MOOCS: INNOVATION OR STAGNATION?

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ABSTRACT

Issues of the phenomenon of Massive Open Online Course (MOOC) and its integration into current online and campus education to enhance higher education quality in universities is gaining importance. This large scale form of online education has the potential to escalate the reputations of universities and increase the global access to their institutions. However, the design and implementation of MOOCs is not easy. Thus, many higher education institutions take time for careful consideration before running them. Otherwise, this new online learning phenomenon, which is also called disruptive innovation, might cause some unintended negative economical and reputational results. This study aimed to examine the strengths and weaknesses as well as opportunities and threats of MOOCs in higher education. The data from the document analysis was examined by SWOT method to put insights on MOOCs internal and external standing. The electronic data including books, research reports, conference papers, journal articles, blog posts, discussion boards, and web forms were considered as a sample of the study. The findings show that accessibility, lifelong learning and brand extensions are some of the strengths of MOOCs, whereas dropout rates, poor pedagogy and low-quality assessments are major barriers for their effectiveness. Alternative education and collaborative learning are some of the outstanding opportunities MOOCs present, which worth the efforts to create more democratic and innovative higher education. Results indicated that it is worth to explore the ways to improve the completion rates, weak pedagogical structure, degree provision, quality insurance and assessment as well as to discover the needs of new generation in online learning.

Keywords: **Connectivism, disruptive, higher education, Massive Open Online Courses, novelty, SWOT.**

INTRODUCTION

Massive Open Online Courses (MOOCs) are one of the most recent developments in the field of online learning. This distributed innovation was rooted in Massachusetts Institute of Technology (MIT) Open Course Ware platform to provide free web access to MIT Course materials and was considered as a promising initiative for democratizing higher education. In 2008, the online open course "Connectivism and Connective Knowledge (CCKO8)" which was introduced by David Comier and Stephen Downes in the University of Manitoba was considered the first MOOC which is free, open, and online with 2200 participants all around the world. In the year 2011, over 6.1 million students took at least

one online course. Actually, 2011 was the year in which MOOC was re-born in Stanford University by Dr. Sebastian Thrun, computer science professor. This first MOOC "CS221: Introduction to Artificial Intelligence" was a graduate level course with more than 160,000 students. Its duration, the interaction tools it provided, certificates it presented and the fact that it no course credit offered were some of the features of Open Courseware. Since 2012, which was announced as the year of MOOCs by New York Times, this new phenomenon has been placed in the vision statement in most of the leading universities in both USA and Europe. These new teaching and learning online platforms currently attract huge number of adult learners from all around world with various learner background and characteristics. MOOCs classically share some common features: open access using the Internet, free of charge, asynchronous, interactive user forums, and the opportunity to receive a certificate. These massive and open online courses do not only provide new approaches to course delivery methods in higher education platforms but also bring new evolutionary pedagogy that changed the conventional learning theories into third generation learning approaches.

This new phenomenon which is called "connected age" make everybody and everything connected via openly available knowledge, human, hardware and software resources over the network (McAuley, Stewart, Siemens, & Cormier, 2010). Thus, connectivisim is the underlying idea of this dramatic transformation from traditional learning theories into innovative learning theories. Although the new version of MOOCs is not likely to represent the same pedagogical features with the first released connectivist MOOCs, no one can deny that this new development has an impact on how we think about higher education. Likewise, Bozkurt, Keskin, de Waard (2016) argued MOOC phenomena is already entered the Plateau of Productivity phase after the year 2015 due to the rapid progress of MOOCs, emerging business models, high rate of registration of lifelong learner and expanding educational adoption by higher education.

From a distance education point of view, some researchers do not see the further significance of massive open online courses in online learning, since there are still unsolved issues that damage their reputations such as high-drop-out rates, weak assessment methods, and accreditation. Reports and research studies have indicated high enrolments rates and attributed it to multifarious advantages and possibilities for students to gain new skills and knowledge through life-long and self-directed learning experiences. However, the same sources also highlight low retention rates of these courses (Jansen & Schuwer, 2015; Kleiman, Wolf, & Frye, 2015). Apart from the high dropout rates, MOOCs are also criticized by some bodies of researchers for their less credibly evaluation strategies employing to assess the students' learning outcomes (Admiraal, Huisman, & Pilli, 2015). For instance, peer-assessment and self-assessment are two commonly used evaluation methods to cope with the disadvantages due to the extraordinary number of students, but they are considered not sufficient to grade students in order to get recognized credits in most of the universities.

Additionally, MOOCs as disruptive innovation are going to disrupt traditional education in higher education (Bower and Chirstensen, 1995). Yuan & Powell (2013) argue that online teaching innovations such as MOOCs are announcing a change in the business world as well as it might pose a threat to existing university courses. Although numerous types of MOOCs are listed in the MOOC providers' web sites, the origin of this new phenomenon has been based on the connectivist theory. Therefore, the first MOOCs are considered cMOOCs that rooted in the connectivism. Despite known limited empirical output the real potential of MOOCs, unlike traditional online education programs, they present some advantages to the learners such as high-quality courses, high-quality digital learning materials and instructors who have worldwide reputation from prestigious universities (Dillahunt, Wang, & Teasley, 2014). With all those advantages listed above MOOCs are standing in a promising position in higher education institutions.

Currently, besides many universities that run MOOCs, many more universities are on the stage to understand, prepare infrastructure and be ready to offer new MOOCs in the upcoming semesters with full of hopes and expectations to profit from global recognition. For instance, Dennen and Chauhan (2013) explored the conditions related to designing and delivering a MOOC at the program level in Florida State University. Similarly, Odom (2014) questioned the potential impact of MOOC on the higher education institutions of Maryland University College. Another study was explored the usability of MOOC on Business English teaching in China (Jin-hui, 2015). Bozkurt, Akgun-Ozbek and Zawacki-Richter (2017) identified that learner support services; management and organization; access, equity and ethics are still unexplored research areas on MOOCs research over the time period from 2008 to 2015. However, considering the limited empirical studies on the real outcomes of this new phenomenon, rushing to implement these courses might be ended up with frustration if it is considered as an innovation that is completely different from the traditional e-learning.

In this respect, this paper aims to explore the potential innovative position of MOOCs in higher education. Therefore, on the early stage of MOOC evolution where the universities and providers are trying to understand its effect on students' learning, this paper provides another perspective on the extend to what MOOCs bring innovation in higher education by considering the strengths, weaknesses, opportunities and threats by conducting SWOT analysis to reveal a clear picture of MOOCs in higher education within the framework of analytical evidence of their innovational effects. Therefore, it is aimed to answer the following research question: *To* what extend do MOOCs bring innovation in higher education?

METHOD

Research Design

This document analysis was conducted to identify the innovative aspects of MOOCs. Document analysis provides essential facts about MOOCs, as well as helps to understand why MOOCs are playing an innovative role in higher education.

Research Sample

Books, research reports, conference papers, journal articles, and electronic documents (i.e., blog posts, discussion boards, and forms) were examined to understand the innovative position of MOOCs in higher education. To identify scientific studies reporting strengths, weaknesses, opportunities or threats to the innovative aspect of MOOCs, we conducted computerized keyword searches in the digital catalogue search of Leiden University which contains multiple databases related with educational and social sciences; Academic Search Premier (EBSCO), ProQuest, Annual Reviews, Science Direct, Cambridge Journals, DOAJ, SAGE, Web of Science, and Wiley Online Library.

Research Procedure

The search was carried out using keywords such as *MOOC* (or *MOOCs*) and *innovation*. Our research provided 97 documents of which we eliminated 45 because they were either duplicated or in languages other than English and a further 52 including dissertations, peer-reviewed articles, conference papers, and e-books, besides, other electronic documents that came up through Google search by using the same keywords (e.g. MOOC(s) + innovation) were included in the data analysis.

Data Analysis

The next step was to screen the documents and compile a SWOT analysis method to provide the insights of the potential innovation aspects of MOOCs into higher education. This is a general analysis including various kinds of MOOCs since we did not utilize any inclusion or exclusion criteria regarding the type of MOOCs while selecting documents. As a methodological framework, SWOT analysis is considered a useful tool for the strategic planning process of strategic planning and policy of organizations (Geneletti, Bagli,

Napolitano, & Pistocchi, 2007). SWOT analysis is used in different fields including health education, business and management, vocational education (Sharma, 2005; Westhues, Lafrance, & Schmidt, 2001), and online education (Cojocariu, Lazar, Nedeff, & Lazar, 2014). Furthermore, some studies used SWOT analysis to decide on program level and to investigate possible outcomes of designing and delivering a MOOC (Deale, 2015; Dennen & Chauhan, 2013). The SWOT analysis can be utilized either as an icebreaker tool during strategic planning meetings (Pailwar & Majan, 2005) or as a tool for building strategy or exploring innovation (Elmansy, 2015). In this study, we examined the second approach, which is exploring innovative aspects of MOOCs, to make an evaluative resolution of whether or not the higher education intuitions should continue to focus on investigating the ways to design and run the MOOCs. We believe that this study adds different perspective and insight into how MOOCs bring innovation in higher education by providing general outcomes of SWOT analysis.

The following SWOT analysis tool (see Table 1) is used to explore the important internal and external factors of MOOCs with the prospects of examining the innovation by asking questions and finding answers related to each factor: strengths, weakness, opportunity and threats. The questions in each category presented in Table 1 were derived from the main questions of SWOT analysis (Bartol & Martin, 1991).

Table 1. The SWOT analysis tool to evaluate the MOOCs as an innovation in higher education.

Strengths	Weaknesses
• What strength points do stakeholders see in MOOCs? • What are the advantages of MOOC over higher education? • What are the advantages of MOOC over traditional online education? • Do stakeholders believe MOOCs are innovative?	• What weakness could be improved in the design of MOOCs? • What issues should be avoided? • What are the factors that reduce the quality of MOOCs? • Does the production process have some limitations?
Opportunities	**Threats**
• What are the opportunities for MOOCs in higher education? • What are the trends to take advantage of? • How can we turn strengths into opportunities? • How do government and policy makers see MOOCs? • Are there any changes in the higher education which can lead to opportunities?	• What issues can threaten MOOCs in the higher education? • What are the factors that can put higher education institutions into risk? • Will there be any shifts in students' and instructor behavior, universities or education system that can affect the students' success?

RESULTS

Strengths

Accessibility

The results of the synthesis reveal several benefits of the MOOCs in higher education. First, MOOC is able to overcome limitations of student access to knowledge and content, thus the *accessibility* as one of the typical characteristics of open online learning is considered a major strength of MOOCs (Rengel & Fach Gómez, 2014). MOOCs, particularly xMOOCs, make the knowledge of some of the world's leading experts from the best universities available to anyone, free of charge, with a computer and an Internet connection. Therefore, they attract and affect large numbers of people (Bates, 2015). For

instance, MOOCs can be useful for opening access to high quality content, mainly in developing countries.

Lifelong learning

Second, the self-directed learning components of MOOCs have the ability to promote *lifelong learning* and continuing education among adult learners (Steffens, 2015). MOOCs allow changes in learning styles to occur and enable lifelong learners to acquire more and various knowledge with no time and money constraints. The fact that MOOCs do not require any particular expectations for completion or achievement is a motivating factor students to continue to learn by gaining understanding of new knowledge (Yuan & Powell, 2013).

Online learning communities

Third, creating large online communities of interests with various backgrounds, nations, and languages is difficult to obtain in face-to face education and is extremely impractical through on-campus education. However, MOOCs are valuable of founding *online learning communities* through which learners generate knowledge for developing basic conceptual learning (Glance, Forsey, & Riley, 2013). According to connectivist theory, individuals learn and work in a networked environment. Based on this theory, how MOOC is designed to enable learning in a connected and networked world with ubiquitous access to the learning devices (e.g., mobile devices), using the most appropriate content and social networking tools are illustrated (Andersen & Ponti, 2014).

Experimentation

Fourth, MOOCs can be considered as an experiment in education that charms gifted teachers, technicians, and businesspersons (Educause, 2012). In this *experimentation* standpoint of MOOCs, many institutions use MOOCs to provide instruction for large on-campus undergraduate courses by recording students' interactions. Besides, this data analyzing encouraged learning analytics to analyze large amounts of data which empowered researchers by providing deeper data on how specific experiences and interactions would be influential on students' learning (Knox, 2014). For instance, how different approaches such as standalone versus hybrid courses or how different time schedules of courses such as courses with fixed time duration versus courses to be taken anytime are influential on students' performance.

Brand extension

Fifth, mainly among elite research institutions, MOOCs have become a way of enhancing the institution's brand and signaling innovation. Therefore, this way of *brand extension* improves the international triteness and reputation of institutions (Gerber, 2014). As a result, by offering MOOCs, many universities have certainly become more noticeable to public. They also created their brands and gained a global recognition (Hollands & Tirthali, 2014).

Weaknesses

Several weaknesses of MOOCs have been pointed out, for example, an electronic open book by Tony Bates listed some issues including *dropout rates*, *expensive infrastructure*, *pedagogy*, and *assessment* (Bates, 2015).

Dropout rates

Firstly, the high registration numbers for MOOCs are misleading; less than half of registrants actively participate, and of these, only a small proportion completes the course successfully. Nevertheless, absolute numbers are still higher than for conventional courses (Jordan, 2015). The meaning and the impact of very low course completion rates is sometimes misleading since students have no intention of completing the courses; instead they are more interested in participating and learning (Reich, 2015).

Expensive infrastructure

Secondly, MOOCs are expensive to develop, and although commercial organizations that offer MOOC platforms have opportunities for sustainable business models, it is difficult to see how publicly funded higher education institutions can develop sustainable business models for MOOCs. Though MOOCs are open and free to administration, the charges to higher education institutions can be noteworthy which can be easily understood by the cost-benefits outcomes of those on the front lines of MOOC developers and implementers. For instance, course development assistance through edX can reach upwards of $250,000 per course with an additional $50,000 fee each time the course is offered (Hew & Cheung, 2014).

Pedagogy

Thirdly, many researchers criticize MOOCs that they are scaling up existing poor practices (Rolfe, 2015) since they demonstrated limited ability to develop high level academic learning and intellectual skills needed in a knowledge-based society (Toven-Lindsey, Rhoads, & Lozano, 2015). Some of the pedagogical weaknesses include lack of instructional structure, poor quality, more focus on teaching (course) and less on learning, non-individual instruction (Maringe & Sing, 2014). Besides, some MOOC materials may be limited by copyright or time restrictions for re-use as open educational resources that can be considered as drawback.

Assessment

Last but not the least, assessment is one of the most criticized issues of MOOCs (Sandeen, 2013). Assessment of the higher levels, affective and psychomotor types of learning remains a challenge for MOOCs. The challenges involve supporting more interactivity and avoiding the restrictions by the limitations of the current technologies available to multiple choice questions and problems which have simple right-and-wrong answers. Besides, cheating stands as a major challenge of online education (Chen, 2014). Furthermore, validation of original work that is not plagiarized is a potential hot topic under assessment challenges in MOOCs (Maringe & Sing, 2014). There are some attempts to verify students' contributions, avoid cheating and plagiarism (Baggaley, 2014), otherwise most MOOC providers will continue to not recognize their own MOOCs for credit.

Opportunities

MOOCs bring an opportunistic approach to education by opening windows for the conversation, sharing and discourse for global educators, researchers, and learners in a wider context and a global community. The key opportunities identified for the MOOCs listed as a game changer in online education by Mak (2013), Fowler (2013), and Fasihuddin, Skinner, and Athauda (2013). Expend reach, collaborative learning, personalized learning, and alternative education are the opportunities of MOOCs.

Expand reach

MOOCs have the potential to shift the education and business model from the notion that a professor lectures students, to a more connectivist, interactive model where global network of practice and community of practice emerges. They will have the possibility to reach the large numbers of educated people with shared knowledge and build a global community with the people who do not have the opportunity to study at top universities.

Collaborative learning

The underlying pedagogy of cMOOCs is to shift from teacher-centered learning in online education, to more cooperative and collaborative learner-centered learning. Furthermore, MOOCs promote decisive pedagogy to support human beings and connectivist pedagogy to enable global communication by promoting learning communities. For example, as a part of course regulation, many MOOCs ask students to form groups for projects and discussions. Thus, by providing such opportunities to students, MOOCs encourage them

to work collaboratively with a diverse set of people and engage in a process of knowledge building (Kizilcec & Schneider, 2015).

Personalized learning

Due to technological innovations and media affordances, the use of different learning technologies allow more individualized and personalized learning. MOOCs can provide experiences better personalize content to students. Thus, learners with different learning preferences and needs are provided with the possibility to learn in a more effective way.

Alternative education

With regard to the perspective of continuous education, MOOCs offer alternative pre-requisite education to early university students as a third generation distance learning model (Gerber, 2014). Some MOOCs as an alternative education aim to prepare students for future education by providing a supportive learning environment that focuses on increasing academic and pro-social behaviors and skills.

Threats

Finally, the analysis included potential threats, including sustainability, quality of education, business model, the identity of the students, and non-credential courses. Besides, the issues on degree have caused struggles to both students and providers.

Sustainability

One key threat to MOOCs is a possible uncertainty of their real potentials and their *sustainability* in the market place. Furthermore, many more universities have started to plan, design and deliver a MOOC. However, the main threat is building a MOOC and having no students enrolled in it. In the case of designing a MOOC that received no attention from students all around the world, it could harm the institution's reputation as well as cause financial problems (Teplechuk, 2013). Thus, in order to eliminate the sustainability threat, universities should conduct a need assessment before running MOOCs.

Quality education

Secondly, some limitations that made MOOCs insufficient to provide *quality education* are considered as threats. Since there is little data about whether MOOCs are more effective than other learning models, both providers and students may not be able to evaluate the real impact of them in terms of quality. Thus, exaggerating the positive role of MOOCs generates negative effects such as: ignoring students and placing more focus on content, which is common in xMOOCs.

Business model

Third, these open online courses truly threaten and disrupt the *business model* of traditional universities. MOOCs cannot just be developed as an advertising vehicle for universities. Money is needed to create the content. There is a possibility of eventually professors who will stop creating content if there will be no funding source. In fact, MOOCs have a place in life-long learning; but there is a need to reconsider the current business model to develop a sustainable solution. Although, a business model of MOOCs is fully developed with demonstrated positive net gains, some universities still doubt about their sustainability in terms of cost effectiveness when running MOOCs and their impact on their long term business goals, objectives and growth with MOOCs (Hill, 2012). Eventually, once MOOC is initiated, there would be pressure to develop revenue models to make the concept self-sustaining.

Identity

The student identity and security of the instrument itself are critical during administration. While some MOOC providers verify the identity of those taking their courses and proctor their end-of-course examinations, more attention must be paid to

the security of the assessment instruments (Fischer, 2014). There is a need for the authentication of students' contributions to avoid cheating and plagiarism.

Credibility

Credentials are not provided to students who participate and complete MOOC programs. From a badge perspective, there is little to show from participation in the courses. Hill (2012) proposed that delivering valuable signifiers of completion such as credentials, badges or acceptance into accredited programs should be accomplished to reach an innovative act in higher education.

Teacher who against the change: fuddy-duddy instructors

A final threat to higher education involves the faculties who are the ones eventually accountable for surviving with disruptive learning technologies (Lucas, 2013). In some cases, instructors do not feel secure to participate in MOOCs and try to keep away. Simply, they deny being a part of it. Instead, they tend to wait and see their sustainability in higher education.

DISCUSSION AND CONCLUSION

The overall aim of this study is to provide an examination of a clear overview for strengths, weaknesses, opportunities and threats of MOOCs for higher education within all stakeholders' perspectives. The matrix below (Table 2) denotes a summary of the crucial concerns that have been recognized above within the SWOT analysis.

Table 2. Summary of SWOT analysis

Strengths	Weaknesses
▪ Accessibility ▪ Life-long learning ▪ Online learning communities ▪ Experimentation ▪ Brand extension	▪ Dropout rates ▪ Expensive infrastructure ▪ Pedagogy ▪ Assessment
Opportunities	**Threats**
▪ Expand reach ▪ Collaborative learning ▪ Individualized learning ▪ Alternative education	▪ Sustainability ▪ Quality education ▪ Business model ▪ Identity, credential and degree ▪ Fuddy-duddy instructors

Table 2 provides much clear observation of the strengths, weakness, opportunities and threats that MOOCs can face during design and development stages. It also allows drawing suitable conclusions which could support future development of MOOCs in higher education institutions as well as pre-college education. Thus, the stakeholders may try to overcome the weaknesses and threats to turn the project into a successful product. MOOCs have expanded and quickly spread into many higher education institutions across the world in recent years. So, several prestigious universities have started running courses on MOOC platforms providing free higher education courses open for enrollment for any Internet user. Although true innovation lies in the large-scale, open-access component (Rolfe, 2012), MOOCs promise opening up higher education by providing accessible, flexible, affordable and fast-track completion of university courses for free or at a low cost for learners who are interested in learning. Although there are potential drawbacks and threats, it is dreadful to disregard the impression of MOOCs in online learning. Although Dennen and Chauhan (2013) emphasized the greatest risks at local level, they also indicated the similar results to this study such as "reputation, recruitment and research." The results of this study also confirmed the other study which reported similar weaknesses and opportunities namely accreditation, assessment and innovative interaction (Bozkurt, Akgun-Obek, Zawacki-Richter, 2017).

MOOCs have been evolving in different aspects including formats, designs, and functions and this evolution will continue in near future. Thus, all the MOOC stakeholders; providers, instructors and students will need to look more closely at and learn more about MOOCs. Having comprehensive knowledge about new opportunities for innovation in higher education, establish a common understanding of the needs of new aged learner profiles. Furthermore, the outcomes of this SWOT analysis identified the innovative potentials of MOOCs including accessibility and online learning communities.

In conclusion, innovation aspects of MOOCs were examined with SWOT analysis. Without ignoring the real impact of MOOCs on higher education institutions in their short life, stakeholders should take cautions the threats that created by these disruptive changed within higher education.

We acknowledge the limitations of this paper. Firstly, this cannot be a comprehensive analysis as it is only based on content analysis of the published documents. Additionally, the MOOCs in the reviewed published studies were in different types but this SWOT analysis was conducted by regarding them as one type. Thus, this also limits our study, that is to say, the same SWOT analysis would offer slightly different outcomes for cMOOCs or SPOCs. In addition, since only the English language documents are included in this review, there is a possibility that articles from non-English resources that examined MOOCs from an innovative framework may have been unintentionally excluded. Finally, the researchers faced the difficulties in categorizing the characteristics of MOOCs into four quadrants of SWOT table since some factors act as strength and opportunity at the same time such as experimentation.

Further studies should explore the innovative aspects of MOOCs in higher education by using other forms of analysis framework. As it was stated in the limitation part, we are aware of the issue of single data source. Therefore, multiple data sources such as personal reflections of stakeholders, providers, institutions, instructors and students who already participated or acted significant roles in making MOOCs well-known should be included into further research studies. Furthermore, other higher education institutions should conduct the same analysis considering their own resources and infrastructures. Additionally, it is worth to explore the ways to improve the completion rates, weak pedagogical structure to discover the needs of new generation in online learning. The funding for higher education institutions, degree provision, quality insurance and assessment should also be analyzed to find possible solutions. Thus, time will show whether MOOCs are going to stay on the stage as an innovation and shape the future of higher education.

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