

Students Used a Massive Open Online Courses (MOOCs) in higher education of Arab Countries (AC)



Nasser Alalwan

Abstract: A systematic literature review of 124 studies considering the usage of Massive Online Courses (MOOCs) in higher education of Arab Countries (AC) from 2013 to 2020 is presented in this research. The aim of the research is to provide a broad and systematic literature review regarding MOOCs used among universities' students. Therefore, based on certain areas, such as, research methods, year of publication, journal, country, type of respondents and author, studies of using MOOCs for educational purposes were analyzed. A great portion of the findings is for the utilization of quantitative and survey research methods with a percentage of 78%, 13% is for the qualitative research methods and 9% for the mixed methods. As shown by the findings, the interest on the topic has increased in the past few years which also indicate that this particular topic will be of great importance for the academic researches to come. Nevertheless, in order to promote and improve the use of (MOOCs) for educational purposes, it is of great significance that the coming studies utilize an extensive utilization of theoretical and methodological approaches like the qualitative methods to inspect the factors which will urge the students to utilize (MOOCs).

Index Terms: Massive Open Online Courses (MOOCs), Higher Education, Systematic Literature Review, Arab Countries (AC)

I. INTRODUCTION

MOOC became a trend since the first MOOC was introduced, MOOC are courses with open access and can be used by anyone around the world. In 2008, the University of Manitoba provided the connectivism and connective knowledge. The interactions and communication among students and instructors are facilitated by a discussion forum which provides a platform for asynchronous communications, and also assists students to develop a learning community within the MOOC. The discussions among colleagues can help improving the learning performance of the students as noted by a previous research.). Additionally, forum discussions can offer the instructors useful information to observe course progress. Therefore, a discussion forum has extensively used MOOCs in order to improve the interaction. The significance of discussion forum to MOOCs leads [1] to call into question the MOOC forums' communications and interactions.

Forum users who actively take part in discussions are to be identified firstly based on their continuous engagement, the amount of replies received, and the amount of responses made. A number of various models of forum threads created by the functioning users are examined and compared with typical (i.e., non-functioning) forum users in order to verify whether the functioning users in the MOOCs discussion forums are effective or not.

Furthermore, in order to find out if functioning users are making a positive contribution to MOOC, [1] analyzed both negative and positive posts and comments and votes of functioning users. Many MOOC courses lacked the team work or group work which was found highly effective in any learning [2]. Often MOOC platform do not support group work or teamwork in a systematic manner, but many of individual Instructors, professors are attempting to produce group work with the help of third party platforms. In order to find a convincing explanation for the dropouts in MOOCs, several researches have been conducted, but the worth noting researches to spot efficient MOOCs are to emerge. MOOCs are still learning the demands of the participants, even though MOOCs are vastly accepted. Replenishing the needs of the participants is of great significance as it is among the crucial reasons of students' low retention. Paving the way for a fruitful learning through this unprecedented education change with MOOC is the obligation of the academic community. The MOOCs community should work together to discover solutions, because as time elapses, problems are to emerge. Universities, public and private organization are providing MOOCs around the world to millions of people in order to be used in the process of learning. For the MOOCs and their learning effectiveness, there is a little empirical research. So far, focus has been placed in developed countries such as the USA, Australia and the UK. However, this research will describe and discuss studies in higher education of Arab Countries (AC). Additionally, the few studies which have investigated MOOCs acceptance and adoption have neglected significant parts of inherent nature of MOOCs which is related to both interactive and perceptual factors of MOOCs use [3]. Consequently, this research will conduct a wide and systematic literature review focusing on MOOCs used among universities' students in higher education of Arab Countries (AC). In addition, while there are many MOOCs models there is no model in evaluating learning performance and satisfaction of research students via using MOOCs for interaction, active collaborative learning and engagement in higher education of (MEC), representing a gap in this area.

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* Correspondence Author

Nasser Alalwan*, Computer Science Department, Community College, King Saud University, Riyadh, Saudi Arabia *Corresponding Author Email: nalalwan@ksu.edu.sa

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Thus, the research problem in this study will be to investigate and explore the previous studies that affect and influence to academic performance of students, with satisfaction of using MOOCs in (MEC).

II. RELATED WORK

Massive online course enrollments are facilitated by technology and both of these course structures, but it must evolve to improve course effectiveness. The distinctive MOOCs educational concerns are the reliable assessment of authentic student performance, the elimination of cheating and prominent student support, and the elimination of cheating are continuously addressed by the emerging novel technological solutions. The social engagement via large online groups is examined in a research on MOOCs as described earlier. Also, the research via small face-to-face groups examined the social engagement, a positive effect is represented on MOOC completion. The interaction of participant via discussion forums is what the success of MOOC is based on. Nevertheless, the different starting point of the prior knowledge of the learners is the obstacle which stands in the way of making this interaction happen. The researchers have started to value the understanding motivation of learning in online environments. For instance, [4] reached the conclusion that the online learning was an incentive of motivation for the students compared to their on-campus counterparts. Online learners' intrinsic motivation is positively related to their learning performance as found by [5]. According to previous studies on online learning, the unmotivated students who utilize the cognitive and meta-cognitive methods, i.e, mastery learning or self-monitoring are more likely to fail. In the context of MOOCs, there is a tendency among users to choose the very parts of the environment of learning which go in parallel with their goals and interests because of the learning environment being open and free. Al-Rahmi et al. [6] insisted on this fact and added that the knowledge of the learners is what determines the interaction in the first place. The MOOC suppliers and their capacity of providing courses with various contents tailored to the different motivations and purposes related to the learning environment is what others are concerned about. The large amounts of data created as learners participate in learning in MOOC environments have been used by researchers interested in MOOCs learning investigation, allowing the frequency and focus of learner engagement to be tracked. The reasons behind the low completion rates are what is the research on learning behavior is concentrated on. The influence of courses', perceived openness, perceived reputation perceived usefulness and overall user satisfaction with perceived reputation and perceived openness being the strongest predictors which has affected the intention of the continuity of using MOOCs as reported in another study. Faculty members are calling into question the quality of education MOOCs provide, in 2013, in conjunction with researchers from Gallup, over 2200 professors were surveyed on Faculty Attitudes on Technology [7]. The online collaborative learning settings [8], online distance courses [8, 9] or role of learner autonomy in open learning environments such as MOOCs [10] was questioned by a number of researchers. However, this research has tended to focus on systematic literature review of using

massive open online courses (MOOCs) in higher education of Arab Countries (AC).

III. THEORETICAL FRAMEWORKS AND REFERENCE THEORIES

The overall teachers' intention of utilizing MOOCs in their studies could be affected by their perceived enjoyment of MOOCs as empirical evidence has shown. The amount of utilizing a particular system is perceived as enjoyable, excluding any outcomes resulting from utilizing the system. Furthermore, another definition of perceived enjoyment is the comprehension of enjoyment in using computers ruling out the enhancement of performance expected from the users. The technology acceptances' cornerstone measurement is the behavioural intention as advised by TAM. The behavioural intention denotes to what extent is the student willing to use technology as defined in [11]. In this study, the level of students' determination and intention in utilizing MOOCs in their studies is the definition of behavioural intention. TAM was the theoretical base of studying the students' MOOCs usage behavior in our study, TAM has theorized the strong linkages and affinities between usage behaviour and perceptions, attitudes and intentions on the other hand. The Expectation Confirmation Theory (ECT) has been utilized widely to define the satisfaction of the consumer and the intentions of repurchase in the marketing literature and this theory was originally established by [12]. In the domains of sociology, social psychology and public policy, ECT has also been employed. Postpurchase satisfaction is affected by expectations and perceived performance as posited by ECT. Dissatisfaction is a result of the negative disconfirmation which occurs if the expectations are not met by the actual performance. Disconfirmation denotes to the services or the actual products' performance being at the same level of the expectations (confirmation), (positive disconfirmation) denotes to the level of expectations being surpassed by the actual products' performance or the services, or services or the actual products' performance misses reaching the expectation level (negative disconfirmation). A number of principles studied and stated which all combined create the theory of connectivism which is the firm ground of the social interaction. The principles are, chaos, network, complexity and self-organization theories.

IV. RESEARCH METHODOLOGY

This research reviewed the literature in higher education of Arab Countries (AC) in databases related to MOOCs used via students for educational purposes. The reviewed including: Science Direct, Ingeta Journals, Wiley InterScience, Springer, Taylor & Francid and Emerald Fulltext. In order to insure the coverage of publications in the different databases, Google Scholar search engine was utilized. We reviewed the citations for the articles identified for the sake of finding more articles. The criteria mentioned in the coming couple of points were utilized to quest these sources and select the papers:

- The excluded sources were doctoral dissertations, conference papers, journals papers, unpublished working papers and masters' theses because they are usually used to get information and publish new findings;



- The keywords for research as Massive Open Online Courses (MOOCs), Higher Education, Arab Countries (AC) were used to pursuit titles and abstracts of books and papers.

This very work initially sets the goal of presenting a wide and systematic review of literature of using MOOCs for learning. The current condition of the field which lacks answers to many questions, making it necessary to answer the three research questions;

1. What are the research issues that have been addressed in higher education of Arab Countries (AC) for the MOOCs use? Which journal, by whom, where and when was it published?
2. What are the theoretical frameworks/models/theories that have been employed in studies dedicated to the topic?
3. What are the research methods that have been utilized?

V. FINDINGS

This search reached the conclusion that between 2013 and 2020, the related articles published were 124. All the articles were selected in this research. The articles were scrutinized by the year of publication, journal, country and author. The guidelines for pursuing stringent research on utilizing MOOCs for education is being provided by this analysis. The following pages present the details.

A. Distribution by the Year of Publication

Figure 1 illustrates the articles' distribution from 2013 to 2020. The data shows an increasing trend in the number of utilizing MOOCs for education purposes in higher education of Arab Countries (AC). This trend shows that the attention is drawn on using (MOOCs) which also has increased as time went on, and also maintain its importance in the field of research. In the last three years, more than half 85 studies were published, from 2017 to 2020. See Figure 1.

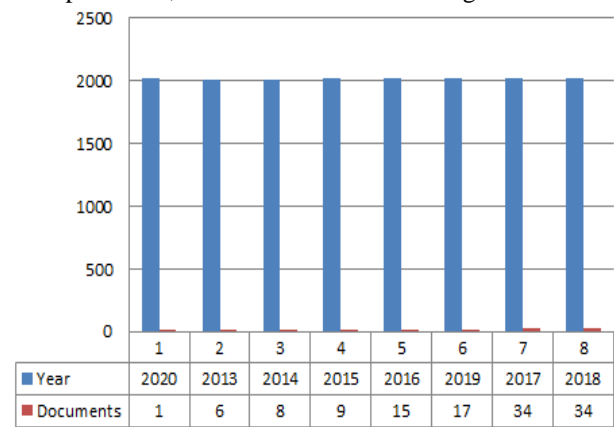


Fig1: Distribution by the Year of Publication

B. Distribution by Journal

Table 1 provides the results of the distribution of articles by the journals in which the authors published the articles. Most of the papers were published on ACM international conference proceeding series (8 papers) also, advances in intelligent systems and computing (4 papers) and international journal of emerging technologies in learning (4 papers). Moreover, international journal of advanced computer science and applications, 6th International Conference On Information And Communication Technology

And Accessibility Icta 2017, journal of theoretical and applied information technology, lecture notes in educational technology and smart innovation systems and technologies for each journal 3 papers. Furthermore, 10th international conference on intelligent systems theories and applications sita 2015, computers in human behavior, education and information technologies, handbook of research on strategic performance management and measurement using data envelopment analysis, international conference on multimedia, computing and systems proceedings, international journal of distance education technologies, international journal of electrical and computer engineering, and journal of educational computing research for each journal 2 papers. In addition, 73 papers were published on 73 different journals, look at Table 1. The scope of journals is the base on which the the result and the scrutiny depended on.

Table 1: Distribution by Journal

Journal	No
ACM International Conference Proceeding Series	8
Advances In Intelligent Systems And Computing	4
International Journal Of Emerging Technologies In Learning	4
2017 6th International Conference On Information And Communication Technology And Accessibility Icta 2017	3
International Journal Of Advanced Computer Science And Applications	3
Journal Of Theoretical And Applied Information Technology	3
Lecture Notes In Educational Technology	3
Smart Innovation Systems And Technologies	3
2015 10th International Conference On Intelligent Systems Theories And Applications Sita 2015	2
Computers In Human Behavior	2
Education And Information Technologies	2
Handbook Of Research On Strategic Performance Management And Measurement Using Data Envelopment Analysis	2
International Conference On Multimedia Computing And Systems Proceedings	2
International Journal Of Distance Education Technologies	2
International Journal Of Electrical And Computer Engineering	2
Journal Of Educational Computing Research	2

C. Distribution by Country

The distribution of articles by country shows the countries from which the authors compiled the data from as illustrated in Table 2. On country wise, the table shows that 14 Arab Countries (AC) were among the countries from which the data was compiled, and the countries which were the most frequently studied were Morocco (37), Saudi Arabia (16), Tunisia (11), United Arab Emirates (11), Egypt (10), Algeria (9), Oman (9), Qatar (6), Iraq (5), Jordan (4), Lebanon (3), Syrian Arab Republic (1), Kuwait (1), and Bahrain (1).



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Cumulatively, research works conducted in Morocco, Saudi Arabia, Tunisia, United Arab Emirates and Egypt these five countries contains 85 articles of total. While the rest of the countries got 39 articles of total, at the geographical regions level, studies concentrated the most in Turkey, see Table 2 and Figure 2.

Table 2: Distribution By Country

Country	Article Count	Percentage
Morocco	37	30%
Saudi Arabia	16	13%
Tunisia	11	9%
United Arab Emirates	11	9%
Egypt	10	8%
Algeria	9	7%
Oman	9	7%
Qatar	6	5%
Iraq	5	4%
Jordan	4	3%
Lebanon	3	2%
Syrian Arab Republic	1	1%
Kuwait	1	1%
Bahrain	1	1%

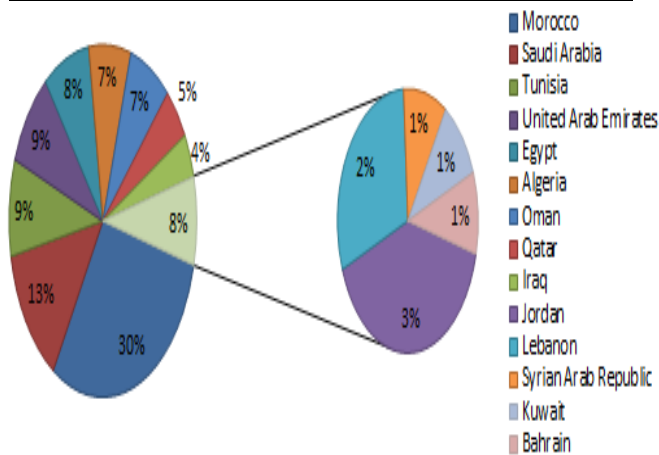


Fig 2: Distribution by Country

D. Distribution by the type

Table 3 and Figure 3 illustrates that the majority of studies were from conference papers with 66 (53.0%), and articles with 47 (38.0%) and The following book chapter with 7 percentages (6.0 %), review papers with 3 percentage (2.0%), and letter with 1 percentage (1.0%). It is worth noting that the vast majority of studies were from conference and articles papers.

Table 3: Distribution by the Type

Document Type	Documents	Percentage
Conference Paper	66	53%
Article	47	38%
Book Chapter	7	6%
Review	3	2%
Letter	1	1%
Total	124	100%

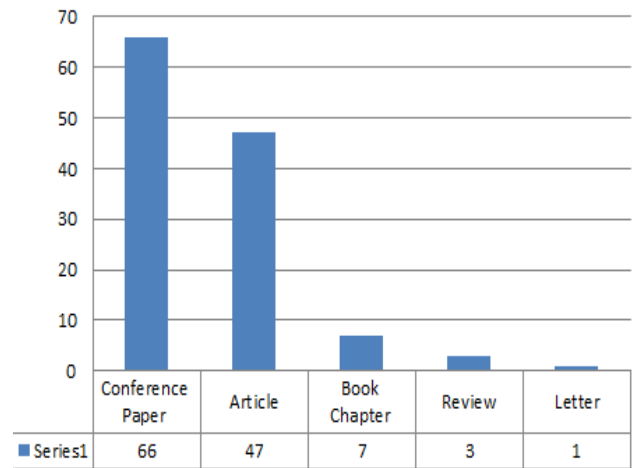


Fig 3: Distribution by the type

E. Distribution by subject area

Table 4 is dedicated for the subject area distribution. It is noteworthy that the majority of studies were from computer science area are 35 (28.0%), social sciences area are 19 (15.0%), decision sciences area are 13 (10.0 %), engineering area are 13 (10.0 %), and mathematics area are 14 (11.0 %). The following studies from medicine area are 8 (6.0 %), also business, management and accounting science area are 7 (6.0 %), and economics, econometrics and finance area are 4 (3.0 %). Furthermore, the four area such as; psychology, nursing, arts & humanities, and biochemistry for each of this area are 2 (2.0 %). finally, the three area such as; physics and astronomy, energy, and agricultural and biological sciences for each of this area is 1 (1.0 %).

Table 4: Distribution by Subject Area

No	Subject Area	Documents	Percentage
1	Computer Science	35	28%
2	Social Sciences	19	15%
3	Mathematics	14	11%
4	Decision Sciences	13	10%
5	Engineering	13	10%
6	Medicine	8	6%
7	Business, Management and Accounting	7	6%
8	Economics, Econometrics and Finance	4	3%
9	Psychology	2	2%
10	Nursing	2	2%
11	Arts and Humanities	2	2%
12	Biochemistry, Genetics and Molecular Biology	2	2%
13	Physics and Astronomy	1	1%
14	Energy	1	1%
15	Agricultural and Biological Sciences	1	1%
	Total	124	100.0 %

F. Empirical Research

The scrutiny illustrates that the quantitative research by survey occupied most of the studies by 97 articles, (78.0%) by percentage, 16 for interview with a percentage of (13.0%) and 11 articles for mixed approach method with a percentage of (9.0%).

Thus, 108 studies as the total of quantitative research forming the upper hand. Table 5 and Figure 4, illustrates the results of the classification in empirical research.

Table 5: Empirical Research Approaches Used To Study Is Continuance Intention

Research Approach	Methods Used	Article Count	Percentage
Quantitative Research	Survey	97	78%
Qualitative Research	Interviews	16	13%
Mixed methods	Survey and Interviews	11	9%
Total		124	100.0 %

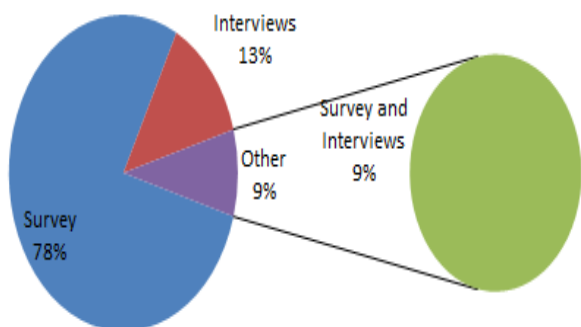


Fig 4: Distribution by the type of research

VI. DISCUSSION AND IMPLICATIONS

Applying MOOC has overshadowed the process of learning negatively as previous studies reported. Baxter and Haycock [13] found that although forums facilitate academic integration, they can have a negative effect on student motivation and online identity. Similarly, [14] found that MOOCs negative posting and a disincentive to some learners. Nonetheless, a positive influence of MOOC with a noteworthy majority of students with a positive feedback as illustrated by other studies [15, 16, 17]. Additionally, using MOOC improves effectiveness learning of students and researchers as it facilitates high interaction with lecturers, enhances communication skills and allows the exchange of information among students and lecturers. In the light of the findings of the research, students and lecturers are incited to utilize MOOC in the learning process. It is effortless to get online learning resources provided by universities. Lecturers and students should be the top beneficiaries of the social nature of MOOC in order to expand the engagement, cooperative learning, and learning process communication [18, 19]. However, it is of high significance that MOOC to be scrutinized on how the lecturers, researchers and students utilize this technology and how can the social features of MOOC improve its effectiveness in the learning process.. Also, it is important to draw the attention of lecturers to the MOOC potential in order to enhance the experience of learning and to make the academic activities more productive. According to some past studies the students were able to use MOOC to develop skills through interactive with peers [20, 21]. Thus, Students will have a tendency to utilize MOOC to get resources from lecturers, as they were satisfied with using MOOC to improve the study skills. Therefore, this study has

the potential to be of an importance as providing a systematic literature review in higher education of Arab Countries (AC) on MOOCs used for educational purposes, the relation and the impact of the social learning on interaction and the accomplishments in the academic field. In addition, this study is targeting the providers of MOOC. Furthermore, the merits of MOOC to be known to the universities and institutions which provide MOOC, and the benefits of having students enrolling in these courses. Students enrolling in MOOCs having inquisitiveness and job promotion as main factors of enrolling in such courses. MOOC providers that take into consideration and value these factors are more likely to retain and tempt more students to enroll. Few switching fees are required in order to decrease the amount of the skiving students. On the other hand, the majority of MOOCs are free. In order for the MOOC providers to be distinguished, they should provide faculty or higher education courses.

In this study the systematic literature review in higher education of Arab Countries (AC) show that using MOOC improves effectiveness learning of students also gives the permission for the information to be exchanged among students and lecturers and improves the skills of communication and facilitates interaction with peers and lecturers. In the light of the result of the research, lecturers and students are urged to utilize MOOC for education. In addition, few researchers in Arab Countries (AC) have conducted studies on (MOOCs) used for educational purposes with different perspectives and theories. Therefore, this study is important and will a wide and systematic review of literature concerning (MOOCs) utilization among universities' students in higher education of Arab Countries (AC). Unfortunately, the (MOOCs) is lacking the group work characteristic which is a corner stone to the environment of learning. Group work is not supported in the platforms of (MOOCs) which makes it necessary to the lecturers and teachers to use some other platforms. Thus, researchers in this field are hold responsible for paving the way and enhancing this type of learning and to tackle any obstacle.

VII. CONCLUSION AND FUTURE RESEARCH

A systematic review of 124 papers throughout 48 journals from 2013 to 2020 is giving a general understanding of the current situation of the utilization of Massive Open Online Courses (MOOCs) in the Arab countries as provided in this research. Depending on the research questions which covered the research methods, year of publication, journals, countries, authors, type of study area and the theories employed, the researchers scrutinized the contributions. Systematic way of classification of contributions was followed to give a broad understanding of the utilization of (MOOCs) in higher education in the Arab countries for educational purposes and to help those who are looking for related studies in the field. Moreover, the research is a contribution to the on demand elements which are in relation with the literature of using (MOOCs) for educational purposes in higher education of Arab Countries (AC). Furthermore, in this research, a number of theories were applied to improve (MOOCs) through pinpointing the six concepts of intention to use, collaborative, motivation, satisfaction, engagement and interaction.



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To recapitulate, needless to say that (MOOCs) can affect the performance of academic students positively and (MOOCs) which have the advantage of facilitating the learning process through offering materials and enabling the share of knowledge and information among student.

This information should be taken into consideration in future studies in order to broaden the existing literature in Arab Countries (AC) and all around the world. It is also suggested in this study that more models and frameworks to be developed in order to utilize Massive Open Online Courses (MOOCs) in higher education in the Arab countries and elsewhere. More components are recommended to be used for measuring the different elements that could affect (MOOCs), for instance, cooperative learning, engagement among students and interactivity. Also, the dropouts in (MOOCs) are catching the attention of researchers as trying to find out the reasons behind this issue. At the same time, the quality of (MOOCs) used in higher education in the Arab countries is being improved by researchers.

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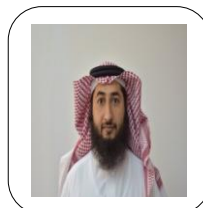
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AUTHORS PROFILE



Dr. Nasser Alalwan is an assistant professor of computer science at the computer science department, community college, at King Saud University. He received his Ph.D. degree in computer science from De Montfort University, United Kingdom. Master degree in computer science from Western Illinois University, United States. His main research interests Database, Semantic Web, ontology, E-learning, M-learning,

information technology management. He is currently vice director of Educational Center for Professional Development for operation.