is similar to our study. However, their study was published in 2014 and many related studies have emerged after this year. The goal of a study led by Latha and Malarmathi (2016) is examining the factors influencing the learners to complete MOOCs. This study differs from ours in terms of that its focus is only on MOOCs completion and not motivations for using MOOCs.

We examined the literature based on different research questions that are not addressed before. To the best of our knowledge, this paper represents the first effort to review the literature on motivations for using MOOCs from learners' viewpoints for a particular time period (2011 to 2016) to make better sense of various research trends and provide proposal for further research.

3 METHODS

To accomplish our objective, we used the systematic literature review strategy suggested by Kitchenham (2004). The approach consists of five activities which are: (A) Define research question, (B) Define search keywords, (C) Select electronic resources, (D) Search process, (E) Match inclusion and exclusion criteria.

The search keywords used were "MOOCs Learner Motivations", "MOOCs Completion OR MOOCs Retention", and "MOOCs Learner Engagement". The papers were identified through searching six educational technology journals and six academic databases namely, British Journal of Educational Technology, American Journal of Distance Education, Distance Education, Open Learning: The Journal of Open, Distance and e-Learning, European Journal of Open, Distance and E-Learning, Computer Assisted Learning, Google Scholar, IEEE Xplore, Elsevier's ScienceDirect, Wiley Online Library, SpringerLink and Scopus. Tables 1,2 and 3 illustrate the ratio of search results to relevant papers using the identified search keywords. A number of search results from journal/database are similar to other journal/database results.

In order to be included in the corpus, each identified paper ought to focus on the motivations for using MOOCs from learner's perspective. This criterion was given the highest priority. However, due to the limited number of related papers, further criteria, with lower priority than the previous criterion, were specified to choose appropriate papers for inclusion in the review which are as follows: the paper ought to focus either on (A) the factors that influence the acceptance of MOOCs (why people accept or reject the use of MOOCs) , or (B) the learner's motivations for MOOCs completion / retention, or (C) the factors influencing the success of MOOCs, or (D) addressing the learners' motivations for using MOOCs as a part of other different objectives. We expect that these additional papers might present factors that are applicable to the motivations of using MOOCs. Moreover, papers ought to be published between January 2011 and October 2016 and written in English. The reason of selecting year 2011 is that it was the date when MOOCs have been used extensively in online learning (Sunar et al., 2015).

Table 1: The results of the search by the keyword "MOOCs Learner Motivations".

Journal /Data Base	*SR:RP
British Journal of Educational Technology	39:2
American Journal of Distance Education	7:0
Distance Education	28:0
Open Learning: The Journal of Open, Distance and e-Learning	23:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	9:0
Google Scholar	6,880:27
IEEE Xplore	247:0
Elsevier's ScienceDirect	178:4
Wiley Online Library	125:3
SpringerLink	434:4
Scopus	259:14

*SR:RP Ratio of search results to relevant papers

Table 2: The results of the search by the keyword "MOOCs Completion OR MOOCs Retention".

Journal /Data Base	*SR:RP
British Journal of Educational Technology	18:1
American Journal of Distance Education	4:0
Distance Education	15:0
Open Learning: The Journal of Open, Distance and e-Learning	16:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	7:0
Google Scholar	4,240:21
IEEE Xplore	304:0
Elsevier's ScienceDirect	242:5
Wiley Online Library	183:2
SpringerLink	197:1
Scopus	35:5

*SR:RP Ratio of search results to relevant papers

Table 3: The results of the search by the keyword "MOOCs Learner Engagement".

Journal /Data Base	*SR:RP
British Journal of Educational Technology	29:1
American Journal of Distance Education	9:0
Distance Education	37:0
Open Learning: The Journal of Open, Distance and e-Learning	32:0
European Journal of Open, Distance and E-Learning	0:0
Computer Assisted Learning	8:0
Google Scholar	9,800: 23
IEEE Xplore	199:0
Elsevier's ScienceDirect	168:7
Wiley Online Library	143:3
SpringerLink	489:3
Scopus	32:1

*SR:RP Ratio of search results to relevant papers

In the data analysis phase, we used the constant-comparative method suggested by Glaser (1965) to classify the identified papers.

4 FINDINGS

This section presents the findings from the analysis of the related studies as well as provides the answers to our research questions.

4.1 What Are Related Papers? How Can the Papers Be Classified?

The results of our analysis revealed that a total of forty-two papers were related to the topic. It can be observed that certain papers intended to develop a model based on identifying explanatory variables that are used to predict the use of MOOCs. In contrast, other papers applied empirical methods such as quantitative and qualitative data collection methods in order to explore the learners' motivations behind enrolling on MOOCs without modelling the motivational factors. Consequently, we clustered the relevant papers into two main categories:

1. Modelling the motivational factors that influence the use of MOOCs
2. Not modelling the motivational factors that influence the use of MOOCs

The classification of the identified papers is shown in Table 4. In this Table, all eleven identified papers in the first category focused on modelling the factors influencing learners' intention to use MOOCs while all seventeen identified papers of the second category sought primarily to identify learners' motivations for taking MOOCs.

Table 4: Classification of the identified papers.

Category	Author(s) (year)
1	Xiong et al. (2014); Xu (2015); Chu et al. (2015); Huanhuan and Xu (2015); Gao and Yang (2015); Chaiyajit and Jeerungsuwan (2015); Nordin et al. (2015); Aharony and Bar-Ilan (2016); Zhou (2016); Sa et al. (2016); Alraimi et al. (2015)
2	Belanger and Thornton (2013); Christensen et al (2013); Norman (2014); Hew and Cheung (2014); Davis et al. (2014); Gütl et al. (2014); Kizilcec and Schneider (2015); Zheng et al. (2015); Liu et al. (2015); Cupitt and Golshan (2015); Li (2015); Salmon et al. (2016); Bayeck (2016); Howarth et al. (2016); Uchidiuno et al. (2016); Zhong et al. (2016); Garrido et al. (2016)

We assigned additional three papers to the first category. However, they established different objectives from those of the previous papers in the first category. Hone and El-Said (2016), Xiong et al. (2015) and Adamopoulos (2013) aimed to develop a model of the factors contributing to the MOOCs completion and retention. The factors identified in these papers can be tested in the context of the intention to use MOOCs.

Further eleven papers, which have been assigned to the second category, indirectly addressed the motivations of learners for using MOOCs or investigated the factors influencing learners' retention or the success of MOOCs. Such papers are as follows: Shrader et al. (2016), Chang et al. (2015), Littlejohn et al. (2016), Rai and Chunrao (2016), Gamage et al. (2015), Wang and Baker (2015), Latha and Malarmathi (2016), Bakki et al. (2015), Khalil and Ebner (2014), Greene et al. (2015) and Barak et al. (2016).

4.2 What Theoretical Frameworks and Reference Theories Have Been Applied to Study the Topic?

Technology acceptance theories are the dominant in the related publications in the first category. The goal of these theories is to "specify a pathway of technology acceptance from external variables to beliefs, intentions, adoption and actual usage" (Van Biljon and Kotzé, 2007, p.152). According to Louho et al. (2006, p.15), "technology acceptance is mostly about how people accept and adopt some technology to use". It was found that most of the studies included into the first category group (11 papers) used technology acceptance theories.

Technology Acceptance Model (TAM) has emerged as the most popular theory with 6 publications employing it. Other used theories included the Unified Theory of Acceptance and Use of Technology (UTAUT) (2 papers), TAM3(1 paper), Theory of Planned Behaviour (TPB) plus Self-Determination Theory (SDT) which is one of the leading motivation theories (1 paper) and Information Systems Continuance Expectation Confirmation (1 paper).

4.3 What Data Collection Methods Have Been Used by Related Papers?

Orlikowski and Baroudi (1991) classified research into conceptual and empirical. Conceptual research refers to studies that are based on formulating concepts and models without using empirically collected data. Literature review is an example of this type of research. On the other hand, empirical research refers to studies that are based on data collection methods to generate and test hypotheses, such as surveys, interviews, multi-method research, case studies and experiments.

All previous studies falling under the first category are empirical research. Survey quantitative method has been used by all the related research except for one research which is based on observation, interview and analysing students' textual reviews.

Researches falling under the second category are classified into conceptual and empirical research. Four publications are conceptual research using literature review. With regards to empirical quantitative studies, there is a large volume of published studies using the survey method (13 papers) with one publication that applied survey and activity data analysis methods. Empirical qualitative studies utilized the interview (1 paper), literature review and observation (1 paper), and observation and interview (1 paper). Studies based on mixed-methods approach used survey and interview (3 papers); survey, clickstream and event data analysis (1 paper); survey and forum posts and email messages analysis (1 paper). The data collection method used in the study by Rai and Chunrao (2016) was based on general opinions that were derived from the perspectives of MOOCs learners but was not clearly identified in the paper. Overall, it turned out that the quantitative approach based on a survey method was the most frequently applied research strategy in both categories, with 26 papers (61.90%).

4.4 What Key Motivational Factors Were Proposed in Existing Studies?

We identified forty-three motivational factors reported in the related publications. Having identified the proposed motivational factors that drive individuals to the use of MOOCs, we classified those factors into four main dimensions: learner-related factors, institution and instructor-related factors, platform and course-related factors, and perception of external control/ facilitating conditions-related factors. The factors identified under each main dimension can be listed as follows:

1. **Learner-related factors**
   This dimension includes the factors related to the learners themselves. The factors are divided as following:
   - **1.1. Personal factors:** including curiosity, perceived enjoyment, learner's attitude, computer playfulness, computer anxiety, satisfaction, extrinsic motivation, intrinsic motivation, challenge, human capital (being able to behave in new ways) and awareness.
   - **1.2. Social factors:** including subjective norm (social influence), interaction with learners, image (social status) and mimetic pressure.
   - **1.3. Educational/Professional development**

factors: including job/academic relevance, extend knowledge and skills, earn a certificate, get learning opportunities not otherwise available, prepare for future, improve English ability and special project requirements.

2. **Institution and instructor-related factors**
   This dimension consists of two factors related to the characteristics of institutions and instructors namely, perceived reputation and interaction with instructor.
3. **Platform and course-related factors**
   This dimension includes the factors that describe the characteristics of the platforms and courses. Such factors include: perceived usefulness, perceived ease of use, perceived openness (open access to MOOCs without restrictions), course's content quality, course characteristics (such as the course's discipline and the duration of a course), ubiquity (flexibility or convenience), perceived utilitarian value (tradeoff between received and given things), objective usability, output quality, trust, perceived effectiveness, MOOC popularity, information richness (the amount of details used to convey the information), personalization and gamification.
4. **Perception of external control/Facilitating conditions**
   The perception of external control/facilitating conditions is defined as "the degree to which an individual believes that organizational and technical resources exist to support the use of the system" (Venkatesh and Bala, 2008, p.279). This dimension encompasses learner's skills and technology-related factors.
   - **4.1. Learner's skill-related factors:** including computer self-efficacy, experience in MOOCs and self-determination (self-regulated learning).
   - **4.2. Technology-related factors:** including technology compatibility.

One obvious finding to emerge from the analysis is that the most frequently proposed factors in the studies in the first category were: perceived usefulness (10 papers), perceived ease of use (10 papers), and perception of external control/ facilitating conditions (4 papers). In the studies assigned to the second category, the most frequently suggested factors were: extend knowledge and skills (25 papers), curiosity and earn a certificate (16 papers) and interaction with learners (14 papers).

4.5 What Is the Participants' Geographic Distribution in the Related Studies?

Participants in the related studies are the users who have been selected during the data collection stage for reporting their motivations for using MOOCs. The results obtained from the analysis shows that 10 papers in the first category reported the participants' geographic distribution. All these studies examined the perspectives of users from specific countries except for one study by Alraimi et al. (2015) which employed users from different countries. As can be seen from Figure 1, most of these studies focused on exploring the factors driving users from China to use MOOCs (4 papers). Other reported countries were: Israel, USA, India, Greece, Azerbaijan, Egypt, Thailand, Korea and Malaysia.

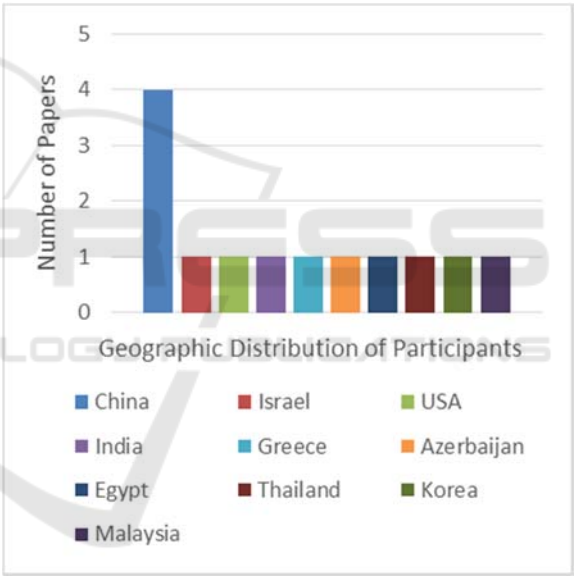

Figure 1: Geographic distribution of participants in the studies in the first category.

On the other hand, 13 papers assigned to the second category stated the geographic distribution of the participants. Conversely, these publications did not focus on the perspectives of users from a specific country or culture. Each of these studies employed participants originating from different countries. As Figure 2 shows, the most frequently mentioned countries were the USA (7 papers), India (7 papers), Spain (6 papers), and then four papers for each of the following countries: Australia, Brazil, Canada, China, and Germany.

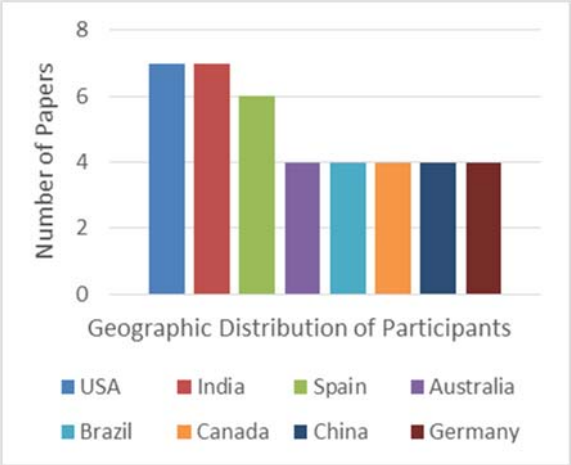

Figure 2: Geographic distribution of participants in the studies in the second category.

5 DISCUSSION

Our analysis of forty-two related papers revealed important findings. One interesting finding is that the amount of research on MOOCs acceptance and the factors influencing their use is limited. Moreover, only few papers adopt the technology acceptance theories.

Another important finding was that 61.90% of papers used solely a survey as a method for data collection. The finding of this study also shows that the main factors driving learners to MOOCs enrolment were learner-related (divided into personal, social and educational / professional development), institution and instructor-related, platform and course-related and perception of external control/facilitating conditions-related.

Unlike the studies assigned to the first category, most of the studies from the second category did not examine the motivations of users from specific countries or cultures. With regards to the geographic distribution of participants in related studies falling under the first category, the most frequently mentioned country was China whereas in the studies in the second category the main focus was on the USA, India, Spain, Australia, Brazil, Canada, China, and Germany.

These findings help us to understand current research directions in the motivations for using MOOCs from learners' perceptions, identify research gaps and provide suggestions for further research. Based on our findings, it can be concluded that substantial efforts are needed to investigate the topic from different perspectives and angles. There are numerous motivation and technology acceptance theories which have been tested in various contexts. Testing the applicability of these theories within the context of MOOCs is a rich area for future research. Because technology acceptance model (TAM) was built from a quantitative survey study, it is not surprising that survey quantitative methodology is the only method used by the papers that adopted technology acceptance theories. Likewise, most papers of the second category also used the survey method. One recommended method for future research is applying mixed-methods. The reason for mixing both quantitative and qualitative data within one study is that neither quantitative nor qualitative methods are adequate to understand the problem and the details of a situation, hence integrating both methods can complement each other (Ivankova et al., 2006).

Related studies addressed many motivational factors leading to the usage of MOOCs. Nevertheless, there is abundant room for further progress in determining other influential factors affecting MOOCs use. For example, further study may be undertaken to investigate the influence of intercultural exchange within MOOCs on the MOOC acceptance. In addition, a further study with more focus on understanding the influence of self-regulated learning capabilities on the learner's intention to use MOOCs is also suggested. Investigating the influence of earning certificate of course completion on MOOC acceptance is also useful research.

The related literature concentrated on the perspectives of users from few geographic regions. Christensen et al. (2013) reported that the reasons for enrolling in MOOC courses varied by country. Similarly, Davis et al. (2014) found that learners' motivations to participate in MOOCs can vary significantly across cultures. No published studies have been conducted so far to determine the motivations of Arabic individuals to accept MOOCs except for two papers by Davis et al. (2014) and Hone and El-Said (2016) which examined the viewpoints of Syrian and Egyptian individuals respectively. In light of these findings, in future investigations, it might be useful to identify the motivational factors influencing users from different countries and cultures such as Arabic or developing countries. In general, in order to develop a full picture of MOOCs acceptance, additional studies will be needed.

6 CONCLUSIONS

Prior literature that focused on the learners' motivations to use MOOCs have been examined. We reported the classifications of papers, theories used, data collection methods, motivational factors proposed and geographic distribution of participants. This systematic analysis enables researchers to understand the related literature on motivations for using MOOCs from learners' viewpoints and its directions and limitations.

Based on our findings, there are many suggestions for future research. First, it would be interesting to investigate the motivations of learners from Arabic countries to accept MOOCs and compare the findings with motivations of learners from other countries. Second, it is suggested that the correlation between learners' motivations and course completion is investigated in future studies. Third, a further study could validate the technology acceptance and motivation theories within the context of MOOCs. Finally, further investigation into influence of self-regulated learning capabilities on the learners' intention to accept MOOCs is recommended. We expect that this research will serve as a base for future studies.

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