



STAKEHOLDERS' VIEW ON MOOCS SUSTAINABILITY IN MALAYSIAN HIGHER EDUCATION: A PRELIMINARY STUDY

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ABSTRACT

The emergence of Massive Open Online Courses (MOOCs) has revolutionized the global higher education due to policy innovation towards learning accessibility, heterogenous participation with low or zero cost imposed on end-users. In the context of Malaysian higher education, the Ministry of Higher Education has launched Malaysia MOOC, the first country in the world to implement government-initiated MOOCs for all public universities. The ministry allocates RM500 million for all public universities to offer the MOOC, under the 2016-2020 Eleventh Malaysia Plan. Nonetheless, there is yet study published specifically on MOOCs sustainability in Malaysian higher education. Hence, this paper aims to gauge MOOCs stakeholders' view on MOOCs sustainability via interviews conducted with ten interviewees who are the primary stakeholders of the Malaysia MOOCs initiative. Four main factors, three constructs and nine elements for MOOCs sustainability in Malaysian higher education have been identified via synthesis of meta-analysis and stakeholders' view. The findings of this research are hoped to be useful as future reference to policy makers, practitioners and researchers.

Keywords: MOOCs, sustainability, higher education, stakeholder view.

INTRODUCTION

There has been a high demand for higher education worldwide that escalates to proliferation of innovation of future learning and hyper-growth of knowledge. This evolving shift in education landscape for higher education has been heralded as “disruptive forces” [1] and “educational innovation” [2, 3]. One of the prominent learning innovations is Massive Open Online Courses (MOOCs) which has been considered as a “disruptive innovation” [4] which radically alter technologies, processes and approaches to delivering learning systems worldwide.

One of the main challenges in sustainability that is faced by higher education is to keep up with the varying demands and needs of the stakeholders [5]. In the context of Malaysian higher education, the stakeholders identified are policy makers, administrators, instructors, lecturers, on-campus and off-campus students. The cost of producing MOOCs course are escalating yet there has been high demands from stakeholders in producing MOOCs that are of high quality, infrastructure efficiency, enhance value proposition of the institutions yet remain cost-effective [6]. As Malaysia is the first country in the world to introduce government-initiated MOOCs in all the twenty public universities, there is a dire need to identify strategic ways in optimizing RM500 million allocated for its sustainability and success rate at all the respective higher educational institutions. Contrasting with main objective of global commercial MOOC providers that specifies on monetization and separate entity for lifelong learning, MOOCs in Malaysia focuses on complementing the blended learning ecosystem with existing on-campus learning environment [7]. As the higher education industry is steadily gaining traction in a robust and competitive open market for quality education, there is a dire need for the brick and mortar institutions, specifically public

universities in preparing and reevaluating strategies and operational plans to thrive within this innovative threat. Apart from that, there has been increasing concern on shifting the focus of higher education in the aspect of sustainability, yet based on literature and empirical studies, very limited studies has been conducted on stakeholder's view on MOOCs sustainability in higher education and there's no study been conducted on the aforementioned topic from the Malaysian perspective. Hence, it is pivotal to study MOOCs Sustainability from the viewpoints of the stakeholders in higher education, specifically in the Malaysian perspective.

This paper is divided into five sections. The first part provides a general overview as well as retrospective development of MOOCs in Global Higher Education. The next section focuses on MOOCs executed in Malaysian higher education. In this section, Malaysia MOOC initiative is discussed apart from the national policies that underpin the initiative. This is followed by literature review on factors of MOOCs sustainability in higher education. The section on Methodology and Design outlines the mapping of the qualitative research and methodology via Stakeholder Analysis and interviews with Malaysia MOOCs stakeholders. Section on Result and Discussion synthesizes the data findings using Thematic Concept Matrix and further discussion on the discourse analysis. Lastly, the paper is concluded with summarization of this research and propagation of future studies.

LITERATURE REVIEW

MOOCs in Global Higher Education

The inception of MOOCs started in 2008 when Stephen Downes and George Siemens initiated Connectivism and Connective Knowledge course that



propagates the underpinning learning theory of Connectivism [8]. Connectivism learning theory [9] tends to underpin MOOCs initiative as it is considered as “learning in complex, social, networked environments” [10, 11]. It champions personalized learning which is the core component in future learning for higher education.

Since then, MOOCs initiative in higher education has globally gained traction where some of the leading MOOC platforms are EdX, Coursera, Udacity and FutureLearn. To date, more than 12000 MOOC courses have been offered by HEIs around the globe [12] and more HEIs are using MOOCs or initiating MOOC platforms [13,14, 15]. Some universities utilize multiple MOOC platforms to complement the existing pedagogy. Albeit myriad platforms offered, they shared affinities as potential learning catalyst that would impact the value proposition of higher education as well as transfigure wider access to quality education [16]. From the global scale, the four MOOCs key players are Coursera, Udacity, edX and Khan Academy and they are the global stakeholders for venture capital in MOOCs universe [15]. Albeit the massive investment injected on MOOC proliferation on a global scale, four potential future problems for MOOCs have been identified by Hill in his research which are : (1) revenue models, (2) credentialing, badges or accreditation, (3) course completion rate and (4) student authentication. Figure-1 depicts the various types of MOOCs as well as potential future problems for its sustainability [17]. Hence, there is a need to foresee how these future problems could be addressed in both global and homegrown scales.

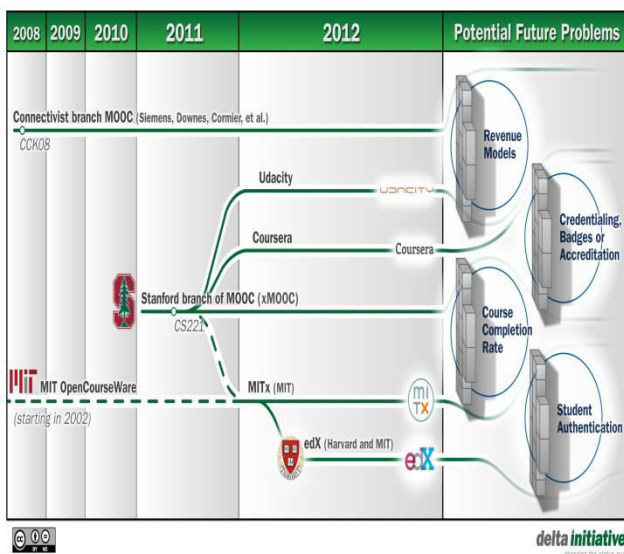


Figure-1. Various types of MOOCs and potential future problems. [17].

Malaysian Education Blueprint for Higher Education

In 2015, the Ministry of Higher Education Malaysia has highlighted ten shifts in the Malaysian Educational Blueprint for Higher Education. The ten shifts are as follows:

- i. Holistic Entrepreneurial and balanced graduates
- ii. Talent Excellence
- iii. Nation of LifeLong Learners
- iv. Quality Technical and Education and Training (TVET) graduate
- v. Financial Sustainability
- vi. Empowered Governance
- vii. Innovation Ecosystem
- viii. Global Prominence
- ix. Globalised Online Learning
- x. Transformed Higher Education Delivery



Figure-2. 10 Shifts in the Malaysian Education Blueprint (Ministry of Education Malaysia, 2015).

MOOC is one of the main strategies in Globalised Online Learning, the 9th Shift of the Malaysian Education Blueprint. [7] Online learning is an integral component of higher education and lifelong learning. Apart from providing optimal infrastructure for MOOC, focus on MOOC resources and training are also paramount to its execution where National MOOC task force has been established under the governance of the Ministry of Higher Education to monitor and facilitate its implementation in all the public universities in Malaysia.

Malaysian MOOC

Malaysia MOOC is initiated by the government in tandem with Malaysian Education Blueprint for Higher Education, National Economic Model and Economic Transformation Programme [18]. It was pre-launched on 19 September 2014 by the then Second Education Minister, Datuk Seri Idris Jusoh. It was a milestone for Malaysian higher education as Malaysia is the first country in the world to implement the Massive Open Online Courses (MOOCs) initiative for public universities [19]. The aim was to ensure online learning complements the on-campus learning experience where is



time-conducive as well as ease accessibility to synchronous and asynchronous learning. The Malaysia MOOC initiative is part of the Ministry of Higher Education strategic plan in expedite the quality and “boost the ranking of Malaysian higher education on global scale” [19].

Prior to Malaysia MOOC, Taylor’s University was the first Malaysian higher educational institutions that initiated MOOC courses. It was spearheaded by Professor Dr. Mushtak Al-Atabi, Dean, School of Engineering who offered Entrepreneurship, a MOOC course on OpenLearning platform [20]. Apart from Taylor’s University, Open University Malaysia has also initiated MOOC courses [18] and by 2025, all Malaysian universities are expected to adopt MOOCs to add value to on-campus learning experience [7].

Open Learning, an online learning platform based in Sydney, Australia has been appointed by the Ministry of Higher Education Malaysia to be the official platform provider for Malaysia MOOC courses for all the twenty public universities [21]. Up to and up to 31st August 2015, Malaysia MOOC has enrollment of 76, 951 users worldwide. Four pilot MOOC courses were launched for the first semester in the 2014 session. The four MOOC courses are Islamic Civilization and Asian Civilization (TITAS) led by Universiti Putra Malaysia, Ethnic Relations led by Universiti Kebangsaan Malaysia, Entrepreneurship led by Universiti Teknologi Mara and ICT Competency led by Universiti Malaysia Sarawak [19].

Apart from OpenLearning platforms, other MOOC platforms are perused by Malaysian higher educational institutions. Universiti Teknologi Malaysia has developed UTMx, a MOOC initiative hosted at OpenEdX platform [22]. Open University Malaysia has launched its MOOCs initiative under iTune U [18] and Universiti Pendidikan Sultan Idris (UPSI) conducts MOOCs at Open4Learn [23].

MOOCs Sustainability in Higher Education

Sustainability refers to policy, situation, product, process or technology that can be perpetually maintained and sustained for an indefinite time [24]. In the context of higher education, Connectivism Theory [25] and Disruptive Innovation Theory are the underpinning theories for this research. Connectivism synthesizes innovative learning theories, social structures and technology. The theory ascended the robust development of higher education. It perpetuates the needs to innovate higher education for higher education sustainability [26].

In the context of MOOCs, higher education needs to shift away from the focus of increasing the quantity of students in higher education to making a quality post-secondary education more cost effective. One of the main highlights of global higher education as it requires reassessment and realignment of the institution’s goals, resources and processes in order to address global and national challenges [27]. Due to its rapid growth in expediting access and cost to quality education worldwide,

interests on MOOCs sustainability has escalated [28, 29] yet a search of literature revealed that there has been a steady increase of literature on MOOCs in higher education covering myriad aspects from educational, institutional, financial and socio-cultural areas.

Pertaining to research trends on MOOC scholarship, the review indicated that sustainability as one of the least explored areas albeit being main concern of higher education worldwide. One of the prominent research conducted on MOOC was carried out by [6] and the top issue for MOOCs highlighted by the research is sustainability, followed by pedagogy, quality and completion rate as well as assessment and credit. This is echoed by research conducted by [30] and [31] that identify sustainability as one of the major apprehensions for global higher education. On top of that, a review conducted by [32] identified lack of evidence, lack of support and unrealistic expectations on beginner learners may lead to issues in MOOCs sustainability. Albeit several attempts studying various issues pertaining to MOOC such as educational, financial, technical and managerial issues, there remains paucity in MOOCs sustainability that has yet been closely examined.

Based on literature review, several researchers have identified main factors that affected sustainability in myriad perspective. In general overview of sustainability of policy and industry decision makers, sustainability affects three main focuses: cost and benefits, financial and resources [24]. From the higher education perspective, [33] discovered that three challenges for MOOCs sustainability are business models, student evaluation and certification.

From literature analysis, business model for MOOCs has been highlighted in many researches pertaining to MOOCs in global higher education. According to [3], MOOCs will dramatically and irreversibly change the existing business model for higher education. Further studies by [6];[34] indicated that there finding a viable model that allows for sustainability of MOOC in higher education poses major challenge for higher education worldwide. [35] developed MOOCs business model where it comprises of three major factors : value proposition, infrastructure and financial. Value proposition refers to These factors are in tandem with a recent research conducted on MOOCs business models in higher education [36] where it was revealed that value proposition is one of the pivotal factors apart from distinguishing financial and infrastructural aspects in MOOCs implementation in brick and mortar institution. In this context, value proposition is catalytic in the reinforcement of branding of institutions as well as providing accessibility to quality education and narrow the knowledge gap. Table-1 depicts the nascent literature on MOOCs sustainability in higher education.

**Table-1.** Literature analysis on MOOCs Sustainability in Higher Education.

Authors	Sustainability Area	Findings
[6]	- Financial - Value Proposition - Infrastructure	-Government & corporate funding -Branding and marketing -Instructional design, pedagogy and course design, accreditation
[36]	-Financial	- Corporate and trans-institutional partnership
[34]	-Value Proposition -Infrastructure -Financial	- Branding, Marketing -Resources, Accessibility -Business model, Corporate partnership
[1]	-Financial -Value Proposition	-Trans-institutional partnership -Quality content, social role
[28]	-Value proposition -Financial -Infrastructure	-Branding, Marketing, Quality content -Trans-institutional Partnership -Technical, Resources, Process
[37]	-Infrastructure -Value Proposition -Financial	-Process, Accreditation -Branding, Marketing -Trans-institutional Partnership

Multidisciplinary and trans-institutional collaboration were some innovative efforts to support MOOCs sustainability in global higher education. Bill and Melinda Gates Foundation has funded USD 3 million for MOOCs-related grants worldwide where the project is spearheaded by American Council on Education [38]. In Asia, trans-institutional partnership are conducted at major universities in Japan and South Korea. JMOOC is a MOOC initiative in Japan which is supported by corporate partnership with NTT DOCOMO and NTT Knowledge Square, Japan's premier telco providers [39]. Meanwhile, KMOOC is MOOC initiative in South Korea that optimizes partnership with corporate sectors such as Samsung in its implementation. Reflecting from the impactful trans-institutional collaboration that was conducted by global higher education, it is imperative to address this perspective from the stakeholder views sustaining MOOCs in Malaysian higher education.

RESEARCH OBJECTIVES

The main objective of this research to identify the the stakeholders views for MOOCs Sustainability in Malaysian higher education. This study aims to address three research questions as follow:

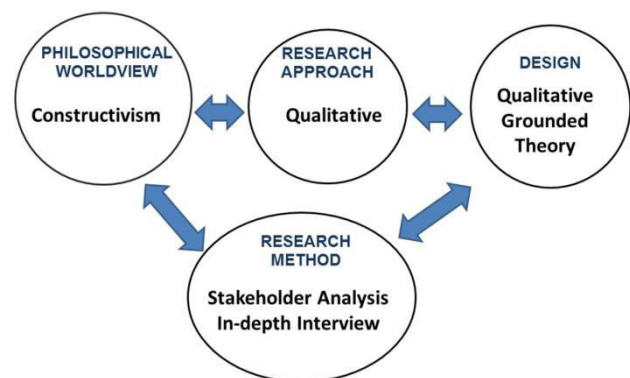
- What are the existing studies on MOOCs sustainability in higher education?
- Who are the stakeholders in MOOCs in Malaysian higher education?
- What are the stakeholders' views on MOOCs sustainability in Malaysian higher education?

SCOPE OF STUDY

The scope of this research is for Malaysian higher education where the parameter is set on stakeholder views on the aspect of sustainability for MOOCs in Malaysian higher education. Albeit being implemented in 20 public universities nationwide, only views from ten stakeholders from of Malaysia MOOC initiative are considered for data collection and comprehensive analysis as they are the champions officially appointed by the Ministry of Higher Education Malaysia to spearhead the MOOC initiative.

METHODOLOGY AND DESIGN

This applied research adopts qualitative approach for this study. In this context, inquiry and analysis on the standpoints of the stakeholders of Malaysia MOOC is conducted. It is chosen as it will provide comprehensive analysis to identifying issues in inductive approach. The philosophic worldview is constructivism as this study aims to identify the factors and elements that will contribute to MOOCs sustainability. The qualitative research is conducted using several methods such as Stakeholder Analysis, In-depth interview, Thematic Concept Matrix and data analysis from decoding the discourse. The research framework for the preliminary study is depicted in Figure-3.

**Figure-3.** Preliminary Study Research Design.

Stakeholder Analysis

Stakeholder Analysis is chosen in order to study the roles of stakeholders and their influences in imposing impact on the use of mobile learning in secondary education. It is vital to identify and understand the stakeholders of relevance to the organization [40]. The main aim is to facilitate divergent viewpoints from stakeholders on the policy reform revision, specifically the mobile devices policy. Thus, identification of variables on the needs and wants of the stakeholders can be leveraged



accordingly. Purposive sampling method was perused to identify the respondents. This method is chosen as the current needs of the stakeholders are addressed and potential strategies can be drawn from the synergy of viewpoints. Table-2 depicts the Stakeholder Analysis on Malaysia MOOCs in Malaysian higher education. From the analysis, in-depth interview is carried out for further data collection.

Table-2. Stakeholder Analysis of Malaysia MOOCs.

STAKEHOLDER	ROLE	INFLUENCE
Ministry of Higher Education Malaysia	Policy Maker	Possess the executive power to revise national MOOC policy
OpenLearning	Service Provider	MOOCs platform provider
MOOCs Master Trainer	Training Provider	Impact the quality and effectiveness of MOOCs implementation
MOOCs Manager	Project Champion	Manage MOOCs at institutional level
End-user	Enrol in MOOCs	Peruse MOOCs at institutional level

In-depth Interview

For this research, interview is chosen to identify stakeholders' view pertaining to MOOCs sustainability in Malaysian higher education. There were ten in-depth interviews with semi-structured questions carried out with ten respondents where the interview was audiotaped and transcribed using qualitative data analysis software for qualitative data analysis [41]. Although the semi-structured questions were constructed based on findings via secondary data research. This is to ensure the findings from the interview can be synthesized with literature analysis and secondary data research for final report documentation. Nonetheless, interview with stakeholders will still allow interviewees to opine and construct their views based on prior experience and tacit knowledge.

The interview was conducted via two methods; face-to-face interview and Skype interview. All of the face-to-face interviews were audio-taped and all the interviews via Skype were recorded using iFree Skype Recorder, an audio-visual Skype recorder software.

Seven face-to-face interviews were conducted at the premise of the Malaysian universities where the respondents are working and audiotaped. Two interviews were conducted via Skype as the interviewees are currently residing in Australia and Indonesia. The interviewees are the stakeholders in Malaysia MOOCs initiative in Malaysian Higher Education as depicted in Table-3. Five interviewees are officially appointed by the Ministry of Higher Education Malaysia to spearhead planning, strategizing and implementing MOOCs nationwide in all public universities in Malaysia. The rest interviewees are active users of MOOCs and have prior knowledge and experience in learning via MOOCs.

Table-3. List of Interviewees.

Position	Position in relation to MOOC
CEO, OpenLearning	Platform provider
Professor and Dean, School of Engineering	Pioneer of 1 st Malaysian MOOC
Vice Rector for Academic and Student Affairs	Open & Distance Learning expert, researcher on MOOC initiative in Southeast Asia
Professor and Director of Center for Development of Academic Excellence	Master Trainer of Malaysia MOOC
Professor and Director	Master Trainer of Malaysia MOOC
Principal Lead (E-Learning and Innovation)	Master Trainer
Head of E-Learning Unit	MOOC manager
IT Manager	MOOC manager
Senior Lecturer	MOOC user
Postgraduate Student	MOOC user

DATA COLLECTION

All the interviewees were approached using a set of questions that are designed based on the main themes aggregated from literature findings on MOOCs sustainability in higher education: value proposition, infrastructure and financial. The semi-structured questions serve the purpose of identifying patterns of emerging factors and elements expressed by the interview but flexible enough for further alteration as the interview progresses, depending on the interviewee's areas of expertise and roles in MOOCs provision, development and implementation. This exploratory approach was implemented in this research where the design of the data collection is gearing towards coding and synthesizing any commonalities and trends, [42] particularly in MOOCs sustainability in Malaysian higher education.

Three common questions were addressed to all seven interviewees; (1) background information, (2) experience with MOOCs initiative, (3) success factors for MOOCs sustainability in Malaysian higher education from the aspects of value proposition, infrastructure and financial. Question three focuses on the success factor identified from primary and secondary data. By identifying commonalities, thematic identification in analysis can be expedited.

DATA ANALYSIS AND DISCUSSION

The transcribed data were analysed and summarized using Atlas.Ti, a qualitative data analysis software. The comprehensive coding revealed emerging patterns on factors and elements of MOOCs sustainability in Malaysian higher education. The data are synthesized and discussed based from the semi-structured questions.



Value Proposition

Pertaining to value proposition offered by an existing platform provider, enhancing the quality of learning experience is the main factor that will influence MOOCs sustainability in Malaysian higher education. This is in tandem with Malaysian Education Blueprint where the antecedent factor for MOOCs implementation in higher education is to complement the on-campus experience via blended learning. This is explained by one of the respondents, "We develop MOOC that has improved the on-campus experience for students, by allowing people from all around the world to work with students at the universities." Accreditation is one of the major concerns for end-users of MOOCs as majority of MOOCs courses offered Majority of higher education established autonomy over customer value proposition by offering accreditation.

The majority of the interviewees opined the importance of quality of MOOCs service provision in influencing MOOCs sustainability in higher education. "In the Malaysian MOOC context, I think it's very clear that MOOC comes in a range of benefits, both to universities and also to the students. Saving time of both of the lecturers and the students, letting students interact with MOOC communities in universities, improving the quality of the online courses being embedded."

Market positioning is also highlighted by the interviewees. MOOCs is catalytic in enhancing the brand and reputation of the Malaysian higher educational institution. One interviewee emphasized on how MOOCs can promote international students to study in local universities and colleges. The interviewee said, "When international students discover the quality of MOOCs and instructors in Malaysian universities, they might be interested to come to Malaysia to study." This is supported by a few by another interviewee who mentioned "We can showcase the brand and the quality of the courses."

Creating niche subjects for MOOCs is one of the way Malaysian MOOCs can provide competitive advantage to other existing MOOCs platforms from myriad higher education worldwide. Apart from offering niche subjects such as Islamic Banking, Halal Entrepreneurship, and so forth, perusing MOOCs for research is seen by the interviewees as way Malaysian higher education could reposition its core competencies and enhance MOOCs sustainability in the respective institutions.

"MOOC is used for research in higher education. So research in looking at the ways in which students learn and research on various teaching methodologies."

Apart from providing value proposition to the higher institution, the interviewees stated that MOOCs could enhance the quality of the learners as competent and possessing better collaborative and networking skills.

"It may improve their (students) soft skills and graduate attributes of the students, by getting them to communicate and work together on projects."

Infrastructure

Infrastructure is defined as institutional, technology architecture, resources and processes that are essential in sustainability of MOOCs in higher education. All of the interviewees opined on the important role of policy makers and top management to champion and implement the Malaysia MOOC initiative in order to influence its sustainability in higher education.

"If the top management is committed with MOOCs, the initiative can be a success among the staff and students."

Technological architecture is also one of the key elements of MOOCs sustainability based from the interviewees' feedbacks. Accessibility, connectivity and technical support are some of the mentioned aspects pertaining to infrastructure.

"People must be able to access easily, without lag time. So, when they get materials, it is smooth and easy. It would be easy to access the course with any device that they like."

One interviewee responded that there is a need for more interactivity in MOOCs implemented in Malaysian higher education. Social media enhancement is considered by the interviewee to be the main consideration for MOOCs development in near future.

"It seems that many of the MOOC are taking the traditional way of delivering things in the classroom, digitizing things, putting it online. Some people may prefer that, but it's not for me."

"I want MOOC to have more social media plug-in because based from what I've seen, it's just a bunch of videos and they have limited features."

The majority of the interviewees stated that skilful and motivated instructors will influence MOOCs sustainability in Malaysian higher education.

"You need to engage both learners and trainers to enhance the quality of learning engagement for MOOCs. We need someone to champion the initiative in a long run by improving the quality of the course as well as enhance the on-campus learning by making MOOCs more accessible via various devices."

Financial

Based from the Disruptive Innovation Theory, one of the main factors of MOOCs sustainability is developing a viable business model. A good business model is a catalyst for a successful planning tool when it focuses on how all the elements of the system fit into a working whole. The organization achieves superior performance when they are unique, when they apply feasible competitive strategy in their strategic planning. This is supported by a statement made by an interviewee.

"When you apply MOOC to accredited higher education, you improve the quality and reduce the cost of delivering higher education, across the universities and the country."

Generating source of income to sustain MOOCs in Malaysian higher education is also highlighted by some interviewees. This is due to the fact that the production



cost of MOOCs for respective higher education is escalating.

“If we want to produce quality MOOCs, we need to have a substantial amount of financial support pumped in. It’s beyond flipped classroom, a well-orchestrated learning ecosystem that supports lifelong learning.”

However, some interviewees believe that Malaysia MOOC can be sustainable if there is an innovative revenue stream initiated to attract more learners to enrol in Malaysia MOOC courses. When asked whether transferable MOOC academic credit to a degree would enhance participation to MOOCs sustainability, all of the interviewees stated that it would be a good initiative.

The analysis of the series of discourse is presented in a Thematic Concept Matrix, as shown in Table-4, to further illustrate the factors, constructs and elements from the viewpoints of the stakeholders.

Table-4. Thematic Concept Matrix on MOOCs Sustainability.

FACTORS AREA	VALUE PROPOSITION	INFRASTRUCTURE	FINANCIAL
Educational	Offer niche subjects. Multi-language MOOCs. Collaboration with top-tier institutions.	Develop course with good Instructional Design. Myriad learning resources. Meet the needs of users.	Free of charge MOOCs. Marketing gateway for potential international students.
Institutional	Marketing positioning via HE branding. Distinguish core competencies of HE. Promote quality of academics.	Policy management. Skilful instructors. Optimize operational management. Complement on-campus experience.	Viable business model. Government grants. Corporate partnership. Revenue through certification.
Technical	Wide accessibility to users. Expedite graduation process upon specific MOOC completion.	Ease of access. Optimum Wi-Fi connection for on-campus students. Efficient tech support.	Cost-effective technological architecture.
Socio-cultural	Zero or low cost of MOOC provision. Transferable MOOCs credit to degree. MOOCs courses that address industry needs.	Establish global networking. Expedite knowledge capital.	Expedite productivity and knowledge capital with lifelong learners.

From the Thematic Concept Matrix, nine elements have been identified based from the analysis conducted using qualitative data analysis software. The nine elements derived from four main factors; educational, institutional, technical and socio-cultural. This is then followed by three constructs adapted from Kalman’s Business Model for MOOCs; value proposition, infrastructure and financial. Comprehensive data analysis on the in-depth interview led to nine elements of MOOCs sustainability; product, service, market positioning, competitive advantage, organisation, core resources, technological architecture, value-added processes, source of income and revenue of income.

The identified factors, constructs and elements are vital findings of this research on impacting MOOCs sustainability in Malaysian higher education. Table-5 depicts the classification of the factors, constructs and

elements for MOOCs sustainability from the Malaysia MOOCs’ stakeholders’ views.

Table-5. Categorization of MOOCs Sustainability in Malaysian Higher Education.

MOOCs Sustainability in Malaysian Higher Education		
Factors	Constructs	Elements
Educational	Value proposition	Product Service, Market Positioning, Competitive Advantage.
Socio-culture		
Institutional	Infrastructure	Organization, Core Resources, Technological Architecture, Value-Added Processes.
Financial	Financial	Source Of Income, Revenue Of Income.

CONCLUSIONS

Higher education has an eminent influence on expediting global knowledge capital via innovative initiatives such as MOOCs. MOOCs implementation has dramatically shifted the focus of higher education. It requires reevaluation and transitions of knowledge deliverance, as well as cater to attaining the institutions’ value and core competencies. With the exponential growth of MOOCs in higher education worldwide as well as the inception of the Malaysia MOOC initiative, research on sustainability is timely and in dire need as it would vindicate the multiplier benefits to all the stakeholders in higher education. Nonetheless, research on MOOCs sustainability in higher education is limited and represents equivocal results. As Malaysia MOOC is the world first government-initiated MOOCs for public universities, this study is significant, especially by taking consideration of stakeholders’ views. Hence, it is vital to analyse the factors impacting MOOCs sustainability for Malaysian higher education.

This research attempts to gauge and analyse the views of Malaysia MOOC’s stakeholders on MOOCs sustainability in Malaysian higher education. The literature analysis conducted on MOOCs sustainability in higher education has identified four main factors: educational, institutional, financial and social-cultural. The literature analysis further highlighted the underdeveloped research on viable business model that is essential for MOOCs sustainability in global higher education and yet to be explored in the context of Malaysian higher education.

Apart from that, the game-changing opportunities that are faced by higher educational institutions, especially in facing pervasive technological advances and trends in open learning require higher educational institutions to review its value propositions. Hence, by synthesizing the primary data and secondary data, a more holistic paradigm on MOOCs sustainability could be established in



providing higher validity of the aforementioned theoretical analysis.

The findings from this research is hoped to provide holistic perspectives from the stakeholders' standpoints in order to identify the factors and elements required for MOOCs sustainability in Malaysian higher education. This research is hoped to offer a guideline for policy makers, academics and researchers in managing MOOCs at their respective higher educational institutions.

Albeit its significance, this research has its limitation. Although there were many issues emanating from MOOC initiatives in higher education, the scope of this research is on the aspect of MOOC sustainability in Malaysian higher education. The scope has been further refined to just public universities as Malaysia MOOC are made compulsory for all 20 public universities in Malaysia. Due to time constraints, the sampling of this research is limited on a selective number of stakeholders in Malaysian public universities.

For further study, the identified factors and development of a business model for MOOCs sustainability in Malaysian higher education could be further explored. Data gathering from stakeholders should also be considered to make this finding more reliable and expedite the success rate of MOOCs sustainability in enhancing on-campus learning experience, value proposition, enhancing core competencies of the higher educational institutions as well as promoting lifelong learning.

ACKNOWLEDGEMENTS

Our deepest gratitude to the Ministry of Higher Education Malaysia, Malaysian Public University's E-Learning Council (MEIPTA) and OpenLearning for their assistance in this research.

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