

A New Paradigm of Regulation for Massive Open Online Courses (MOOCs) in Higher Education in Indonesia: From Disruptive Innovation to Sustaining Innovation

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MOOCs are one of the disruptive innovation phenomena capable of destroying conventional education methods. The aim of this research is to offer solutions regarding a shift in the educational paradigm and the formulation of an anticipatory policy towards the transformation of disruptive innovation into sustaining innovation. The results of this study indicate that MOOCs have become an alternative means of improving the quality and equity of education. The education paradigm in Indonesia is currently undergoing a transition process. The old education paradigm, which focusses on the role of lecturers conducted in the classroom, has slowly shifted into a learning process that no longer requires face-to-face meetings in the classroom. The Indonesian Government has issued several laws and regulations in regulating the Indonesian Online Learning System. However, this policy still needs a lot of improvements to develop MOOCs from disruptive innovation into sustaining innovation. This namely involves determining a new direction of the paradigm of MOOCs regulation in Indonesia, improving cooperation among stakeholders, improving infrastructure for supporting the MOOCs system, and improving the culture of digital literacy.

Key words: *Paradigm, Massive Online Open Courses, disruptive innovation, sustaining innovation, higher education.*

Introduction

Massive Online Open Courses (MOOCs) are a phenomenon occurring in the higher education sector, indicated by the growing number of open courses, online-based courses, and other changes during this globalisation era (Gardiner *et.al.*, 2017). The aim of the MOOCs learning system is to enable unlimited participation in education accessible on the Internet. In addition to features like videos, reading materials, and problem-based discussions, MOOCs also provide forums for interactive users, which helps build communities for students, lecturers, and teaching assistants. MOOCs are the latest development in e-Learning (Silvana & Fajar, 2016).

The theory of disruptive innovation elaborates how innovation can ruin conventional markets that have existed earlier by sacrificing incumbents (Budhijanto, 2010). This may result in negative impacts on the existing pattern; in this case the existence of technological innovation has shaken the current pattern, allowing ‘this old way’ to fall into bankruptcy (Christensen, 1997). In the higher education sector, the question as to whether the innovation of online learning poses a threat to the current higher education system has been raised (Gardiner *et.al.*, 2017).

MOOCs are a promising and increasingly popular technological innovation in higher education. They provide an alternative to the flaws of conventional education, known for its complex bureaucracy, ever-changing curriculum, rigid regulation in the systems of education, and even poor human resources and skills. MOOCs evenly distribute learning opportunities in societies, especially for those planning to continue on to universities. This new method is certainly different from the patterns and structures that conventional universities have clung on to for so long, the patterns and structures that have tended to be exclusive to a limited number of students.

Furthermore, the complexity of bureaucracy and the high cost of education in universities have often become a burden for students. In MOOCs, students can assign themselves to classes they are interested in, and this method allows them to explore classes without the concern of bad scores or sessions wasted. In other words, this seems to give unlimited opportunities to those willing to study throughout their life, even to those having earned their university degrees, those currently studying in universities, or those who are retired (Anonymous, 2017).

To date, the most common issue in the MOOCs system is the failure of universities and companies to officially recognise their courses since they are not validated or regulated. To respond to this issue, Coursera, an MOOCs, offers a certified program verified at an affordable cost in collaboration with accredited universities. Moreover, this institution also

offers online courses based on e-learning and peer-to-peer learning (private tuitions) principles and offers bachelor degree programs accredited by an accreditation commission called Distance and Education Training Council (Anonymous, 2017).

To improve the quality of online learning, several elite universities provide online courses through course platforms such as edX, Akademi Khan, and Duolingo. Other start-ups like Coursera and Udacity are also in partnership with several prestigious campuses to provide free-of-charge and paid courses in small numbers for certification. Big actors such as Pearson and Google also plan to take part in the education sector in similar way (Gardiner *et.al.*, 2017).

However, such high innovation levels reflected in MOOCs has the potential to spoil traditional methods of education; learning activities will completely change. Classrooms will evolve through digital learning patterns that give learning experiences in a more creative, participative, varied way, and more thoroughly. Learning evolution offered by MOOCs will raise a critical question: “how will universities and lecturers play their role in the future?” (Aji, n.d.) How will regulations concerning education in Indonesia prepare proper learning systems in order to welcome the MOOCs with open arms?

Higher education must anticipate the transformation of the digital era and of market needs where there is a tendency for a labour market that prefers skilled human resources to university degrees (Gardiner *et.al.*, 2017). This research aims to present a change of paradigm by explaining the relationship between technological innovation in the form of MOOCs and regulations of higher education in Indonesia, and to ascertain anticipatory measures to convert this disruptive technology into sustaining technology that brings benefits to the systems of higher education in Indonesia.

Research Method

This research employed a socio-legal method aiming to combine several aspects of the fields of social and legal studies into a distinct approach. The research stages involve:

- a. Identifying legal and social facts that will be solved concerning MOOCs in anticipation of disruptive technology in universities in Indonesia.
- b. Collecting legal materials that are relevant to non-legal materials related to the study of the policy of MOOCs, as to anticipate the presence of disruptive innovation in universities in Indonesia.
- c. Analysing issues according to the data collected.
- d. Drawing conclusions in the form of argumentation that answers the problems.
- e. Providing prescriptions according to argumentation developed in the conclusions drawn.

This research employed statute and conceptual approaches. Furthermore, primary legal materials consisting of laws and regulations were collected based on inventory and categorisation, while secondary materials were collected in a card system. Both the inventoried primary and secondary data were grouped and studied based on statute approach to obtain the synchronisation of all legal materials, followed by systematisation and classification to look into and compare the theories and legal principles contributed by experts. The analysis of the legal materials was conducted deductively and based on extensive analytical methods.

Results and Discussion

MOOCs and Disruptive Innovation in Higher Education System

MOOCs are a model of education with advantages. First, MOOCs are massive; they have an infinite scalability principle, meaning the number of participants can reach to the thousands in each lecture. This is considered common since there are no hindrances that limit the number. This model can come as a solution when it is related to population and education distribution throughout Indonesia.

Another benefit is that MOOCs are open, where there are no specific requirements to join them, other than a computer, mobile device, and Internet to help participants access MOOCs. Some MOOCs are offered for free, while others only charge participants for marking their results and providing a certificate; particular payment is required in some other MOOCs. In several platforms, the openness can be seen as an opportunity, allowing institutions to use the platforms to develop their own MOOCs. Alternatively, freedom is given to allow them to manage intellectual property rights to the materials provided by the institutions through MOOCs.

Nowadays, there are many platforms working in association with public and private universities to run online classes as they would regular classes. For example, HarukaEdu enables the participants to earn their bachelor degrees from universities, based on the majors they pick.

Thirdly, MOOCs are given online. In their initial development, MOOCs offer online access to all activities provided. However, in the development that follows, several universities used MOOCs to support conventional lectures. Universities provide materials for MOOCs through particular platforms, such as lecture recording, reading materials, and quizzes that students can access. The online classes are combined with face-to-face sessions in a classroom, so that students still have their chance to discuss in a group, to conduct experiments, or to take quizzes to find out their progress. Furthermore, courses are the criteria of MOOCs, where lectures held by MOOCs are managed as a whole lecture. Designed on the objective of study,

the lecture also requires students to read recommended materials, follow explanations given by a lecturer, to take quizzes, and complete assignments. Participants are also encouraged to be involved in online forum discussions. When participants finish their courses, a certificate is given (Educause, 2015). To sum up, MOOCs are an online-based education; the learning process takes place online, and they are open and massive.

This brings the question: will the innovation of MOOCs disrupt conventional education? When businesses weren't supported by advanced technologies like they are today, during development in businesses, business actors had often been in conflict with bureaucracies, government arrogance, rigid regulation, irrelevant investment systems, or poor resources and skills. It is inevitable that the presence of technology adds efficiency to those drawbacks. Back in 1997, Clayton M. Christensen (1997) introduced the term "disruptive technology". Christensen divided technology into two categories, comprising sustaining technology and disruptive technology. Christensen explained there were three central dilemmas in the use of technology:

"The Innovator's Dilemma has three main findings: 1). Sustaining technologies are different than disruptive technologies, 2) the pace of progress often precedes the market's awareness of the need, 3) Structures of companies colour the choices and investments they make."

Sustaining technology is defined as a gradual improvement of an established technology. In this criterion, technological development is prepared by listening to consumers, followed by the creation of products that meet the needs of the future by business actors (Crooker, Baldwin & Chalasani, 2009). Disruptive technology, in contrast, is a condition not anticipated by companies or business actors. Therefore, the birth of a new technology can disrupt or even ruin traditional systems in a company (Christensen, 1997). In other words, disruptive technology is defined as a process of innovating products or services to develop a new market different from the conventional one, spoiling and threatening the existing products.

Furthermore, Christensen (1997) provides five principles of disruptive technologies as follows:

1. Companies depend on customers and investors for resources. Customers drive internal decision making because companies are resource-dependent.
2. Small markets don't solve the growth needs of large companies. Large companies are not interested in small, emerging markets, and they wait too long.
3. Markets that don't exist cannot be analysed.
4. An organization's capabilities define its disabilities.
5. Technology supply may NOT equal market demand.

The phenomenon of disruptive technology is obvious in the case of Nokia, back in 2010, a well-known market leader above all hand phone products. Nokia, however, experienced a fall in its sales following the vast development of Android Operating System introduced in 2009. The falling sales of Nokia was also in line with the growing development of iPhone from Apple in 2007 that was widely accepted by consumers due to its more interesting features and applications (Bouwman, 2014).

The example given indicates that Nokia slowly responded to the change and threat of new technologies growing at no time. The advanced technologies, such as OS Android overtaking OS Symbian by Nokia, show that the market taste was easily changed due to the birth of a new technology which Nokia did not have despite having been earlier accepted.

Some other examples categorised by Clayton M. Christensen into disruptive technology involve the personal computer replacing the mainframe and mini-computer, leading IBM to bankruptcy (Bouwman, 2014), the Cellular Phone starting to replace the Fixed Line Telephone, forcing PT Telkom Indonesia to fix its business model with TIMES (Telecommunication, Information, Media, Edutainment and Services), and many more (Telcom Group, n.d).

In the field of higher education, MOOCs can rapidly and massively disrupt the conventional education system. These days, job markets tend to prioritise competence in field over a university degree. When several global networks and private job markets have started to welcome the system of MOOCs and are more focused on students' skills instead of their degrees, MOOCs can be taken as a threat to conventional universities, or their existence can even replace universities (Gardiner *et.al.*, 2017).

Therefore, universities must reposition the teaching systems by using and/or introducing MOOCs. The existence of MOOCs can affect the management of human resources in colleges and universities, where the needs of teaching staff will be minimised and adjusted to accreditation, while the needs for lectures can be met through MOOCs. Moreover, the existence of MOOCs will affect the role of lecturers and the behaviour of the students in teaching and learning process taking place in a classroom. Students will probably prefer being taught by world class professors through MOOCs to lecturers or teaching staff with lesser qualifications. Colleges and universities must anticipate, adapt, and adopt MOOCs to help the institutions to survive in this ever-changing era (Gardiner *et.al.*, 2017).

Change in Paradigms in managing MOOCs existing today in the Regulation of Higher Education in Indonesia

MOOCs come with new systems that keep developing in Indonesia. To date, the education system in Indonesia has been mainly focussed on the role of lectures dominant in classroom activities. This is deemed the old paradigm, where lecturers give lectures in many ways in universities (Darmayanti, Setiani & Oetojo, 2007).

As seen in Table 1, there are principal differences between the paradigm of the education system in conventional universities and that in modern universities.

Table 1: Differences between the old paradigm and the new paradigm in higher education (Darmayanti, Setiani & Oetojo, 2007)

Old Paradigm in Higher Education	New Paradigm in Higher Education
Subjects are fixed	Subjects can be chosen based on interest
Registration and academic activities highly depend on academic calendar	Registration and academic activities open throughout the year
Universities are located at certain places	Universities do not exist physically
Earning degree marks the end of the course	Learning takes a lifetime
Age ranges from 18 to 25 years old	Age starts at 18 to a lifetime
Dependent on activities running in the institutions	Reliant on market perception
The products are in single form	Information obtained can be reused
Students serve as objects	Students are consumers
Teaching and learning take place in classrooms	Class activities are not restricted to classrooms
Multicultural	Global
The concept is whole big unity	The concept is small and separated
Single discipline	Multi-discipline
Focussed on institution	Focussed on market
Funded by government	Financially supported by public funds
Technology is costly investment	Technology is distinguishing element

The new paradigm no longer requires any face-to-face sessions, although social interaction is still maintained, and this paradigm has been welcomed widely, affecting human life (Darmayanti, Setiani & Oetojo, 2007). With the geographical condition of Indonesia consisting of 16,056 islands and 4,500 universities, Intan Ahmad argues that online learning like MOOCs are highly relevant to universities (Directorate General of Learning and Student, 2017).

The Ministry of Research, Technology, and Higher Education has tried to develop long distance learning by adopting the concept of MOOCs. This model is commonly called HYLITE or Hybrid Learning in Teacher Education (HYLITE) and SPADA or online learning in Indonesia (Directorate General of Learning and Student, 2017).

SPADA Indonesia has been conducted by 51 organising universities and 116 partner universities, involving 6,927 students. SPADA Indonesia had been offering 253 online courses till 2007, 147 open courses, and 172 open contents. Organising SPADA fundamentally intends to improve access to qualified higher education through the implementation of MOOCs as a credit transfer improvement program (Directorate General of Learning and Student, 2017).

The growing of SPADA in Indonesia is inextricable from the vision and mission achieved to improve the quality and quantity of the education system in Indonesia. The Government has passed the legislation to better help implement the system of SPADA. The legislation consists of:

1. Law Number 20 of 2003 concerning the National Education System

Article 1 point 15 of Law concerning the National Education System defines distance education as an education whose students are separate from their teachers. This education involves several learning resources available through communication technology, information, and other media. It involves members of the public willing to grow their personal potential via learning processes available in a particular education path, time period, and type of education, having registered within the education program or course.

Furthermore, the concept of education in Indonesia is performed as a systematic unity with an open system and multi-definitions. An open system is defined as an education held with flexibility of options and time in a multi entry-multi exit system. The students can study while working, or they can take study programs with different types and paths of education in an integrated and sustainable way through either face-to-face sessions or long-distance learning methods. Multi-definition education is defined as an educational process that is focused more on culture-based nurture, character, personality, and skill building needed in life.

An open system is divided into two: (a) face-to-face and (b) long distance. Long distance education is based on paths, stages, and education types, aimed at providing education services to those who cannot attend regular classes or cannot attend face-to-face sessions. Distance education can involve correspondence, radio, audio/video, TV, and/or computer-based learning, while the mode of implementation of the education involves single mode or dual mode. Moreover, the scope of distance education involves subject-based education and/or field of study-based education. Overall distance education requires infrastructure,

learning services, and an assessment system guaranteeing the quality of graduates based on the national standard of education.

2. Law Number 12 of 2012 concerning Higher Education

The provisions of distance education in the Law concerning Higher Education are slightly different from the Article in the Law concerning the National Education System. Specifically, the principles of distance education are formulated in the Law concerning Higher Education as follows (Yerusalem, 2015):

a. Access

The desire to improve access to education has become the main grounds for distance learning. Based on this paradigm of access, the system of long-distance learning applies the principle of industrialisation, namely massive education for economic benefits.

b. Distribution

The principles of fairness and equality, concerning rights to opportunities for education, not restricted to certain people and free from barriers of space, time, and socio-economy, have made long-distance learning interesting for people from all walks of life. People have opportunities to receive quality education without having to leave their family, home, job, or career.

c. Quality

In terms of characteristics, the learning process in long-distance learning systems, curricula, teaching materials, and exam materials are usually presented in a standard form to be distributed across space and time by involving communication and information technology. To help achieve a standardised level of quality, long-distance learning programs heavily rely on the use of shared learning facilities according to partnerships among institutions.

3. Regulation of Minister of Education and Culture Number 109 of 2013 concerning Distance Education in Higher Education

The Regulation of Minister of Education and Culture Number 109 of 2013 concerning Distance Education in Higher Education allows education organisers in Indonesia to conduct education through long-distance universities by using information technology. MOOCs or the Indonesian Online Learning System (SPADA) can be conducted within the area of field of study as long as there are 50% of subjects or more in a study program each year. Furthermore, learning outcomes and academic programs in long-distance learning, equal to the system in face-to-face sessions, are conducted by:

a. Using learning mode where students and teachers are not in the same place;

- b. Encouraging independent, structured, measured, and guided learning by utilising varied learning resources;
- c. Using learning resources located where the students are, or using resources separate in location from students;
- d. Utilising electronic learning media combined with other learning resources in varied forms, formats, media, and sources;
- e. Utilising information and communication technology-based learning media as learning resources accessible at any time; and
- f. Giving emphasis on the interaction of information and communication technology-based learning but still enabling limited face-to-face sessions.

Furthermore, long-distance learning is held by universities to have fulfilled certain requirements set by the Directorate General. In terms of funding, long-distance learning is independently regulated and set by universities that organise long-distance learning, in which the cost covers investment, non-personnel and personnel operational cost, and development cost.

Assuring the quality of those responsible for organising long-distance learning is performed based on the characteristics of the long-distance learning program. Study programs given through the program must be accredited by an accreditation authority recognised by the government. Moreover, long-distance learning must develop and perform an internal quality assurance system.

4. Regulation of Minister of Research, Technology, and Higher Education Number 44 of 2015 concerning the National Standard of Higher Education

Intensive long-distance learning systems utilise information and communication technology for all educational and learning activities, comprising setting, procurement and distribution/uploading learning resources, learning processes through tutorials, practices, and exams, and administration and registration, without overlooking learning and face-to-face sessions given in limited amount, or known as hybrid/blended learning (Pannen, *et.al*, 2016).

Conducting long-distance learning must comply with the National Standard of Education consisting of (Pannen, *et.al*, 2016):

- a. Competence standard of graduates
- b. Standard of learning contents
- c. Standard of learning process
- d. Standard of learning assessment
- e. Standard of lecturers and education staff
- f. Standard of learning facilities and infrastructure

- g. Standard of learning management
- h. Standard of learning program funding

The future of MOOCs and Higher Learning in Indonesia

Developing the nation's intellectual life is one of the goals Indonesia holds. MOOCs can be one of the platforms appropriate to improving the quality and quantity of higher education in Indonesia. However, in reference to the trends in Indonesia, MOOCs have the potential to disrupt conventional higher education. This is because the policy of MOOCs in Indonesia is intended for learning courses given massively and for pedagogical innovation. The government also tries to develop MOOCs for public interest, not for business. Therefore, it is essential to anticipate the implementation of MOOCs in Indonesia in order that they do not disrupt the systems of conventional higher education. There are four key elements, as follows:

1. New Direction of Paradigm of Policy of MOOCs in Indonesia

a) Curriculum

Not all fields of science are applicable for users of the MOOCs systems. Sebastian Thrun argues that MOOCs may be more appropriate for training instead of academic education (Ronkowitz & Ronkowitz, 2015). Therefore, as an initial pilot project, MOOCs in Indonesia are mainly for the following areas: (a) skills/professional/vocation; and (b) corporate training.

Instructional design also needs to be considered, especially concerning how the participants of MOOCs study by integrating the delivery of systematic learning models and the involvement of the participants (Bagley & Weisenford, 2015).

Instructional design also comprises methods for the delivery of feedback and the assessment of the participants. Participant performance can be assessed by conducting quizzes, exams, and through practices such as written assignments or other learning projects. In terms of practices, learning transfer to a work environment can be assessed through observation by practitioners who excel in their particular fields by employing certain instruments. The training program with MOOCs is completed when participants have accomplished all learning credits as set; participants will receive their certificate upon graduation (Bagley & Weisenford, 2015).

The quality of learning design or pedagogy directly affects the participants of MOOCs. Poorly designed training will hamper participants from success. In most training programs, it can cause the participants to drop out of the program and may discourage them from continuing their further studies. Therefore, the academic curricula of MOOCs must be under constant evaluation and innovatively improved.

b) Participants of MOOCs

The Government needs to regulate policy to limit the participants and prioritise the following:

- 1) Participants not able to attend regular classes because of their career or location.
- 2) Participants incapable of continuing their education to conventional universities due to their age.
- 3) Participants willing to learn more skills to support their knowledge or profession.
- 4) Foreign participants

2. Development of partnerships with stakeholders

The development of proper management is essential in order to attract more participants. The role of stakeholders is also required. The combination of the work of the Government with that of related stakeholders, will help widen the network of institutions and the access to education, will reduce costs, will allow for participation in innovation in education, and will improve the quality of education in Indonesia. Several key stakeholders responsible for developing MOOCs involve (Patru & Balaji, 2016):

a) Universities or other educational institutions, functioning to:

- 1) support the development of MOOC
 - 2) offering platforms for MOOCs in the form of new pedagogical innovation
 - 3) providing teaching staff to develop, share, and deliver MOOCs and online learning and teaching
 - 4) developing institutional leadership in sectors of education, professional staff development, technological support, research and evaluation
- b) involving members of the public in changing paradigms of education from conventional to digital-based education
- c) involving private companies in transferring knowledge and innovation
- d) allowing non-governmental organisations to serve as a connecting bridge for members of the public, which is expected to encourage the development of MOOCs
- e) Involving professional training institutions and other social partners with promoting MOOCs intended for innovation and development.

3. Improvement of infrastructure underpinning MOOCs system

The Internet is one of the elements of infrastructure needed to help implement MOOCs. Based on the survey result conducted in association with the Association of Indonesian Internet Service Providers (APJII), in April 2019, there had been 171.17 million people (64.8%) out of a total Indonesian population of 264 million connected to Internet (Pratomo, 2019). However, the level of penetration of the Internet in Indonesia is not evenly distributed. Most Internet users are still centralised in East Java, accounting for 55%, while the contribution of Internet users in Sumatera represented 21%, Sulawesi-Maluku-Papua was

10%, Kalimantan was 9%, and the smallest figure was in Bali and Nusa Tenggara (5%) (Jayani, 2019).

Furthermore, Internet connection in Indonesia is still behind that of other Asian countries; the internet connection in Indonesia ranked number 112 globally, with a downloading speed of 17.02 Mbps, as of May 2019 (Jayani, 2019). This condition serves as barrier to implementing MOOCs, particularly in villages that need more quality education than urban areas.

In addition to the Internet, implementing MOOCs will require computers or tablets that allow participants to access materials. Websites should be easily accessed and should allow participants to take part in the sites. Therefore, improvement of information technology infrastructure, especially related with facilities and infrastructure, is needed alongside the implementation of MOOCs.

4. Improvement of Culture and Digital Literacy

The people in Indonesia have very low digital literacy level. Most Indonesians use the Internet to access social media, while the Internet's use in education is not common throughout the country (Berliyanto & Santoso, 2018). Therefore, the government and related stakeholders' role in developing the culture of digital literacy aims to raise the quality and quantity of education in Indonesia. The following are the reasons why digital literacy needs improvement:

- a. to prepare younger generations to be more critical and wise in the use of digital technology to gain unlimited knowledge
- b. to develop digital literacy to help give both students and schools to contribute more diverse knowledge and experiences, where the learning method is becoming more relevant and directed.

Conclusion

The process of transition in paradigms of education in Indonesia is underway. Old paradigms which emphasised on the role of lecturers in a classroom have slowly shifted to a learning atmosphere which no longer presenting face-to-face sessions in a classroom. The Ministry of Research, Technology, and Higher Education tries to develop a model of long-distance learning that adopts the concept of MOOCs. However, the MOOCs have an innovation potential to disrupt higher education system in Indonesia. The Indonesian government has passed several legislations to regulate the systems of MOOCs: (a) Law Number 20 of 2003 concerning National Education System; (b) Law Number 12 of 2012 concerning Higher Education; (c) Regulation of Minister of Education and Culture Number 109 of 2013 concerning Long Distance Learning in Higher Education; and (d) Regulation of Ministry of Research and Technology of Directorate General of Higher Education 44 of 2015 concerning



National Standard of Higher Education. However, to anticipate the possibility of disruptive innovation, it is essential that, in the future, new directions for the paradigms of policy of MOOCs in Indonesia, the improvement of partnerships with stakeholders, the improvement of supporting infrastructure of the system of MOOCs, and the improvement of the culture of digital literacy be regulated.



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