

A Concept Review on MOOCs Research Findings – A Qualitative Approach

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Abstract: Massive Open Online Courses (MOOC) platforms play a vital role nowadays in knowledge creation and enhancement. Though, initially these programs and courses were offered freely, now due to emergence of technology and requirement, they were offered in both free and paid mode. Currently, the MOOCs provide various programs and courses that are administered by various international higher education institutions and private organizations. Moreover, the COVID – 19 has triggered all the universities, colleges and institutions to move towards MOOC platforms as an online learning method. The students used these MOOC platforms to gain and enhance required knowledge in this competitive world. Due to this emergence, various research studies were conducted during the past years using different research methodologies and scopes to identify the usage, gaps, trends, advantages, disadvantages and user satisfactions. This paper reviews some major researches since 2010 and summarizes the findings to support future research scopes. The 16 research articles that were having more than 100 Google citation counts were considered for this study and analyzed. Currently, the number of students joining and completing the courses through online is significantly increased which showed that the learners' intention on getting the knowledge in the area of specialization has increased. Moreover, the acceptance and recognition of online courses and programs by various employers and institutions have been increase which opens a great opportunities for continuous and life-long learnings. Though, the completion rates of courses and programs thorough online platforms are increased comparatively now-a-days, the success rates, knowledge acquisition rates, actual participation rates and learning outcome attainment rates need to be studied in depth.

Index Terms: MOOCs, online courses, research findings, online learning, educational technology

1. Introduction

1.1. MOOC and its Applications

Massive Open Online Courses (MOOC) platforms drastically changed the education system moral into a new level. They provide flexible courses and programs platforms to support the learners to gain new skills at their convenience. These platforms provide courses at affordable fees (either free or comparatively lesser price) and support the learners in their regular learning, career development and lifelong learning. The courses offered at MOOC platforms act as a supplement to the traditional learning process as an e-learning systems. They offer interactive programs and courses and maintain high quality educational environment to attract students, employees and organizations. They provide audio and video materials, additional learning resources and lectures with sufficient interaction between the learners and providers.

In early 21st century, the technological developments opened ways to e-learning or online learning and assist in developing open educational resources. . In 2007, Wikiversity tested this open education system as free [1]. The word MOOC was created in 2008 and further developed in 2011 with educational videos. The videos were published as free web resources through open online platform [2]. Later various online platforms were established as free, non – profit and for – profit to provide educational facilities to the students and users.

The courses offered in MOOC platforms were made without credit requirements and non-compulsory attendance system. As traditional learning programs were limited to enrollment, these MOOC courses were allowed to registered

students without a limitation. The course materials were developed with interactivity and students were allowed to discuss and clarify their doubts through online forums. Initially, the evaluation of the coursework was challenging and there were huge scopes for cheating [3]. Thus since the year 2012, these MOOC courses were accepted by various universities all over the world which triggered various outsourcing companies to invest for the infrastructure and develop required systems to accept massive students enrollment with a range of courses [4]. The courses were developed under extended MOOC (xMOOC) with traditional higher education courses and connectivist MOOC (cMOOC) where the learners had full freedom of course selection.

During the pandemic, most of the higher education institutions joined with various outsourcing companies and advised the students to get required knowledge through these platforms also, as the face – to – face classes were moved to online mode. The MOOC courses motivated the students to select the courses based on their specializations and areas of interest. The students could benefit through these courses to obtain the necessary learning outcomes of the programs that they were registered at the universities. MOOCs have provided the learners a better access and choices to pursue their education. Hence the higher educational institutions are forced to reevaluate their educational systems and scopes [5]. The systematic review of the research articles related to MOOCs on the topics and models supports the researchers in understanding the MOOCs phenomenon in international context. Though various researches were conducted related to this topic, this paper reviews some of the major researches since 2010 and summarizes the findings to support future research scopes and potential research areas.

1.2. Research Objectives

The following research objective was set to conduct this study:

Objective 1: Identify the research activities conducted in the area of MOOC to understand the phenomenon in international context on higher education processes.

Purpose: The research activities are conducted in various perspectives in the area of MOOCs. The study includes not limited to relationships between the learners and MOOC platforms, obstacles and barriers in using the platform etc. This study could provide an insight on those perspectives and to support the researchers to conduct further researches in the current scenarios, demographic areas, the potential future scopes and impacts on higher education processes.

1.3. Limitation

The study summarizes only those research activities that have citation counts higher than 100 and published after 2010. Thus, the research activities conducted in recent years or before 2010 and those have fewer citation counts but with comparatively new findings and the results are not included.

2. Literature Review

Table 1. Literature Review Findings

S.No	Author(s)	Findings
1	[7]	- To identify the relationships between the learners and the platforms with the impact levels the article was reviewed. - There was a positive relationship between learners' intention and perceived usefulness of MOOCs, performance-to-cost value, and self-regulation. - There was a negative relationship between learners' intention and lack of accessibility tradition, social norms and lack of supporting information.
2	[8]	- To study the barriers and their impacts on using the MOOC in higher education sector. - Barriers in adoption of MOOC: Usage, Value, Tradition - Barriers in Using MOOC: Self-control, attitude, promotion, economical circumstance.
3	[9]	- To study MOOCs and its supports on higher education systems - The characteristics of disruptive innovation were not satisfied by MOOC. - MOOCs supports the learners who are in out of the higher education system.
4	[10]	- To study learners' perspectives this article was reviewed. - In general, the MOOC completers applied goal setting which is one of the major sub-process of self-regulatory learning.
5	[11]	- To study the perceived usefulness and impact on learners this article was reviewed. - Students with comparatively lesser educational background may not be able attain the required knowledge - The course contents may not be suitable to the students with lack of knowledge. - The learners with more experience in online learning benefit significantly.
6	[12]	- To measure the learners' intentions and interests this article was reviewed. - The learners showed overall liking of video-based activities that supports their personal development. - Most of the students discontinued the MOOC immediately after opening an assimilative activity.
7	[13]	- To understand the knowledge management practices and its impacts on using MOOCs, this article was reviewed. - The Knowledge Management practices (access, storage, and application) positively impact the perceived usefulness (PU) of MOOCs. - Knowledge sharing positively impact perceived ease of use.
8	[14]	- To understand the overall impact and usefulness of MOOCs in higher education, this article was reviewed. - MOOCs significantly increase international viability and reputation of the institutions. - Motivation to participation in MOOCs is comparatively very low. - MOOCs support in finding new teaching and learning strategies.

Though the study itself a qualitative review on research article findings, those literature do not fall under the research methodology but has the google citation count between 50 and 100 were reviewed for potential impacts on the higher education processes. Table 1 summarizes the literature review findings. The research articles that had conducted with different research perspectives that had impacts on higher education processes that supports the research objectives were considered for review of literature.

3. Research Methodology

The related research articles were searched in Google Scholar. As there were very huge number of articles, to restrict the numbers, the articles that had citation counts above 100 were considered for the study. The citation count size was set to this size to ensure that the recent research activities could be included in the study. 16 such research articles were identified and considered for the study. Though there are numerous researches conducted on MOOCs, this study concentrated on those where the authors studied the impacts on the higher education institutions.

In general, the impact of a research article depends how the findings motivated the researchers to adopt and continue further in the area of study. The highly cited articles have significant improvement in the field of the study conducted. Thus, this research methodology was selected to ensure that the research articles have impacted the other researchers to use and continue the similar studies. This will support the other researchers to conduct similar studies in various environments with research perspectives and focuses. The articles were searched with key terms “MOOC and Higher Education Institutions” in Google Scholar. The time frame was set to start from 2010. The articles that are cited by above 100 were analyzed for study.

The findings of the below mentioned research papers were reviewed and consolidated for further research purposes. The research papers were analyzed for their findings in various perspectives that would provide clear insights for the future research scopes. Table 2 shows the details on number of google citation counts for the research papers considered for the study.

Table 2. Google Citation Counts

S.No	Author(s) #	Year	Google Citation Count
1	[5]	2019	110
2	[15]	2010	843
3	[16]	2012	2030
4	[17]	2012	876
5	[18]	2013	1557
6	[19]	2013	1456
7	[20]	2013	1130
8	[21]	2013	865
9	[22]	2014	2387
10	[23]	2014	1261
11	[24]	2015	1063
12	[25]	2015	131
13	[26]	2019	444
14	[27]	2020	135
15	[28]	2020	106
16	[29]	2020	291

4. Analysis and Findings

Ref [15] identified that the paradoxes existing about the major characteristics of MOOC such as “autonomy, diversity, openness and connectedness / interactivity” were not easy to satisfy in the online courses. They also found that when online courses were offered with more autonomy, diversity, openness could attract more students. But the online courses offered should ensure that proper structure of the program / course content that meets the users’ requirements, sufficient supports to the users in knowledge creation and effective moderation by the instructors. The cMOOCs and xMOOCs were developing very fast. He also found that MOOCs will support in development in teaching

methods and the institutions need to update their missions in line with the technology development. He said that the MOOCs encourage the universities to develop systems for online learning [16].

The characteristics of AI – Stanford like courses and cMOOCs were using diverse formats. The openness between the courses offered in both formats had different meanings. The learners' participation and interactions were significantly different. The courses offered under AI supported the learners with no technical subject knowledge whereas CMOOCs need prior knowledge to support independent learning [17]. The first course offered in MOOC on students' usage of resources and the impact of students' capabilities and background supported their level of success. Their study revealed that the completion rate on MOOC and the students' participations in discussion forums were very low [18].

Ref [19] studied the learners' engagement in online courses and detected four major prototypical trajectories on their engagements during their learning processes. Their study also identified that the learners enrolled those courses as they felt they were fun and interesting. They found that the successfully completed learners had participated in forum discussions significantly and their engagements were similar to traditional learning. Auditing learners watched the lecture videos regularly but participated in assessments comparatively less. The disengaging students found that they wrote assessment one or two times and watched the lecture videos rarely. The sampling learners watched the learning videos watched only one lecturing video.

The students' performance of flipped classroom using MOOCs was comparatively better when compared to traditional classroom teaching. The completion rates of videos with micro-lectures of lesser run duration were completed by the students. The students completing the online exercises were drastically reduced over the weeks. The authors felt that it could be due to non-provision on correct answers with clear explanation. The students' learning performances were significantly increased [20].

Ref [21] studied the participation patterns on online classes and identified that the contribution rates were significantly too low when compared to the number of learners visiting, registering and participating in the MOOC classes. The study revealed that the MOOC platform courses had very high rates of drop-outs and the participation in the activities were comparatively reducing over the time period. The learners were not much engaged with the pre-recorded classroom lecturing videos. Apart from that, the instructor's enthusiastic engagement with fairly understandable fast language and the videos produced with more personal feel motivated the learners to engage with the videos [22]. Ref [23] also identified that the same issue persist irrespective of the institutions and their world ranking. The completion rates were significantly very low due to course length and releasing of courses on time. The students' uses different engagement strategies with respect to lecture and learning through videos. Their study also identified that the students were more engaged with the short videos, Khan-style tablet drawings and informal talking-head videos.

Ref [24] identified that the instructional design quality of the MOOCs were very low. Their study also revealed that the majority of MOOCs were not problem-centered. They had ill-structured learning activities. Moreover, most of courses did not require any subject prerequisite of the learners. The courses were not providing sufficient real world problems and their solutions. They were not proving necessary knowledge or skills that shall be applied during problem solving. The course materials had limited scopes for integrating learners' new knowledge. Moreover, the MOOCs environment did not provide enough opportunities to collaborate with colleagues during the learning processes. The experts' feedback on the learning activities was too minimal. One of the major issues identified was that the course materials presented in the platforms had authentic resources in use.

The opportunities and threats on implementing MOOCs focus mainly on teaching and learning pedagogies. They could not be used for developing a professional teacher. Though the MOOCs platforms provide flexible and personalized learning opportunities for the learners, the poor quality of pedagogies and approaches would spoil the reputation of the institutions, in turn, damage the commercialization [25].

Basically the MOOCs would not entirely change the higher education systems. It would be an additional tool that provides various technical and technological supports to enhance the existing education systems. Though the current global educational requirements were drastically increasing and providing a very high opportunity to the learners to gain knowledge, proper funding and focus by the political and government needs a great vision. Mere technological development would not be sufficient for higher education systems [26]. The institutions needed to ensure proper copyright issues that arise while using Open Education Resources. The cost incurring during the MOOCs development may be included to research grants to ensure sustainable development. The learners need to be followed-up for the impact of MOOC learning on participation and research activities [27].

The social presence of the student community played a vital role in drop-outs. Moreover, the students with lower academic skills and ability drop-out from the online courses. The course design also one of the major factor influenced the students drop-outs. The student's prior experience and the social supports that they receive played comparatively higher roles in students' drop-outs from the MOOCs [28]. Though the students were interest in such online courses, some of the institutions did not either provide opportunities by encouraging the students or developing external strategies to utilize the development of technologies. The government should take necessary steps and accredit the programs offered in such distance education platforms [29].

The MOOC educations triggered those higher education institutions to develop new business models as MOOC drastically elevated the internationalization and increasing momentum of lifelong learning. The institutions and investors were in the way of building strategies to accommodate the open education system and develop their brands in such way to attract the national and international students. The MOOC platforms of education prompted the ministries

to look for alternate policy funding, quality assurance and certification of open higher education conducted by higher education institutions [30].

5. Discussions

The recent years, the technology development supported the autonomy, diversity, openness and connectedness / interactivity. The programs and courses offered by various MOOC platforms are considering the importance of these basic characteristics and developing the programs to at least to satisfy at minimal level. Moreover, as Ref [16] identified, the public and private higher education institutions are involved in developing OER using multimedia to attract the learners. Both the cMOOCs and xMOOCs support the learners in knowledge creation and accumulations. Though the number of students joining the online course is increased exponentially, the proportionate increase in the completion rates in the current enlarged volume needs to be studied in depth for knowledge gained. There is a need to ensure that the learners successfully completing the free courses physically viewed the videos.

As most of the MOOCs platforms conduct online assessments only after ensuring that the students are significantly engaged in watching the lecture videos, the students have made to engage themselves in watching videos. Moreover, as the learner needs to write an assessment to get the certificate with a minimum marks for passing, the students are motivated to study the course contents comparatively very well. The institutions that are globally at higher ranks offering courses and programs with low cost that would support the institution to generate funds and greatly provide opportunities to the learners to get high quality education with minimum expenses. The MOOCs investors should ensure that the visual flows of the lessons are motivating the learners to engage with the videos. Though, the instructional designs of the courses are improved a lot to ensure that the learners get an opportunity to learn independently, still there are scopes to improve.

The course materials needs to further updated in order to attract the learners towards the online learning platforms. The learner's engagement needs to be monitored through various assessment and learning strategies and the low engaged learners should be motivated for increasing their engagement. The higher education institutions must recognize such highly engaged online courses with credits and equalize with the existing courses in the program of study. The employers shall devise systems to recognize such courses in considering professional development.

6. Conclusion

The number of students enrolling to such MOOC courses is significantly amplified. The number of online platforms offering such courses and programs are consistently increasing. The pandemic created a very huge scope for the universities and colleges to join hands with these MOOC platforms or create a new one to attract the students at different levels. The learners are attracted to join the courses and programs through the informative videos, interactive discussion forums and course contents. Though, the completion rates of courses and programs thorough online platforms are increased comparatively now-a-days, the success rates, knowledge acquisition rates, actual participation rates and learning outcome attainment rates need to be studied in depth. This paper identified the some major findings from the highly cited articles to support the researchers to further focus on the areas of improvement. Moreover, this paper provided an insight of the findings that are supported in various other research articles. This study provides an overview for identifying the research focuses related to MOOCs, The researchers shall conduct extended studies to identify the relationships between the learners and the online platforms in post pandemic period. The impacts of pandemic on MOOCs platforms need to be studied considering various factors but not limited to such as usefulness, supports provided to the learners, learner's perspectives and the ways to eradicate the existing barriers. The researchers shall identify the strategies how the MOOCs shall be utilized to educate the slow learners in their learning processes. Studies need to be conducted identify the learners' participation trends and the completion rates in each region in the post pandemic period. The impact and importance of adding the study materials in local languages shall be studied to use the platform with its full potential by maximum number of users.

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