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A THEMATIC LITERATURE REVIEW OF THE IMPLEMENTATION OF MOOCs - 2008 TO 2018

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Abstract:

From around 2008, Massive Open Online Courses (MOOCs) promised a new way in which universities could better position themselves for future disruptions to the Higher Education (HE) sector. Anyone with an internet connection was now able to access vast numbers of courses, without having to pay expensive tuition fees. Now, ten years later, MOOCs as a disruptive technology, have been tried and tested. In this article, a thematic literature review is conducted to evaluate the implementation of MOOCs. The main findings are that HE institutions offering MOOCs often rate their successes or challenges in terms of the monetary returns, course uptake and completion rates, the authentication of students and the formal accreditation of courses. Other important factors include the nature and role of student engagement, the sustainability of MOOCs and the urgent need for course materials to be available and accessible. While this study focuses on the UK HE experience, future research will need to examine the usefulness of MOOCs in different country and learning contexts.

Keywords: MOOC, disruptive technology, higher education, opportunities for success, challenges for success

I. INTRODUCTION

In 2008, Massive Open Online Courses (MOOCs) promised a way in which universities would position themselves in the future (Rambe and Moeti, 2017). An extensive range of topics for study is now available to anyone free-of-charge. MOOCs became widely adopted from 2012 and many institutions in the higher education landscape felt obliged to take note of these new technological developments, not least to ensure their future competitiveness (Siemens, 2013). This article reviews some of the vast literature on MOOCs, to gain an understanding of the issues that early adopters encountered and to discern what opportunities were created through the rapid expansion in the MOOC 'offer'. Based on this reflection, a clearer roadmap for the next decade of MOOCs and their derivatives is faintly discernible.

II. BACKGROUND

Disruptive technologies have promised to change the way academics teach. Examples of disruptive technologies include distributed collaboration (Anderson and McGreal, 2012), technology enhanced learning (Schuelke-Leech, 2017), blended learning (Garrison and Kanuka, 2004), the flipped classroom (Herreid and Schiller, 2013) and MOOCs. One major drive for the establishment of MOOCs was to make higher education more affordable and accessible (Conole, 2016, Siemens, 2012). The so-called 'University of the People' was established in 2009, as a not-for-profit university (Selwyn, 2012), and the world's first tuition-free online university (Anderson and McGreal, 2012). The business model is simple: make all material available without any cost, with students only paying if they choose to write the formal exam at a cost of between \$10 and \$100 per exam. Since then, a large number of universities across the world have implemented MOOCs, a system allowing anyone with an internet connection to access vast amounts of diverse

course material on a bewildering range of topics, some of it developed by the world's leading academics, for the cost of an internet connection.

III. LITERATURE REVIEW

The beginning of the MOOC

The first two MOOCs were started and made available in 2007 and 2008 in the US, the first one called “*Introduction to Open Education Course*” by David Wiley from the University of Utah and the second called “*Social Media and Open Education*” by Alec Courus from the University of Regina (De Freitas et al., 2015). In Figure 1 below, the history of the MOOC is shown, indicating the big uptake towards the end of 2012. A large number of MOOC providers originated from higher education institutions, with some remaining part of the institution and some branching-off to create separate entities focusing only on MOOCs. MOOC providers such as Coursera and Udacity are profit-driven organisations, backed by venture capital funding and their mandate is to their shareholders, rather than for the benefit of students or society (Siemens, 2013). Some of the earliest challenges were identified as being financial constraints on the part of course developers, difficulties in accrediting courses, poor course completion rates and difficulty in authenticating the registered students, as highlighted in Figure 1.

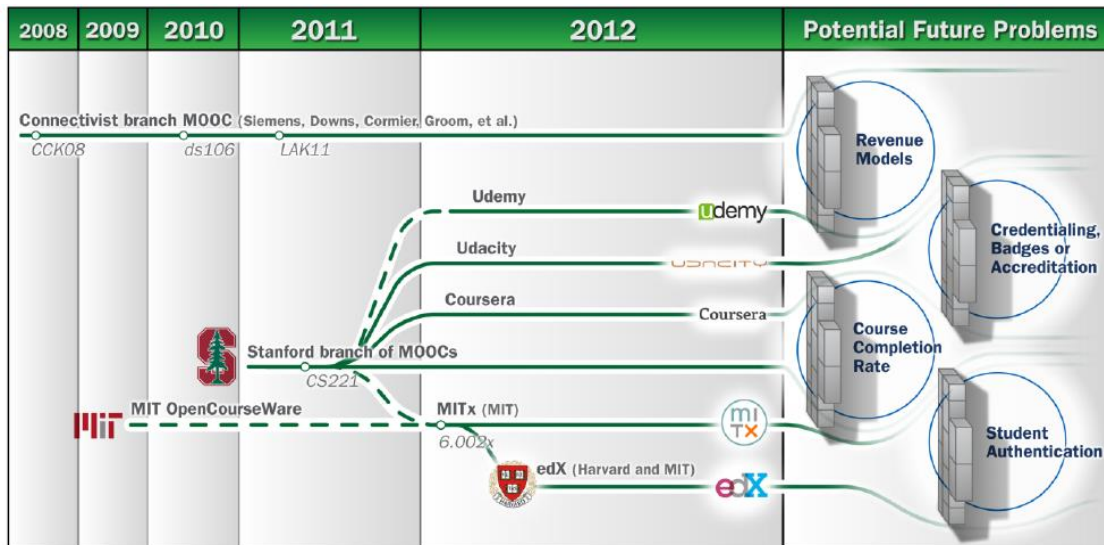


Fig. 1. The history of MOOCs up to 2012. Source: Hill (2014).

The *New York Times* labelled 2012 as “the year of the MOOC” (Chauhan, 2014), both anticipating and reflecting the fact that the technology was rapidly gaining traction worldwide. It was only in 2013 that a large number of universities across the world started developing and presenting MOOCs as part of their basket of academic offerings (Cunha, 2016). The main aim was not to replace lectures at bricks-and-mortar universities, but rather to provide content to people who would otherwise not be able to afford to access higher education. Registered students could also access an institution’s MOOC, but it only covered certain, quite limited elements of the full curriculum. MOOCs are typically not credit-bearing (Siemens, 2013), but provide the universities

offering them with more exposure. In Table 1, a brief description of certain better-known MOOCs is given.

Table 1. MOOC providers

MOOC	Brief details
OpenUpEd	A European Association of Distance Teaching Universities, offering a large number of courses in more than ten languages
Open2Study	It is a group of eight Australian universities working in partnership to provide a wide offering of courses.
Coursera	This is a for-profit MOOC and it uses material from highly acclaimed institutions like Oxford and Harvard.
Udacity	This MOOC is primarily focusing on mathematics and computer science.
Udemy	It offers more than just academic courses, with business courses such as programming and music production.
MITx using the edX platform	This prestigious university started offering MOOCs in 2013, with the first course enrolment attracting over 43,000 students worldwide.
FutureLearn	This platform – started as a partnership between the BBC and the Open University - has been widely used British universities and offers a wide number of MOOCs.

Refs: Daniel, 2012), (Shrivastava and Shrivastava, 2014), (Conole, 2016), (Hoy, 2014), (Rayyan et al., 2013), (Liyaganawardena et al., 2015), (Pappano, 2012).

The rationale for using MOOCs

The biggest drivers for MOOC development are to provide access and content free-of-charge to anyone in the world, with a high level of quality and a meaningful learning experience (Rambe and Moeti, 2017). Large, well-known universities measured the uptake of certain MOOCs, with Figure 2 below showing how many people signed-up for a specific MOOC in all of the continents, in the process reaching an impressive total of 572 899 people. Other motivations include the ability to learn a new skill without having to enrol at an expensive institution (Yuan et al., 2013), the ability to communicate and receive feedback from peers (Piech et al., 2013) and self-paced active learning (Bali, 2014), to name a few.

However, it became apparent as early as 2012 that typical students do not come from a disadvantaged background and nor were they university drop-outs, but rather that most enrolled students are already qualified professionals simply looking to keep in touch with, or update their skills in light of, new trends and technologies (Selingo, 2014). It also emerged that only the top 5% of students were able to successfully complete the MOOC course(s) on which they enrolled. Also, a large number of universities developed MOOCs as they simply did not want to lose students or be seen as lagging behind the latest technology curve (Hew and Cheung, 2014).

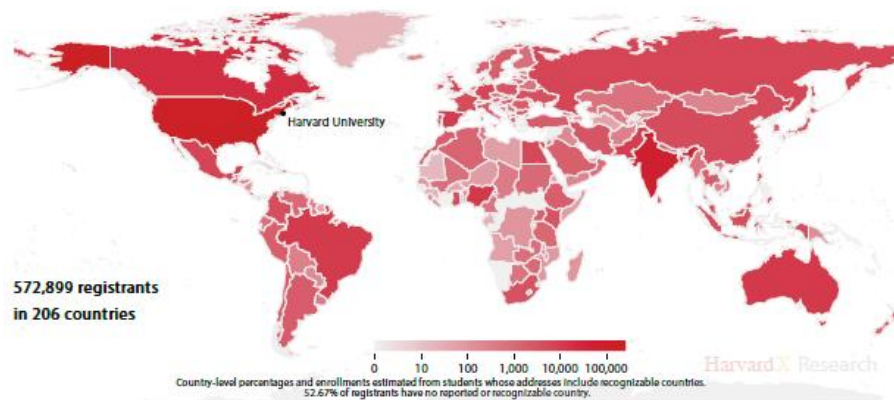


Figure 2: Estimated registration for HarvardX courses (all-time) by country as of September 8, 2013. Source: Nesterko et al. (2013)

MOOCs seem to grow in popularity as 23 million new learners registered for their first MOOC in 2017, with a total of more than 81 million people registered for a MOOC worldwide (Class Central, 2018) and over 8 000 courses currently presented as a MOOC offering.

IV. RESEARCH METHODOLOGY

Research questions

The research questions addressed are:

1. What were the opportunities and circumstances that typically underpinned successful MOOC implementations during the period 2008-2018?
2. What were the commonly experienced challenges working against the successful implementation of MOOCs over the same timeframe?
3. What recommendations can be made for the next decade of MOOCs?

DATA COLLECTION METHOD

The data collection method used is a thematic literature review since the analysed data is relatively straightforward (Myers, 2013). Also, it is well suited as “a research technique for making replicable and valid references from data to their contexts” (Krippendorff, 1980). The themes are identified from the literature reviewed and are based on the successes of MOOCs that relates to education, builds on the last ten years and enables a better theoretical understanding of the relevant literature. The literature reviewed and discussed is not exhaustive, but rather based on relevance, taking into account the main aim of identifying opportunities and challenges for successful implementation. This data collection method is thus not as comprehensive and substantive as a systematic literature review, as the identification of key themes was regarded as of greater importance than the number of articles reviewed.

THE SEARCH PROCESS

The following search terms were selected: “MOOC” or “MOOCs” or “Massive Open Online Courses” in the title and “impact” or “implementation” or “successful” or “unsuccessful” and the years selected were between 2008 and 2018 in the body of article. The search process was done manually and only a small sample of articles were selected, largely because recurring themes emerged. Duplication was avoided as far as possible. The first set of articles (numbering XX) were indexed in the EBSCOhost database, summarised in Table 2 under the Results section. The second set of (ZZ number of) articles in Table 3, were from a selective search under Google Scholar, where all full articles had to be available and comply with the search criteria mentioned above. The search was not meant to address all possible outcomes, given the exploratory nature of the study.

The data analysis

The two tables show the following information per article:

- The authors and date of the publication
- The title of the article
- The objective of the article
- The opportunities for successful implementation
- The challenges of successful implementation

V. RESULTS

From the search criteria specified, the EBSCOhost results are shown in Table 2 below:

Table 2: A thematic literature review of MOOCs on the EBSCOhost database

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Rodriguez, 2012.	MOOCs and the AI-Stanford Like Courses: Two Successful and Distinct Course Formats for Massive Open Online Courses	This article shows how MOOCs can be used as a way of making online learning available to millions of people, with no geographical boundaries. The reach of the Artificial Intelligence course is explained as well as the large number of students successfully completing the course – 20 000 from 190 countries.	<ol style="list-style-type: none"> 1. Learners receive “Statement of Accomplishment”. 2. Presented by world leaders in their subject matter. 3. Presented in a similar way to conventional lectures. 	
Lowenthal and Hodges, 2015.	In search of quality: Using Quality Matters to analyze the quality of massive, open, online courses (MOOCs)	Not everyone is convinced that MOOCs offer quality education and in this article, the Quality Matters Quality Control Framework is used to evaluate if MOOCs adhere to the required standards. Six MOOCs were reviewed and not one passed the Quality Management review, although they were well-designed MOOCs. It also remained difficult to provide learners with enough support. MOOCs provide higher education to rethink the way in which courses are designed and presented online.	<ol style="list-style-type: none"> 1. MOOCs have the potential to be of high quality in the way it is being implemented. 	<ol style="list-style-type: none"> 1. Not all MOOC implementations are of high quality.

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Semenova and Rudakova, 2016.	Barriers to taking massive open online courses (MOOCs)	The aim of this article is to illustrate how having access to the Internet can remove barriers to studying because anyone can study anywhere if free access via a MOOCs is given. But not all students have an equal chance of successful completion and barriers still exist.	1. MOOCs gives anyone access.	<ol style="list-style-type: none"> 1. The quality of MOOCs are questionable. 2. Lack of Internet access is a barrier. 3. Lack of basic knowledge is a barrier. 4. Level of education is a barrier.
Stevenson, 2015.	MOOCs and Joseph Lancaster: Lessons from a Two-Hundred Year Precedent in Mass Learning on a Global Scale	This study argues that the attempt to use technology for the purpose of mass education dates at least to the early nineteenth century and that many other media for education delivery offering a combination of methods have been unsuccessful. The Lancasterian system, incorporating how class rooms were designed, their layout and the use of blackboards, revolutionised the education system. It is seen as vital that the Lancasterian approach be re-evaluated and incorporated into MOOCs, rather than being be aside.	<ol style="list-style-type: none"> 1. MOOCs have proven to be an effective disseminator of lifelong learning. 2. Accessible to a wide audience. 	<ol style="list-style-type: none"> 1. MOOCs have been less successful in the third area of universalizing education. 2. Problem in assessment of MOOCs. 3. It is not it possible to educate the poor masses at a minimal cost – someone has to pay.

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Holstein and Cohen, 2016.	The Characteristics of Successful MOOCs in the Fields of Software, Science, and Management, According to Students' Perception	The Coursetalk website was used to extract student reviews regarding five xMOOCs (Massive Open Online Course) in the fields of software, science, and management were extracted. The data was analyzed by quantitative and qualitative methods using the Garrison, Anderson, and Archer (2000) Community of Inquiry (CoI) model.	1. The findings show that the characteristics that contribute to successful MOOCs are teacher, exercise, atmosphere, and workload.	
Elmore, 2016.	"Finding the Balance": Motivating Factors Behind Arts Faculty's Choices Regarding Massive Open Online Courses	This study examines MOOCs as a medium for supporting teacher professional learning. What did K–12 teachers identify as meaningful about their participation in the Creative Computing Online Workshop (CCOW), a large-scale, constructionist, online learning experience for teachers? How do the teachers' experiences relate to each other, to learning research, and to the affordances of MOOCs?		1. Teachers described four qualities as most meaningful to their learning: activity, peers, culture, and relevance. MOOCs is found lacking.

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Soffer and Cohen, 2015.	Implementation of Tel Aviv University MOOCs in academic curriculum: A pilot study	The Tel Aviv University is used as a case study to measure the implementation of MOOCs. Three courses presented in 2013 on the Coursera platform were examined to determine the intensity of usage, the learner path and the attitude of learners. The MOOCs train seems to be here to stay and cannot be ignored, offering flexible learning environments and new models of giving feedback and evaluating work completed.	<p>1. The TAU MOOCs are considered to be a successful experience for all those involved:</p> <ul style="list-style-type: none"> • the students, who were very satisfied with their courses and their achievements; • the lecturers, who were very enthusiastic and satisfied with the learning process, as well as the new experience; and • the University policy makers, who took the challenge and integrated this new model of learning into the academic environment. 	

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Gilfoil and Focht, 2015.	Value-Based Delivery of Education: MOOCs as Messengers	This paper attempts to reframe MOOCs, and related educational initiatives, within a Value-Based Delivery of Education (VBDE) model. The VBDE model defines its value in the learning outcomes, cost of education and improved stakeholder satisfaction. VBDE model elements are quantified, and assesses key elements of MOOC-related initiatives.	<ol style="list-style-type: none"> 1. Designed to accommodate thousands of simultaneous students in the (global) marketplace (massive). 2. Intended to be readily accessible to the general public at no, or minimal, cost (open) 3. Available via the internet (online). 	<ol style="list-style-type: none"> 1. Completion rates are extremely low. 2. MOOC business owners have not yet developed a sustainable business model. 3. MOOC deliverables have not been productized where certificates or degrees have been conferred in any meaningful way.
Gasevic et al., 2014.	Where is research on massive open online courses headed? A data analysis of the MOOC Research Initiative	This paper was funded by the Gates Foundation and reports on the analysis of the research proposals submitted to the MOOC Research Initiative (MRI). The goal of MRI was to get all stakeholders involved into critically analysing MOOCs and MOOC content.	<ol style="list-style-type: none"> 1. Student engagement and learning success. 2. Motivation and attitude. 	
Morris, 2014.	How Digital Technologies, Blended Learning and MOOCs Will Impact the Future of Higher Education	The use of digital technologies are explored to support blended learning in universities. Ways of improving MOOCs are also discussed as a way of more successfully using this technology.	<ol style="list-style-type: none"> 1. Successful use of technology. 2. Using blended learning. 	

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Stephens and Jones, 2014.	MOOCs as LIS professional development platforms: Evaluating and refining SJSU's first not-for-credit MOOC	Some Library and Information Science (LIS) Schools want to use MOOCs as a way of promoting lifelong learning. Surveys and content analysis methods were used to determine if MOOCs can be useful and assist learners from all spheres of life to access content in large-scale environments.	<ol style="list-style-type: none"> 1. Benefits of diverse viewpoints. 2. Making large-scale professional development possible. 3. Students enjoyed the variety of viewpoints provided by course content, the instructors, and the guest lecturers 4. Students often talked about how they enjoyed making connections with their peers, collaborating in the community, and building their professional network. 5. Students felt that aspects of the course made the experience convenient. 	<ol style="list-style-type: none"> 1. Reported data show completion rates as quite low 2. Students suggested various changes to course content, delivery, workload, and topics—reducing the amount of readings in particular 3. Some courses are too long.
Annabi and Muller, 2016.	Learning from the adoption of MOOCs in two international branch campuses in the UAE	This research examines MOOCs from a teacher's perspective and asks 20 lecturers whether MOOCs are seen as innovative learning platforms within international branch campuses (IBCs) given the fact that MOOCs offer virtual and free global education.		<ol style="list-style-type: none"> 1. Can lecturers address the national needs of technology-driven students sufficiently?

Authors	Title of article	Objective of article	Opportunities for successful implementation	Challenges for successful implementation
Warburton and Mor, 2015.	A set of patterns for the structured design of MOOCs	The authors used a design pattern approach and conducted workshops with teaching experts to explore how to develop and deliver Massive Open Online Courses (MOOCs). Three workshops took place where 20 design patterns emerged and shared within the groups. Six dimensions emerged and were tested during those workshops.	<ol style="list-style-type: none"> 1. Choice of delivery mode and platform; 2. Reported experiences from learners and tutors. 3. Increased use of motivational schemes such as micro-certification and badging. 	
Wintrup et al., 2015.	Engaged learning in MOOCs: a study using the UK Engagement Survey	This article critically looks at the challenges of MOOCs. Factors such as usefulness in higher education, learning principles and quality indicators are examined to evaluate future impact.	<ol style="list-style-type: none"> 1. Students enjoy blended learning. 2. Higher student engagement. 	<ol style="list-style-type: none"> 1. Low course completion.
Fomin, 2013.	MOOCs: Tips for Enrolment Professionals	The author wants to explore how MOOCs are used currently and looks at the following criteria: <ol style="list-style-type: none"> 1. Interactive textbooks for flipped classrooms. 2. Corporate training. 3. Interactive learning and collaboration between institutions. 4. Personal and professional development. 5. Core curriculum for multiple universities. 	<ol style="list-style-type: none"> 1. Some MOOCs may have as many as 50,000 students enrolled in a course at the same time. 2. MOOCs can be described as a grand experiment in higher education. 	<ol style="list-style-type: none"> 1. Some users are described as being only "lurkers", not active participants.

In Table 3 below, the articles found on Google Scholar is shown.

Table 3: A thematic literature review of MOOCs on Google Scholar

Authors	Title of article	Main topic area	Opportunities for success	Challenges for success
Robinson et al., 2015.	Maps and the geospatial revolution: teaching a massive open online course (MOOC) in geography	MOOCs can be taken by anybody and in this article, an analysis is done on a MOOC based on a geography course. MOOCs indeed offer valuable offerings in terms of how learning and teaching takes place.	<ol style="list-style-type: none"> 1. Feels that the definition of the success of MOOCs is misguided. 2. A large portion of MOOCs deliver quality content. 	<ol style="list-style-type: none"> 1. Free and open education not equivalent to paid courses. 2. Difficult and time-consuming to create MOOCs.
Baggaley, 2013.	MOOC rampant	Since the wider uptake of MOOCs between 2012 and 2013, outside companies have assisted universities with the necessary infrastructure in some cases. This article focuses on the mostly successful relationships that formed in the partnerships.		<ol style="list-style-type: none"> 1. Encouraging students to network via social media. 2. There's no right way to do the course, no single path ... and only you can tell in the end if you've been successful. 3. Collaborative and learner-centred learning can have disruptive interpersonal effects. 4. Many MOOCs are massive but not open. 5. Many MOOCs are open but not massive. 6. Many MOOCs try very hard not to be courses.

Authors	Title of article	Main topic area	Opportunities for success	Challenges for success
Conole, 2016.	MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs	This article considers the pedagogies associated with different types of Massive Open Online Courses (MOOCs). It argues that one cannot simply compare xMOOCs and cMOOCs, as learners engage with them differently.		1. We need to develop better metrics to understand the way in which learners are interacting with MOOCs and hence their experience of them.
Ross et al., 2014.	Teacher experiences and academic identity: The missing components of MOOC pedagogy	This article focuses on the role of the teachers in MOOCs, not the learners and addresses the question of pedagogy. What does it mean to 'teach' in courses in the MOOC environment? Also looking at what the role is of an institution and professional values.	<ol style="list-style-type: none"> 1. Various MOOCs proved to be very successful, with well-designed projects. 2. Part of this success should be attributed to the structured and visible tutor input 	<ol style="list-style-type: none"> 1. Tensions around participation. 2. Outsized media attention. 3. New measures of success and quality are required, because participant behaviours and intentions are so diverse.
Oyo and Kalema, 2014.	Massive Open Online Courses for Africa by Africa	Africa was often seen as being excluded from opportunities for higher education. MOOCs are seen as a way of equalling the scales so that anyone can access quality resources. This article examines xMOOCs – a blended learning approach with video lectures and assignments and cMOOCs – where the focus is mainly on the interactions of the students.	<ol style="list-style-type: none"> 1. Successful adoption of MOOCs by African HEIs requires an eLearning platform developed and maintained by a third party which in this case is the MOOC secretariat. 	<ol style="list-style-type: none"> 1. The global view of MOOCs as open to anyone who has Internet access is not relevant to Africa where the challenge of Internet access has persisted for over a decade.

Authors	Title of article	Main topic area	Opportunities for success	Challenges for success
Czerniewicz et al., 2014.	Developing world MOOCs: A curriculum view of the MOOC landscape	MOOCs offer opportunities for students from developing countries with unique needs and challenges. Institutions have to find ways of incorporating MOOCs in their teaching offering, but keep the African flavour. MOOCs have expanded the modes of delivery, entry requirements and assessment practices. This article highlights the complexities of MOOCs, while making sure that developing countries also become a force in global online education media.		1. There is no point in increasing access without seriously improving chances of success.
Castillo et al., 2015.	MOOCs for development: Trends, challenges, and opportunities	The MOOC phenomenon is growing in momentum and receives wide media attention. MOOCs offer access to education for students, even in the poorest regions, but its potential has not been proven in all regions of the world, specifically in the developing contexts.	1. A Coursera representative suggested the idea of value creation as a necessary component for success in developing countries.	<ol style="list-style-type: none"> 1. Addressing limitations of digital access, cultural relevance, peer engagement, and accreditation are among the major barriers currently faced in diverse global settings 2. Second, we provide a sense of some challenges to successful expansion of MOOCs within development contexts. 3. How will we reach those least educated?

Authors	Title of article	Main topic area	Opportunities for success	Challenges for success
Sanchez-Gordon and Luján-Mora, 2014.	MOOCs gone wild	MOOCs have been recognised as being popular worldwide, but the revolution in education, as stated by some, needs to be substantiated, others reckon. MOOC provides are also mentioned and their role in the growing movement.		1. The most successful MOOCs are hosted in for-profit platforms, such as Coursera or Udacity.
Boga and McGreal, 2014.	Introducing MOOCs to Africa: New economy skills for Africa program	MOOCs are highly interactive online courses open to all. This paper examines a case study in Tanzania and looks at the implementation of MOOCs from the developing world.	<ol style="list-style-type: none"> 1. MOOCs can be successful in the African context, as long as MOOC instructors are able to adapt content and make use of available and appropriate technologies. 2. Clayton Christensen, the influential Harvard Business School professor who coined the term “disruptive technology”, noted that disruptive technologies find success initially in markets “where the alternative is nothing” 	1. Coursera’s copyright rules could prove to be a real barrier to the success of their platform in developing countries.

Authors	Title of article	Main topic area	Opportunities for success	Challenges for success
Fadzil et al., 2015.	MOOCs in Malaysia: A preliminary case study	MOOCs have been newly introduced in Malaysia and six universities offers courses on that platform in 2014. This article provides a preliminary phase of the MOOC initiatives and two new platforms used make the offering wider accessible.		1. Malaysia needs to identify a sustainable approach that can ensure long-term success in terms of quality of courses, engagement with all relevant stakeholders, teaching and learning practices and scalability.
Yousef et al., 2015.	A usability evaluation of a blended MOOC environment: An experimental case study	MOOCs are seen as a new form of Technology-Enhanced Learning (TEL), in higher education and beyond. This article looks at teaching methodologies in an Egyptian university and expresses the need for blended MOOCs where face-to-face activities still take place as part of learning.	1. One of the successful factors in MOOCs is flexibility.	
Sonwalkar, 2013.	The first adaptive MOOC: A case study on pedagogy framework and scalable cloud Architecture—Part I	Learners use MOOCs as a way of gaining access to some of the best professors in the world. This article looks at the pedagogical implications of MOOCs and the role of the adaptive MOOC or aMOOC as a way of providing the pedagogical framework needed.	1. The pedagogical instructional design was modelled to accommodate five learning strategies	1. The high attrition rate of students who register at the beginning of a MOOC is a major cause of concern regarding the long-term success, impact, and sustainability of MOOCs.

VI. DISCUSSION AND ANALYSIS OF THE RESULTS

Certain themes emerged strongly from the abovementioned articles and include the availability of courses to anyone with an internet connection, the popularity of the MOOC, how the MOOCs are assessed in terms of quality and questions regarding the progress in the maturity of the MOOCs model. What is of concern, though, is that a number of potential implementation challenges, as identified in Figure 1, still manifests as some of the biggest challenges today. Of the fifteen articles identified on EBSCOhost and the additional twelve articles from Google Scholar, the following success factors were mentioned either directly or indirectly:

1. **Financial factors:** mentioned five times as an opportunity and seven times as a challenge.
2. **Accreditation of courses:** mentioned eight times as an opportunity and ten times as a challenge.
3. **Course completion rates:** mentioned only once as an opportunity and eight times as a challenge.
4. **Authenticating students:** mentioned twice as an opportunity and nine times as a challenge.

These factors above seem to still play a significant role, even as MOOCs have grown in maturity. Ways of creating MOOCs where the financial factors are addressed, where the courses are not only accredited, but students are authenticated and where course completion rates increase, still seem to elude the wider MOOC environment and needs addressing to make it a viable, competitive teaching tool in future.

Other factors were also identified beyond the previous four factors and need some consideration too. They are:

- Accessibility – either as giving everyone access or hampering access due to poor connectivity, lack of internet or basic infrastructure.
- The MOOCs model – it might not be sustainable for universities, but rather taken over by private companies.
- The importance of the instructors to motivate students, provide feedback and use a variety of assessment methods.
- The role, nature and optimal levels of student engagement when completing a MOOC.
- The very definition of a MOOC, where some courses are not massive, some are not open and some are not courses, but marketing material.
- Course material that is only relevant to certain developed countries.

From the results, it can be seen that although MOOCs have evolved and improved in the last decade, there are still a number of successful implementation factors that need to be taken into account when developing or presenting MOOCs, such as:

1. The need to make content available to students, who would have no other way of accessing resources.
2. The need to attract the right students to the right MOOCs, to improve engagement and completion rates.

3. The need to present the student with recognition when he/she successfully completed a course, even if it is merely to state it was completed.
4. The need to attract funding, but remain free to all.
5. The need to make MOOCs sustainable in the long run.

VII. CONCLUSION AND FUTURE RESEARCH

It is concluded that MOOCs, as a disruptive technology, has come a long way from its infancy in 2008, where it is now a well-known method of gaining new knowledge. There are various (largely technology-based) opportunities for ensuring the sustained successes of MOOCs, but there are still challenges that need to be addressed. The four factors identified as being the main themes remain the financial factor, the difficulty in accrediting courses, the low course completion rates and the difficulty in authenticating students. In future, universities should ensure that they have the means to create sustainable MOOCs, are able to successfully present it in a blended learning manner, are doing it for the right reasons and are not excluding developing countries' students. Future research should investigate what underpins the successes of specific MOOCs and do so from both a developed and developing country's perspective.

VIII. ACKNOWLEDGEMENTS

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