INDONESIAN PERSPECTIVE ON MASSIVE OPEN ONLINE COURSES: OPPORTUNITIES AND CHALLENGES

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ABSTRACT

There are two indications that Indonesia needs to improve its education quality. The first is the Human Development Index (HDI), which is still at the medium level, and the second is the enrollment rate in higher education, which is also at the low level. MOOCs have the potential to solve both problems. However, implementing MOOCs in a developing country needs a specific analysis to determine the opportunities and challenges. This study aims to identify the opportunities and challenges in implementing MOOCs from an Indonesian perspective. We observed four local MOOCs and analyzed various documents, including literature and government regulations. As a result, this study identified seven opportunities and seven challenges in implementing MOOCs in Indonesia. Recommendations are also provided.

Keywords: massive open online course, MOOC, distance learning, Indonesia

INTRODUCTION

As a developing country, Indonesia needs to improve the standard of living of its people, which is still at the medium level. The relevant indicator for that is the Human Development Index (HDI). HDI is used by the United Nations Development Program (UNDP) as a summary measure of the average achievement in the key dimensions of human development: living a long and healthy life, being knowledgeable, and having a decent standard of living (UNDP, 2016). According to UNDP, the HDI of Indonesia in 2014 was 0.684 (UNDP, 2015). It can be categorized as a medium HDI. As a comparison, the top 50 countries with the highest HDI have values not less than 0.789 (UNDP, 2015).

Sanchez-Gordon and Luján-Mora, (2016) shows that there is a positive correlation between the HDI value of a country and its education quality. That research explains that a country with a high HDI has a high tertiary education enrollment rate too. We can say that by increasing the enrollment rate in tertiary education, which is higher education, it might increase the HDI as well. That statement is logical since the education index is one of the HDI components, and it has two indicators: the mean years of schooling and the expected years of schooling (UNDP, 2016). According to the data of the Ministry of Research, Technology, and Higher Education of the Republic of Indonesia, only about 30% of high school graduates in Indonesia continue to college (Ristekdikti, 2015a). That number is relatively low. As a comparison, most countries with very high HDI have greater than 50% enrollment rate (Sanchez-Gordon & Luján-Mora, 2016). One option to increase the enrollment rate is by optimizing the use of information technology for education.

The development of information technology has positive impacts in many aspects of human life, including education. The most common use of information technology for education is e-learning and many universities use e-learning in addition to traditional learning. The rapid growth of web technology and the Internet has made distance education possible. This phenomenon brings a paradigm shift in education (Bozkurt et al., 2015). Indeed, distance education provides ease in the learning process and has the potential to make a

country achieve educational equity.

Among all kinds of distance education reforms, massive open online courses (MOOCs) can be considered as the most attractive topic in educational innovation studies in recent years (Shen, Ye, Wang, & Zhao, 2016). The MOOC phenomenon is supported by research that studied trends in distance education studies from 2009 to 2013 (Bozkurt et al., 2015). The research reported that MOOC is a keyword that frequently appeared in those years, along with Open Educational Resources (OER) and Web 2.0. The original idea of a MOOC was proposed by Dave Cormier and Bryan Alexander in 2008 (Shen et al., 2016). The concept of MOOCs is to offer free and open access courses for massive numbers of learners from anywhere in the world (Gamage, Fernando, & Perera, 2015). The year 2012 became the year of the MOOC as stated by the New York Times because many MOOC platforms, such as Udacity, Coursera, and EdX, were introduced in that year. Those three were widely accepted as the fastest growing MOOC providers until now.

A MOOC is quite different from the ordinary e-learning platform. In a MOOC, the participants do not have to be registered as a student at any institution. One advantage of MOOCs over the traditional university courses is that MOOCs enable participants to choose how they want to participate in the course by allowing them to take as many components of the course as they choose (Engle, Mankoff, & Carbrey, 2015). With those characteristics, MOOCs are an alternative to obtain a qualified education that is flexible in time, cost, and place. Moreover, the MOOC promoters see it as a resource to help underserved populations have access to education, which is a universal human right (Sanchez-Gordon & Luján-Mora, 2016).

A MOOC could be described as a nonformal education, complementary to a formal education. In fact, most MOOC students are highly educated and job oriented (Zweifler, 2013). An online survey was conducted in July 2013 of nearly 35,000 students enrolled in at least one of a university's 32 courses on Coursera. Across all geographic regions, the study found that MOOC students have high levels of educational attainment: 83% of those who responded said they had earned either a two- or four-year postsecondary degree, far more than the international average (Zweifler, 2013). Another study also reported that the majority of MOOC students live in the United States and Europe (Perna et al., 2013).

MOOC implementation in countries with a low and medium HDI has its own challenges. This study aims to provide an analysis of the opportunities and challenges of MOOC implementation in Indonesia. It was designed to respond to the research question: What are the opportunities and challenges of MOOC implementation in Indonesia? That question is important to be answered because countries with a low and medium HDI, including Indonesia, need a deep and specific analysis before implementing MOOCs (Sanchez-Gordon & Luján-Mora, 2016).

RELATED STUDIES

We found at least seven studies that discuss the opportunities or challenges of MOOCs in the past few years (Hew & Cheung, 2014; Madaio, Grinter, & Zegura, 2016; Sanchez-Gordon & Luján-Mora, 2016; Schuwer et al., 2015; Shen et al., 2016; Yousef & Schroeder, 2014b; Viswanathan, 2012) and chose the three most related ones that address similar problem to ours. Table 1 provides the summary of comparison among those three studies.

The first study discusses the opportunities and challenges of MOOCs for higher education in Europe. It was conducted at a European MOOC conference. This study used data from conference papers, a survey to conference participants, and Twitter with a specified hashtag. This study applied the SWOT analysis. The research team decided to focus on only the opportunities and threats and ignored the strengths and weaknesses of MOOCs. The results of this study revealed eight opportunities and seven challenges of MOOCs (see Table 2), which are categorized into macro- and microlevels (Schuwer et al., 2015).

The second study was conducted in China and was published in 2016. The purpose of this study was to identify the current condition of MOOCs in China along with their opportunities and challenges. Document analysis was done on various documents and observations. The results show the current condition of MOOCs in China both in the international and national educational platforms. It also identified two opportunities and four challenges of MOOC implementation in that country (Shen et al., 2016) (see Table 2).

Table 1. Previous Related Studies

No	Title	Data Sources	Data Analysis
1	Opportunities and Threats of the MOOC Movement for Higher Education: The European Perspective (Schuwer et al., 2015)	15 conference papers Survey of conference participants Twitter	SWOT Analysis
2	Massive Open Online Course (MOOC) in China: Status Quo, Opportunities, and Challenges (Shen, Ye, Wang, & Zhao, 2016)	Various documents and observations	Document Analysis
3	e-Education in Countries with Low and Medium Human Development Levels using MOOCs. (Sanchez-Gordon & Luján-Mora, 2016)	Samples from six countries with various HDI levels.	SWOT Analysis

The last related study was done by Sanchez-Gordon and Luján-Mora in 2016. They studied MOOCs in countries with a low and medium HDI. Their goals were to identify opportunities and challenges of MOOC implementation as e-Education in those countries. They also used the SWOT analysis framework and collected sample data from six countries with different human development levels: Norway, Spain, Dominican Republic, India, Rwanda, and Niger. They identified eight strengths, five weaknesses, four opportunities, and seven challenges (Sanchez-Gordon & Luján-Mora,2016). Table 2 shows the opportunities and challenges identified in the above studies.

These studies indicated that there are opportunities and challenges in implementing MOOCs. The similar opportunity across the studies is that MOOCs give accessibility to a quality education. We inferred from Schuwer et al. (2015) that MOOCs' accessibility can increase the opportunities for collaboration. Shen et al. (2016) added that MOOCs can promote resource sharing and educational equity. In addition, Sanchez-Gordon and Luján-Mora (2016) concluded that there is a need for an affordable mechanism to improve access to professional training to citizens in countries with medium and low HDI. The studies also revealed similar challenges in MOOC implementation, including the high cost to develop a MOOC and the challenges in making qualified courses.

Differences between the Current Study and Other Related Studies

Our study has some similarities and differences with the three studies mentioned before. This study shares the same research topic, and it also uses the SWOT analysis framework as a data analysis tool. However, our study is different from the others in three ways. First, we studied MOOCs in an Indonesian context. Indonesia is an archipelago, and it consists of various ethnicities and cultures. Currently this country has an HDI at the medium level (UNDP, 2015). Second, we used documents and government regulations as inputs. We also conducted observations on four local MOOCs. Third, we involved respondents with various backgrounds related to MOOCs to provide their perspectives.

METHODOLOGY

This study is qualitative research conducted in five phases. The first phase was the formulation of the goal of the study. The second was the formulation of the method of the study. The third phase was the data collection. The fourth phase was the data analysis. The phases were followed by concluding comments.

Data Collection Procedures

Four types of data were collected in this study. The first type of data was documents. We included

Table 2. Findings form Three Related Studies

Research	Opportunities	Challenges
Schuwer et al. (2015)	The European Credit Transfer and Accumulation System (ECTS)	Worries about quality
	Increased opportunities for collaboration.	Lack of recognition and accreditation.
	MOOCs as accelerator for online learning.	Lack of institutional strategies for integrating MOOCs.
	Reaching new target groups.	Too much regulation, which hinders innovation.
	European policies on MOOCs.	Missing evidence and data.
	MOOCs as a tool for marketing.	Sustainability and costs.
	Research about MOOCs.	Inequality in access
	Use of open licenses considered more present in Europe than in the United States.	
Shen, Ye, Wang, & Zhao (2016)	Promoting Resource Sharing and Education Fairs.	Course content duplication and resources wasting.
	Promoting Lifelong Learning and Personalized Learning	Evaluation of learning process and results
		Differentiated Quality of Course
		Intellectual property protection.
Sanchez-Gordon & Luján-Mora (2016)	An increasing need for qualified workers and professionals.	Limited access to electricity in some countries.
	The need to improve employability of citizens	A lack of affordable and quality Internet access.
	The need for quality training for the general population.	A lack of access to affordable technological devices.
	The need for an affordable mechanism to improve access to professional training.	Digital literacy levels in countries with low human development are low.
		A lack of a clear business model for MOOC sustainability.
		The danger of promoting a sort of "intellectual neo-colonialism" due to the lack of customized content adapted to local cultures and realities.
		There is a lack of an organizational model to incorporate MOOCs.

conference papers, journals, reports, and articles that were published between 2013 and 2016. Document discovery searches were conducted using the keywords "MOOC" or "Massive Open Online Course" in the SCOPUS database. We continued the search with Google Scholar. Articles from the International Review of Research in Open and Distributed Learning (IRRODL) were also reviewed. Finally, we used an ordinary search engine to find relevant articles and reports. As a

Table3. Selected Respondents

Code	Initial	Gender	Profession
[P1]	SF	Female	Distance Education Researcher
[P2]	BP	Male	Academician
[P3]	MS	Female	Academician
[P4]	NS	Male	Academician
[P5]	DR	Male	Professional in the e-learning Industry
[P6]	ZS	Female	Assistant in the Distance Education Program
[P7]	WY	Female	Assistant in the Distance Education Program
[P8]	FA	Male	Distance Education Researcher

result, 29 documents and articles were selected for this study, including one presidential regulation and two ministerial regulations related to the education system in Indonesia.

The third type of data was collected through observations of four local MOOC providers. The selected MOOCs were IndonesiaX, MOOC Universitas Terbuka (Indonesia's Open University), Universitas Ciputra Entrepreneurship Online (UCEO), and FOCUS Faculty of Social and Political Sciences (FISIPOL) Universitas Gadjah Mada. All of them have more than five active courses and offer free courses. The observation was done from the student's perspective. We enrolled into some courses in each MOOC provider as a student and collected the data we needed.

The last type of data was obtained from professional comments. We surveyed eight respondents and asked them two open-ended questions. The first question aimed to get their opinions about the opportunities of MOOCs in Indonesia and the second one asked about the challenges. All selected respondents (including researchers, academicians, and professionals in the industry) had experience in the distance education field and had good knowledge about MOOC. Table 3 shows the details of the selected respondents for this study.

Data Analysis Method

The data analysis method in this study was divided into three steps. In the first step, we extracted useful information from the collected data. Next, the extracted information was analyzed and coded. We used simple theme-based coding with two categories: opportunities and challenges. Sekaran and Bougie (2013) state that when you use the theme as a coding unit, you primarily look for the expression of an idea and you can assign a code to a text unit of any size, as long as that unit of text represents a single theme or issue. Thus, in this study, the extracted information that corresponded to an opportunity was coded with prefix [OP], while prefix [CH] was used for a challenge. And finally, the coded information was grouped by their category and presented as the results of this study.

RESULTS

We identified seven opportunities and seven challenges of MOOC implementation in Indonesia. Table 4 shows the opportunities, while Table 5 provides the challenges.

In the next part, we will explain the details in this order: potential MOOC users and digital literacy, the education system in Indonesia, the

Table 4. Opportunities of MOOC Implementation in Indonesia

Code	Opportunities	References
[OP01]	Indonesia has many potential MOOC students.	(Internet World Stats, 2016),
[OP02]	Government supports MOOCs through Presidential and Ministerial Regulations.	(APJII, 2016),
[OP03]	MOOCs have the potential to connect the nonformal and formal education in Indonesia.	Respondent quotes [P2], [P5], [P7], & [P8]
[OP04]	MOOCs can be used as promotional tools by the university to attract potential students.	(Ministerial Regulation, 2013)
[OP05]	Quality and equity in education are needed to improve the standard of living of Indonesians.	(Ministerial Regulation, 2013),
[OP06]	Accessibility of qualified training is needed to improve professional skills.	Respondent quotes [P3] & [P4]
[OP07]	There are only a few MOOC providers in Indonesia, so the competition level is low.	Observation on local MOOCs, Respondent quotes [P5]

challenges in content development of MOOCs, and our observation on local MOOC providers.

Potential MOOC Users and Digital Literacy

We started our first analysis from the Internet user profile of Indonesia because Internet access is required to use MOOCs. According to the World Internet Stats, in 2016, there were more than 132 million Internet users in Indonesia. That was the third highest number in Asia, after China and India (Internet World Stats, 2016). In addition, data from the Indonesian Internet Service Providers Association (APJII) reported that the Internet penetration rate of Indonesia in 2016 was 51.8% (APJII, 2016). According to our respondent, [P8], the low cost of devices and Internet access support this condition. [P7] agreed with [P8] and explained that the high number of smartphones available today is the main factor that drives the high number of Internet users in this country.

Most internet users in Indonesia are 35 to 44 years old (29.2%) followed by 25 to 34 years old (24.4%) (APJII, 2016). The highest penetration, 75.8%, was in the age group of 25 to 34 years old. In terms of age group, this matches Engle, Mankoff, and Carbrey's research in 2015. They studied the student demography of one MOOC in Coursera and found that 29.5% of students were 18–25 years old and about 30.3% were 26–34 years old (Engle, Mankoff, & Carbrey, 2015). As a complement, [P7] also added that most of them are young. Based on those references, we concluded that Indonesia had many potential MOOC participants. We coded this opportunity as [OP01].

We identified two challenges related to Internet users. The Internet users outside Java Island are still low [CH01]. Furthermore, digital literacy in Indonesia is also relatively low [CH02]. About 65% of Internet users from Indonesia live on Java Island, which is the most populated region. Nevertheless, if we talk about educational equity, it surely concerns every region. The Internet penetration of Indonesia is unequal in each province. [P1] and [P6] supported this finding as they said that the infrastructure development and the Internet in Indonesia are not equal yet. The five provinces in Indonesia with the lowest penetration rate are West Papua (20%), West Kalimantan (23%), North Maluku (24%), North

Table 5. Challenges of MOOC Implementation in Indonesia

Code	Challenges (Threats)	References
[CH01]	There are only a few Internet users outside Java island.	(APJII, 2016), (Puskakom UI, 2015), Respondent quotes [P1] & [P6]
[CH02]	Digital literacy in Indonesia is still low.	(Internet World Stats, 2016), (APJII, 2016), (Puskakom UI, 2015), (Mirani, 2015), (Geopoll, 2015), Respondent quotes [P3], [P6], & [P7]
[CH03]	Obligations that are regulated by the Indonesian government need to be fulfilled.	(Ministerial Regulation, 2013), Respondent quotes [P8]
[CH04]	Course development in MOOC requires a lot of time and money.	Respondent quotes [P1] & [P2]
[CH05]	Multidisciplinary knowledge and skills are required to make qualified courses.	Respondent quotes [P1], [P3], & [P4] (Ministerial Regulation, 2013)
[CH06]	English skills of Indonesians are still at a low to medium level.	(EF Education First, 2016)
[CH07]	There is no mature business model for MOOCs in Indonesia yet.	Observation on local MOOCs, Respondent quotes [P2], [P4], [P7], [P8]

Sumatra (25%), and East Nusa Tenggara (28%) (Puskakom UI, 2015). This is a big challenge for Indonesia because there are only a few potential MOOC participants in those provinces.

Digital literacy is another challenge for MOOCs in Indonesia. We use the term digital literacy in this study according to Cornell University, which defines it as the ability to find, evaluate, utilize, share, and create content using information technologies and the Internet (Cornell University, 2016). From that definition, it is clear that digital literacy is not only about using the Internet. A recent APJII survey stated that the use of the Internet for education is relatively low (APJII, 2016). Social media is the main reason why the people of Indonesia use the Internet, and there are about 88 million Facebook users from this country (Internet World Stats, 2016; Puskakom UI, 2015). An article from Quartz stated that many of the Facebook users from Indonesia have no idea they are using the Internet (Mirani, 2016). There is also a quote from LIRNEasia: "It seemed that in their minds, the Internet did not exist; only Facebook" (Samarajiva, 2012), Another interesting piece of information was found in the Geopoll survey. According to that survey, 11% of Indonesians who said they used Facebook also said they did not use the Internet, and 61% of Indonesian respondents agreed with the statement "Facebook is the Internet" (Geopoll, 2015). In short, those references show that digital literacy of Indonesia is low.

Three respondents also addressed the digital literacy issue in Indonesia. [P6] reckoned that there are still many students who are not familiar with e-learning, much less MOOCs. [P7] agreed with this opinion. He doubted that the students and the lecturers could use MOOCs. Unfortunately, [P1] also said that the people involved in MOOC development lacked the knowledge about MOOCs. She thought that the human resources, like technicians and lecturers, are not ready yet to create qualified MOOCs.

Education System in Indonesia

The Indonesian Government has already given its support to the educational institutions to implement MOOCs. That support was stated in the Ministerial Regulation Number 109 in 2013, which regulates the implementation of

distance education in higher education (Ministerial Regulation, 2013). We included the government support as an opportunity for MOOCs [OP02]. The regulation also ensures that participants of distance education can get academic credits recognized by the promoter. It means MOOCs have the potential to connect the nonformal and formal education in Indonesia [OP03]. That is an opportunity for Indonesia to increase the student enrollment rate in higher education. Currently, the student enrollment rate in Indonesian higher education is only 33.66% (Ristekdikti, 2015a). [P5] saw this condition as an opportunity. She thought that the low rate of student enrollment in higher education could be a good chance for implementing MOOCs. [P3] had the same opinion with [P5]. She noted that MOOCs could increase efficiency and effectiveness in the learning process of students in university. She also said that the universities can use MOOCs as a monitoring tool to ensure that the students get a qualified education. [P4] was also concerned about this issue and thought that the university could give credits to MOOC students. As a comparison, Europe has the European Credit Transfer and Accumulation System (ECTS), which plays an important role in bridging nonformal and formal learning (Schuwer et al., 2015). Some students indeed reported that they participated in a MOOC for credit (Hew & Cheung, 2014).

The ministerial regulation states some requisites that need to be fulfilled by the universities providing distance education [CH03]. They include information technology readiness, qualified learning materials, supporting facilities, lecturers, and academic staff (Ministerial Regulation, 2013). Unfortunately, [P6] judged that most lecturers, faculty, and staff do not have sufficient competences to provide a distance education program like MOOCs. It is a huge challenge for a university to implement MOOCs. In addition, [P7] thought that this condition is related to the digital literacy issue.

From the university's perspective, MOOCs are a good promotion tool to attract potential students [OP04]. One of the main goals of MOOC providers is to give free educational opportunities to people around the world (Engle, Mankoff, & Carbrey, 2015). Giving something for free for promotional purposes is a common marketing strategy. MOOCs can also be seen as nothing more than a clever marketing ploy by the elite universities (Krause & Lowe, 2014).

The quality of education in Indonesia is explained in the Presidential Regulation Number 8 (2012). The regulation is about the National Qualification Framework (KKNI). The National Qualification Framework has as one of its long-term goals to increase the quantity of qualified human resources (Presidential Regulations, 2012; Ristekdikti, 2015b). Indonesians are expected to have international competitiveness. Therefore, quality and equity of education are needed by Indonesia to reach that goal. Unfortunately, Indonesia faces another problem with college teacher qualification. There are more than 40,000 lecturers in this country with only bachelor degrees (PDDIKTI, 2016). It is therefore hard to provide a quality education equally through the traditional means. On the other hand, MOOCs can overcome that problem as they only need some qualified lecturers with proper educational degrees and expertise to team up and make a qualified course. We concluded that the need for equity of qualified education is an opportunity for MOOCs [OP05]. [P1], [P2], [P6], and [P8] agreed and shared the same point of view about this opportunity. MOOCs are capable of helping Indonesia achieve its national education goal.

Qualified training is also needed for the workers and professionals to improve their skills (Ristekdikti, 2015b). They need easy access to those qualified trainings [OP06]and this is an opportunity because accessibility is one advantage of MOOCs. In that way, MOOCs give Indonesia a chance to increase its human development level. As mentioned before, human development level has a positive correlation with education (Sanchez-Gordon & Luján-Mora, 2016). [P2] and [P3] were also concerned about human development. They said that the industries should use MOOCs to provide qualified training to guarantee their workers' skills. Moreover, [P5] believed that MOOCs could fulfill life-long learning needs. [P7] agreed with them and added that MOOCs are efficient in terms of time, place, and costs.

Challenges in Content Development of MOOCs

Whether or not a MOOC is successful depends on its content. Content development in MOOCs, which in this case is the course, is costly and not an easy task. Holland and Tirthali in their study (2014) state that the cost needed to make a MOOC

Table 6. Local MOOC Providers in Indonesia

No	MOOC	Active Courses	Established	Course Topic
1	IndonesiaX (https://www.indonesiax.co.id/)	17	2015	Management, Information Technology, Business, Engineering, Law
2	MOOC UT (http://moocs.ut.ac.id/)	7	2015	General Topic, Information Technology
3	UCEO (https://ciputrauceo.com/)	12	2013	Entrepreneur
4	FOCUS Fisipol UGM (http://focus.fisipol.ugm.ac.id/)	12	2016	Social and Political Sciences

is about $38,908 to $325,330. In addition, their study also explains that the major cost drivers in MOOC production and delivery are the number of faculty members, administrators, and instructional support personnel participating in the process; the quality of videography; the nature of the delivery platform; the programming for special features, such as computer code autograders, virtual labs, simulations, or gamification; the analysis of platform data; and the technical support for participants (Hollands & Tirthali, 2014). There is a huge risk of financial loss if MOOC implementation fails. A course development process is not only costly, but it also requires a lot of time. Holland and Tirthali (2014) assert that the effort to create a MOOC is two to three times greater than creating a traditional course. To create one hour's worth of MOOC video, a lecturer requires three to ten hours of preparation. Sustainability, especially in finance and content, also made [P2] believe that implementing MOOCs in Indonesia is challenging. In short, course development of a MOOC requires a lot of time and money [CH04].

A study states that there are at least six factors which drive a successful MOOC (Yousef, Chatti, Schroederj, & Wosnitza, 2014a). Those factors can be classified into pedagogical and technical factors. The instructional design and assessment mechanism are pedagogical, while user interface, video content, learning tools, and learning analytics are technical. In other words, multidisciplinary knowledge and skills are required to make a qualified course [CH05]. Three respondents supported this finding. [P1] said that different regions in Indonesia have different problems and need different skills. Thus, different kinds of expertise are complementary in creating successful MOOCs. Sadly, [P3] expressed that in reality the skills among the team members involved in MOOC development are unequal. She also mentioned the need for a quality assurance institution or regulation for MOOCs. Without one, the continuity of MOOCs, especially in content, will not be achieved. [P4] believed that continuity of content is important for MOOCs, and creating an interesting course is challenging.

Language is one thing that needs to be decided in the course creation process. Most qualified courses, which are in Udacity, Coursera, or EdX, are delivered in English. Technically, Indonesians could enroll in those courses, but it is not easy for them to engage in the learning process. Indonesians have relatively low English skills on average. The English Proficiency Index (EPI) of Indonesia, which was published by EF Education First, is 52.94 (EF Education First, 2016). It is lower than the average score in Asia, which is 55.94. It also shows that the English skills of Indonesians are in medium level [CH06].

Observation on Local MOOC Providers

We started our observation with IndonesiaX. It was the first MOOC we found and had 17 active courses. We considered IndonesiaX the biggest MOOC in Indonesia in terms of courses and partnership. Various course topics were offered

by IndonesiaX, such as: business, management, engineering, information technology, and law. It also has partnerships with several top universities in Indonesia. They provided open courses through the IndonesiaX MOOC platform. The second MOOC provider that we observed was MOOC Universitas Terbuka. They only provided seven active courses with general topics. The third MOOC was Universitas Ciputra Entrepreneurship Online (UCEO). They focused on entrepreneurial topics with 12 active courses. The last MOOC provider was FOCUS Faculty of Social and Political Sciences (FISIPOL) Universitas Gadjah Mada. They had 12 active courses with a special topic in social and political sciences.

We found some interesting things that reflected the current MOOC condition in Indonesia. First, the current available MOOCs in Indonesia are not that "massive." A study done by Shrader et al. (2016) notes that a course with a duration of 4 to 8 weeks has 10,000 to 100,000 enrollments, and we considered that that number as massive. On the other hand, we did not find any Indonesian MOOC platforms that have more than a thousand enrollments in a single course. In addition, only a few participants were engaged in the discussion section in every MOOC we observed. Based on that, we concluded that the MOOC participant number in Indonesia cannot be considered massive. The courses provided also show that all the observed MOOC providers were still small. IndonesiaX had the most courses, yet it had only 17 courses, which was very few compared to other MOOCs from all over the world.

As a result of our observation, we found that the current condition of MOOCs in Indonesia has an opportunity and a challenge. We regarded the small number of available MOOCs in Indonesia as an opportunity [OP07]. This means the competition level among MOOC providers is low. On the other hand, there is not any mature business model for MOOCs in Indonesia yet [CH07]. [P5] remarked on the same point. That is also a challenge for any institution that wants to implement MOOCs. Marketing is one of the main business activities that plays an important role in producing successful MOOCs according to some respondents. [P2] had the opinion that MOOC providers in Indonesia lack in promotion. On the other hand, [P7] said that most people in Indonesia are not aware that MOOCs exist. Therefore, marketing is needed to have successful MOOCs. In addition, [P4] thought that MOOC providers need to work hard to convince both the students and the lecturers to use MOOCs. They need to educate the users about MOOCs before asking them to enroll.

DISCUSSION

Indonesia has many potential MOOC students [OP01]. It is reflected by the number of Internet users in this country, which is the third highest in Asia. However, the Internet penetration rate of Indonesia is uneven [CH01]. In most countries with low to medium HDI, the Internet speed across all regions are more likely to be uneven. These conditions should be considered before we implement MOOCs in Indonesia. We can predict that the Indonesian MOOC students live in big cities or regions with high population where the Internet speed is adequate for accessing MOOCs. Furthermore, in Indonesia, people who live in big cities are likely to be more educated than those living in rural areas. We can infer that the implementation of MOOCs will not instantly bring equity in education to Indonesia. Improvements in information technology infrastructures, especially those that are related to the Internet, are required along with the implementation of MOOCs.

Another MOOC challenge in Indonesia is the low level of digital literacy [CH02]. The main reason Indonesian people use the Internet is for social media (Puskakom UI, 2015). QUARTZ published a survey result which said 61% of Indonesian respondents believed that Facebook and Internet were the same (Mirani, 2015). These facts make the data of the Internet users in Indonesia biased. We think that Indonesia should find a good and harder way to educate its people about using the Internet for education. The Indonesian government has already supported distance education and MOOC implementation [OP02]. Distance education is regulated by the Ministerial Regulation Number 109 (2013). The regulation allows MOOC students to get academic credits recognized by the university that provides the course. It means that MOOCs have the potential to connect the nonformal and the formal education in Indonesia [OP03], or it can at least be used as a good promotional tool to attract potential students [OP04]. On the other hand, the regulation also states some requirements to be fulfilled by any institution that provides

Table 7. Recommendations

No	Recommendation	Problem addressed
1	The provision of Internet access outside Java Island needs to be improved so it can be aligned with MOOC implementation.	[CH01], [OP05], [OP06]
2	Education and training are needed to increase the digital literacy of the Indonesian people, especially in using information technology for education.	[OP01], [CH02], [CH06]
3	Strategic planning is required by any institutions that implement MOOCs.	[OP02], [OP03], [CH03], [CH04], [CH05]
4	A clear quality assurance mechanism of MOOCs is indispensable.	[OP05], [OP06], [CH05]
5	Institutions need to adopt the existing international business model of MOOCs to be implemented in Indonesia.	[OP04], [OP07], [CH07]

a distance education program [CH03]. Those requirements include information technology readiness, lecturers, academic staff, and qualified courses. In short, MOOC strategic planning is required in order to fulfill them. It is not easy to do so as it requires a lot of extra cost, time, and staff. Institutions in Indonesia should be aware that MOOC implementation is not an easy task.

Indonesia has the National Qualification Framework as a reference for educational content. This framework shows clearly that Indonesia needs quality and equity in education [OP05]. In addition, the human resources of Indonesia also need access to qualified training in order to improve their skills [OP06]. Those two are opportunities for MOOCs. Nevertheless, developing a high-quality MOOC is a difficult task that requires a lot of time and money [CH04]. Moreover, it also requires multidisciplinary knowledge and skills [CH05]. Language is another thing that the providers should be concerned about when creating a course. Indonesia has a low level of English skills; its English Proficiency Index is even lower than the average score of Asia [CH06]. This might be the reason why Indonesia has low participation in global MOOCs. Based on this condition, we can say that in Indonesia, MOOCs should be delivered in its national language for the best result. A standardized work flow is also needed in course creation to assure its quality.

There are two important things that are inferred from our observation on local MOOCs. First, there are only a few MOOC providers in Indonesia [OP07]. It is a big opportunity to implement MOOCs right away because the competition is still low. There are many potential students with few MOOCs available in Indonesia, but there is no mature business model in this country [CH07]. Any institution that wants to implement MOOCs must work hard in order to create a proper business model that is suitable for Indonesia. Or maybe Indonesia needs a MOOC framework that is fit to its current conditions. Another option for Indonesia is to adopt the existing MOOC framework or model. A distinct study is needed to address those issues.

RECOMMENDATIONS

As a result of this study, we provide some recommendations, especially for Indonesia and other countries with the same conditions, to harness the opportunities and overcome the challenges in MOOC implementation. Table 7 shows our recommendations for the problems addressed.

It is clear that the Internet is a basic requirement to use a MOOC. Internet provision in regions outside Java Island needs to be improved so that it can be aligned with MOOC implementation. MOOCs' potential to bring equity in education needs equity in the Internet as well. In addition, education and training are also needed to improve digital literacy to Indonesians. They have to be capable of using

information technology for education.

We recommend any institution that wants to implement MOOCs make a strategic plan. There are several obligations that need to be fulfilled by any institution when implementing MOOCs. They should be regulated by the government. In terms of content quality, we suggest that the institutions provide a clear content quality assurance mechanism for MOOCs. Indeed, Indonesia already has its own national qualification framework, yet it does not provide a detailed mechanism to ensure course quality. Indonesia also does not have a mature business model for MOOCs yet. Any institution that wants to implement MOOCs has to work hard in order to create a proper business model that is suitable for Indonesia. We suggest that institutions adopt the existing international business model of MOOCs to be implemented in Indonesia.

CONCLUSION

MOOCs have the potential to improve the education and the standard of living in Indonesia. This study identified that Indonesia has seven opportunities and seven challenges in implementing MOOCs. Educational institution can use those opportunities as a motivation to provide MOOCs. On the other hand, knowing the challenges can reduce the risk of failure in MOOC development. This study also provides recommendations to address those opportunities and challenges. The results of this study can be used as a reference by any institution to do an initial analysis on MOOC implementation in Indonesia or any other countries with the same conditions.

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