The Evolution, Challenges and Prospects of Implementing Massive Open Online Courses (MOOCs) in Malaysian Public Universities

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Received: 15 November 2024
Accepted: 25 December 2024
Date Published Online: 1 January 2024
Published: 1 January 2024

Abstract: *Massive Open Online Courses (MOOCs) have emerged as a promising educational innovation, aiming to democratize access to quality education on a global scale. In the context of Malaysian public universities, MOOCs have garnered significant interest in enhancing educational outreach, improving learning outcomes, and fostering lifelong learning opportunities. However, the implementation of MOOCs in this setting faces several challenges that impact their effectiveness and long-term sustainability. This review was written based on a careful analysis of the published MOOC literature (2008-2023) identified through journals, database searches, searching the Web, and chaining from known sources to form the base for this review. The review intends to understand how the evolution of MOOCs affects the prospects of MOOCs and how universities incorporate MOOCs into their educational frameworks. In addition, this paper aims to explore the current and anticipated future*

challenges that hinder the successful integration of MOOCs especially in public universities across Malaysia. The key challenges identified in the present implementation include limited faculty buy-in and engagement, lack of appropriate technological infrastructure, concerns over course quality and accreditation, and difficulties in assessing and recognizing learners' achievements. Additionally, issues related to cultural barriers and language diversity within the Malaysian context are also found to influence the effective utilization of MOOCs. Looking into the future, this paper will also explore additional potential challenges that may arise in the continued implementation of MOOCs in public universities in Malaysia. Anticipated challenges include evolving pedagogical practices, ensuring equitable access for all learners, addressing the digital divide, and keeping pace with rapidly advancing technology. By shedding light on the current and future challenges faced by public universities in Malaysia in implementing MOOCs, this research aims to provide valuable insights for policymakers, administrators, and educators to enhance the efficacy of MOOCs and leverage their potential for advancing education in the country. Recommendations stemming from this research may include faculty training and development, investment in technological infrastructure, fostering collaborations with private sectors, and designing inclusive and culturally sensitive learning environments. Ultimately, understanding and addressing these challenges are crucial to ensuring the successful integration of MOOCs within the Malaysian higher education landscape, contributing to the nation's efforts to provide accessible, high-quality education to a diverse and aspiring population.

Keywords: *MOOCs, Educational, Innovation, Prospects, Challenges*

INTRODUCTION

Massive open online courses (MOOCs) are among recent additions to the range of online learning options introduced in 2008. It was first introduced at University of Manitoba, a public university in Canada. MOOCs are structured learning interventions delivered via the web, and they enable anyone to participate free of charge (mostly) without having to meet any

demographic or knowledge requirements. To date, MOOCs have been run by a variety of public and elite universities all around the globe. It emerged as a popular mode of learning in 2012, when that year is called as the Year of the MOOC (David, 2012). More than 900 academic institutions have launched MOOCs, and more than 100 million students have signed up for at least one of them (Shah & Pickard, 2019). MOOCs are educational opportunities that permit learners worldwide to participate in a single learning experience on a common platform, such as Coursera, FutureLearn, and edX (e.g., Bonk et al., 2015, 2018; Stracke, 2017; Stracke et al., 2023; Zhang et al., 2020; Diordieva & Bonk, 2023). MOOCs have been envisioned to increase access to education and help to democratize it. Compared to closed online courses, MOOCs generally have more diverse participants in terms of their backgrounds, ages, cultures, identities, readiness, and language proficiencies (Jasnani, 2013; Lu et al., 2020; Diordieva & Bonk, 2023). While MOOCs are generally considered a valuable format for online learning (Gonzalez & Alarcon, 2017), their effectiveness is still a matter of debate. There is no consensus on what success looks like in a MOOC (Rodriquez et al., 2016). Therefore, this paper intends to understand the evolution and prospects of MOOCs, and how public universities incorporating MOOCs into their educational frameworks. It also aimed to explore the current and anticipated future challenges that hinder the successful integration of MOOCs in public universities across Malaysia.

2. LITERATURE REVIEWS

2.1 INTRODUCTION OF MOOCS

This section will enrich the existing literature reviews and aims to explore the evolution of MOOCs in general, the development of MOOCs in Malaysia and Malaysian public universities, focusing on factors influencing adoption, students' satisfaction, and readiness.

The term "MOOCs" was coined in 2008 by Dave Cormier and Bryan Alexander in Canada to describe an open online course titled "Connectivism and Connective Knowledge" at the University of Manitoba. This course, developed by Stephen Downes and George

Siemens, was offered to 25 fee-paying on-campus students and 2300 members of the public for free (Daniel, 2012; deWaard, 2011; Siemens, 2013). The course content was delivered through RSS feeds. The year 2012 marked a pinnacle for the emergence of MOOCs, as they gained coverage on the front pages of prominent newspapers and magazines (Pappano, 2012). In the same year, Daniel (2012) critically assessed the initial decline in MOOC development. Nevertheless, MOOCs continued to be designed, taken, and researched throughout the latter part of the 2000s (Shah, 2019).

MOOCs offer flexible and accessible learning opportunities, allowing students to engage in online courses from anywhere at any time (Liyanagunawardena et al., 2013). Hence, the literature on MOOCs has grown rapidly, with numerous research papers published on various aspects of MOOCs (Liyanagunawardena et al., 2013). A recent trend in modern higher education is the Massive Open Online Course (MOOC), which offers an opportunity for many participants from around the world to enroll in free online courses without any admission requirements. This approach to learning provides a diverse array of options across various disciplines (Abu-Shanab & Musleh, 2018). MOOCs serve as a platform for interaction and collaboration, enabling participants to share information and enhance their knowledge (Zhang, Gao, & Zhang, 2021). The primary goal of MOOCs is to provide high-quality education to individuals interested in learning globally (Azevedo & Marques, 2017).

The concept of "all-at-onceness" captured the intricate nature of MOOCs, encompassing the utilization of platforms and social networks like Moodle, Skype, Twitter, blogs, and chatrooms for disseminating knowledge and facilitating learning (Koutropoulos & Hogue, 2012). MOOCs further evolved to include hybrid designs that combined connectivist and extended MOOC principles (Bozkurt, Kilgore, & Crosslin, 2018; Roberts, Waite, Lovegrove, & Mackness, 2013). Initially, MOOCs garnered significant participant numbers and raised substantial expectations about their potential to revolutionize or even disrupt higher education (Dillahunt, Wang, & Teasley, 2014; Hansen & Reich, 2015). Figure 1 illustrates the progress of MOOCs on Garther's Hype Cycle.

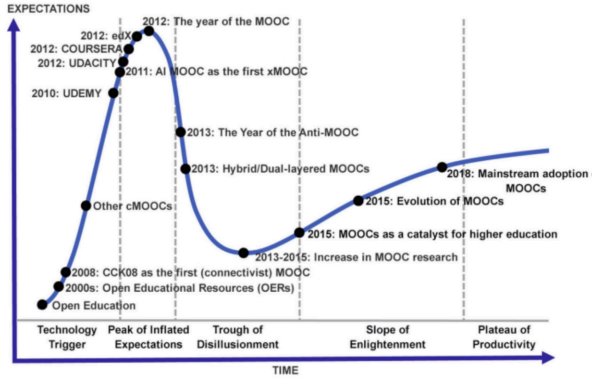

Fig 1: Progress of MOOCs on Gartner's Hype Cycle (Adopted from Bozkurt, Özdamar Keskin, & de Waard, 2016)

2.2 MOOCS PLATFORMS AROUND THE WORLD

Class Central functions as an online course platform proclaiming itself to be the leading "MOOCs Search Engine," containing an extensive collection of over 50,000 courses spanning various universities (Class Central, 2021). However, the platform's course offerings can solely be sorted using fundamental categories, including collections (individually curated), providers, rankings, and subjects (Class Central, 2021). In contrast, Udemy, another prominent MOOC platform, offers a more comprehensive array of courses alongside enhanced filters. With a repertoire exceeding 183,000 video-based online courses, Udemy allows users to explore and opt for courses by topic. Notably, within the overarching topic category, there are subcategories such as cost, language, proficiency levels, attributes, ratings, subtitles, and video duration (Udemy, 2021). Additionally, the attributes category encompasses coding exercises, subtitles, practice assessments, and quizzes. Similar to Udemy's structure, edX offers a comparable setup while presenting a more modest selection of 3000 online courses (edX, 2021). Similarly, users can either choose a subject listed on the main page or directly access courses from the navigation bar. However, edX expands user choices by allowing them to narrow down results using categories like program, provider, subject, language, learning type, and availability. Coursera boasts approximately

5000 online courses and presents users with a landing page enabling direct course searches or swift access to links pertaining to degrees, objectives, providers, skills, certificates, subjects, and free courses (Coursera, 2021). Coursera's search results extend to encompass categories such as level, language, skills, duration, partners, subject, and learning products (Coursera, 2021). Other platforms such as Khan Academy (2021) offer fewer categories and filtering options for users, where it primarily permits searches based on subjects and formal prerequisites (MOOC List, 2021). FutureLearn distinguishes its courses based on their length, categorizing offerings as short courses, micro-credentials and programs, expert tracks, and online degrees (FutureLearn, 2021).

2.3 MOOCS IN MALAYSIA

The Ministry of Education Malaysia (MOE) introduced a blueprint outlining strategies for higher education from 2015 to 2025, highlighting the significance of MOOCs in the country's education system. This plan aims to enhance education quality and accessibility using MOOCs (Ministry of Education Malaysia, 2015). In October 2014, Malaysia became the first country to implement MOOCs for academic credit in all public universities, supported by a budget of 500 million MYR (about 138.6 million USD) (Albelbisi, 2019). Initially, four MOOC courses were created on the OpenLearning platform, covering subjects like Islamic and Asian Civilizations, Ethnic Relations, Entrepreneurship, and ICT Competence for first-year undergraduates. Later on, six institutions, including public and private universities like Open University Malaysia, Taylor's University, UPM, UKM, UiTM, and UNIMAS, expanded MOOC offerings to a total of 36 courses (Mansor et al., 2015). These courses were hosted on the "OpenLearning" platform in Australia and attracted participants from various educational backgrounds in Malaysia. In September 2014, Malaysia's MOOC platform, OpenLearning, was officially launched, becoming the designated platform for higher education institutions. Currently, it offers more than 681 courses (OpenLearning, 2017).

2.4 PROSPECTS AND FUTURE IMPLICATIONS

MOOCs have gained widespread public attention in and have attracted millions of learners worldwide and are considered an excellent medium for promoting lifelong learning. However, high dropout rates in MOOCs are still the most common problem with the service. According to the research conducted by Zhang et al. (2022), the present course completion rate for MOOCs ranges from a mere 5 percent to 40 percent. Enhancing course completion rates in MOOCs has emerged as a prominent concern among scholars. Surveys of MOOC completers indicate positive effects on job prospects.

Nevertheless, according to studies conducted among hiring managers, MOOCs are generally regarded in a negative light (Rivas et al., 2020). This indicates that there is more potential that warrants further investigation to enhance the efficiency of MOOCs. The issue of internet connectivity is a significant challenge when it comes to MOOCs. According to Clay (2013), MOOCs necessitate a significant reliance on internet connectivity due to their online nature. Consequently, learners must have a reliable internet connection to access course materials, engage in discussions, and submit assignments. The limited availability of bandwidth in low-resource countries is a significant hurdle to fully leveraging the potential of MOOCs, particularly in locations with poor internet infrastructure or low bandwidth capacity. This has prompted MOOC designers to reconsider course elements and optimize them for limited bandwidth. Recognizing the issue of internet connectivity, some MOOC providers have started offering offline options. For example, MOOC Camp allows learners without internet access to download course materials and complete assignments offline (Trainer, 2014). However, allowing offline flexibility may come with other issues as well. Meanwhile, the increasing use of new applications, devices, and modes of learning has led to a growing demand for bandwidth in educational institutions. This can impact the availability and quality of internet connectivity for MOOC learners. Hence, it is important to address the issue of internet connectivity to ensure equal access to education and the benefits of MOOCs. Continuous efforts must be made to improve internet infrastructure and explore offline options to make MOOCs more accessible to learners with limited connectivity.

2.5 CHALLENGES OF MOOCS

The key challenges identified in the present implementation include limited faculty buy-in and engagement, lack of appropriate technological infrastructure, concerns over course quality and accreditation, and difficulties in assessing and recognizing learners' achievements. Additionally, issues related to cultural barriers and language diversity within the Malaysian context are also found to influence the effective utilization of MOOCs. Looking into the future, this research will also explore potential challenges that may arise in the continued implementation of MOOCs in public universities in Malaysia. Anticipated challenges include evolving pedagogical practices, ensuring equitable access for all learners, addressing the digital divide, and keeping pace with rapidly advancing technology. The challenge for MOOC is the need to optimize learner activities in an online learning environment. Infrastructure, content, and facilitation considerations, would, therefore, consider the nature of online learners in terms of competencies, prior knowledge, motivation, and expectations, and therefore, create a non-formal, ubiquitous, and flexible community that support and encourage active learner engagement for an optimal learning experience. According to Sun et al. (2008), flexibility is viewed as an important factor in eLearning satisfaction. The advantage of online education to learners is its flexibility in choosing the most suitable learning methods to accommodate their needs.

MOOCs rely heavily on the use of technologies to ensure the accessibility of information and knowledge. This emphasizes the need for students and facilitators to be competent in the usage of digital instructions and technologies. The assumption is that if learners find the technology infrastructure comprising the MOOC platform user-friendly and the content useful, then the possibility of learner retention is high.

In research investigating critical factors influencing learner satisfaction, Sun et al. (2008) listed courses quality as the most important concern in an eLearning environment. Course content design and presentation appears to play an important role in students' perceived usefulness and

ease of use of a course and will have an impact on students' satisfaction. As mentioned by Drake, O'Hara and Seeman (2015), course content must incorporate five principles as a foundation to inform the MOOC course designers and course managers, in designing and developing the new course, namely – meaningful, engaging, measurable, accessible, and scalable. A well-thought curriculum design in developing a MOOC is therefore necessary. There is a need to emphasize the importance of the course design with appropriate assessment format and load, without compromising the quality of the course.

Facilitation is an important element in sustaining MOOC participation and engagement. Any MOOCs platform must take note of the essential's facilitator features, like positive attitude, pedagogical content knowledge, interactive style and perceived availability (Hiltz, 1993), since the facilitator's behavior convey cues that motivate and shape students' experience (Mathieu, Martineau & Tannabaum, 1993).

In the realm of Malaysian universities, there are numerous challenges associated with the implementation of Massive Open Online Courses (MOOCs). For instance, while MOOCs offer the advantages of free accessibility and flexible learning at one's convenience, various studies (Mansor et al., 2015; Fadzleen et al., 2015; Wahid et al., 2019; Ulrich et al., 2015) have identified hurdles in integrating MOOCs within university student populations. A noteworthy concern pertains to the restricted availability of these platforms. Certain MOOCs are intended as supplementary tools for students in traditional Malaysian universities, thus confining their accessibility mainly to this specific group (Mansor et al., 2015).

A predominant challenge is the low completion rate and a substantial dropout rate, indicative of poor retention among students (Bozkurt et al., 2016; Stepanyan et al., 2015) especially for students who enroll out of personal interest. In addition, the effective utilization of MOOCs necessitates specific skills not universally possessed. Attaining proficiency with the platform is pivotal for meaningful engagement (Al-Rahmi et al., 2019). Deficiencies in these skills can impede successful MOOC completion (Zhang, Chen, & Phang, 2018). Another

significant obstacle is the dearth of self-regulated learning skills among students, which influences the effectiveness of MOOCs. Proficiency in self-regulated learning is critical for autonomous learning within MOOCs (Zalli et al., 2019).

Moreover, the issue of awarding credentials and credits in the context of MOOCs is contentious (Chen, 2013; Gerber, 2014). Granting credits faces challenges, notably in upholding academic integrity (Hanover Research, 2014). Evaluation methods have been subject to critique, and only a few platforms have instituted verification systems to ensure participant authenticity (Atiaja and Proenza, 2016). Responding to this, in 2016, the Minister of Higher Education Malaysia announced the country's pioneering role in establishing a credit recognition policy for MOOCs (Shahar, 2016).

Pedagogical considerations remain a hurdle in MOOC implementation within universities. Certain studies propose that students may encounter difficulties with connectivity learning approaches (Dewar et al., 2014). Meanwhile, pre-recorded instructional videos are consumed outside the classroom, and peer discussions and collaborative activities take place in physical settings. However, this approach can constrain real-world interactions and experiential learning (Hanover Research, 2014). Following this, instructors in the realm of MOOCs play a pivotal role in shaping the learning experience, facilitating interactions, and promoting engagement (Zhang et al., 2018). However, they grapple with challenges such as managing sizable groups, addressing cross-cultural considerations, and employing diverse teaching methods (Garcia-Loro et al., 2020).

Next, technical challenges encompassing applications, equipment, software, and internet support necessitate consideration for effective MOOC implementation. Internet connectivity can be problematic, particularly in developing nations (Dewar et al., 2014). Addressing these technical issues is imperative in the initial phases of MOOC development, preceding course design and creation. Reliable support is pivotal for producing high-quality MOOCs. Adequate broadband access, internet coverage, and advanced mobile devices or tools are essential for sustaining MOOC practice. This is attributed to the need

for robust technology to accommodate the storage of instructional videos and high-capacity digital content (Dewar et al., 2014). In addition to this, instructors also required consistent internet or Wi-Fi coverage to ensure uninterrupted MOOC delivery throughout the course duration. A study involving twenty participants highlighted a significant challenge related to technology infrastructure, particularly affecting individuals in economically disadvantaged, or rural areas due to limited internet access (Albelbisi et al., 2018).

2.6 EMERGING ISSUES: MOOCS IN MALAYSIAN PUBLIC UNIVERSITIES CONTEXT

The implementation of e-learning system by the universities has promised better quality as the internet makes teaching and learning available anytime and anywhere without any boundaries. However, despite all the benefits of using e-Learning, especially MOOCs depends on the level of individual and social support available (Ibhrahim et al., 2012). Several emerging issues that have impacted successful MOOCs implementations in higher education have been cited.

The adoption of MOOCs in Malaysian public universities has been influenced by various factors. The Malaysian Ministry of Education has played a crucial role in promoting and supporting the MOOC initiative (Albelbisi et al., 2023). The Ministry's recommendations for the Redesign Education System towards IR 4.0 have emphasized the importance of MOOCs in delivering teaching and learning approaches (Yue, 2022).

Moreover, one important aspect of MOOCs' adoption in education is the completion rates of these courses. Studies have shown that completion rates vary widely, ranging from 0.7% to 52.1% Jordan (2015). Factors such as course length, start date, and assessment type can influence completion rates. Hence, longer courses tend to have lower completion rates, while more recent courses have higher completion rates. Courses that use auto grading only for assessments also tend to have higher completion rates (Jordan, 2015).

Other than that, the perceived usefulness of MOOCs also plays an important role in MOOC adoption. Research has shown that the perceived usefulness of MOOCs has a significant influence on their adoption (Ma & Lee, 2018). When learners perceive that MOOCs can provide valuable knowledge and skills, they are more likely to adopt them. The perceived ease of use and usefulness of MOOC platforms also have been studied in the context of specific courses offered in Malaysian public universities. The MOOC platform used in the Islamic and Asian Civilization (TITAS) course has been found to increase students' interest and deepen their knowledge in civilization and global issues (Halim et al., 2022). The MOOC TITAS platform has also been recognized for its potential in practising blended learning and enhancing the effectiveness of teaching and learning sessions (Halim et al., 2022). Additionally, the perceived ease of use and usefulness of the MOOC TITAS platform have been measured among first-year students in Malaysian public universities (Halim et al., 2022). This suggests that promoting the benefits and practical applications of MOOCs can encourage their adoption in Malaysia.

The lack of accessibility to MOOCs also influences MOOC adoption. In a developing country like Malaysia, where there may be limitations in infrastructure and access to quality learning resources, the accessibility of MOOCs becomes crucial (Ma & Lee, 2018). Improving the accessibility of MOOCs by addressing issues such as internet connectivity and availability of devices can facilitate their adoption in Malaysia. Moreover, the attitude of learners towards MOOCs also plays a role in their adoption.

Studies have found that Malaysian learners generally have a positive attitude towards MOOCs, perceiving them as interesting and easier learning platforms (Albelbisi et al., 2023). This positive attitude can contribute to the adoption of MOOCs in Malaysia. Additionally, the quality of courses offered through MOOCs is an important factor. Learners' perception of course quality influences their decision to adopt MOOCs (Albelbisi et al., 2023). Ensuring that MOOCs provide high-quality content, interactive learning experiences, and individualized instructions can enhance their adoption in Malaysia. Student satisfaction is an important aspect to consider in the evolution

of MOOCs and e-learning in Malaysian public universities. Self-regulated learning strategies have been found to positively impact learners' satisfaction in MOOCs (Zalli et al., 2019). The role of self-regulated learning components, such as time management, planning, self-evaluation, and help-seeking, has been examined in relation to learners' satisfaction in a specific MOOC course (Zalli et al., 2019).

In contrary, students' readiness towards the use and application of MOOCs has been investigated, revealing a lack of literature on Malaysian students' readiness (Hashim et al., 2019). Furthermore, the support and involvement of instructors are crucial for the successful adoption of MOOCs. Lack of instructor support has been identified as a challenge to the adoption of MOOCs in Malaysia (Albelbisi et al., 2023). Providing adequate support and guidance to learners through various means, such as discussion forums and online assistance, can address this challenge and promote the adoption of MOOCs.

Hence, understanding these factors and addressing any barriers can help promote the adoption of MOOCs and bridge the digital divide in the Malaysian higher education system (Ma & Lee, 2018; Albelbisi et al., 2023).

Furthermore, the development of MOOCs has been seen as a major transformation in the delivery of education, representing the next stage in the evolution of open educational resources (Gómez et al., 2022). MOOCs have the advantage of being available to an unlimited number of students and have become a prominent part of the higher education system (Pant & Pant, 2021). They provide a platform for individuals to enhance their educational status or learn new technologies (Putra et al., 2020).

CONCLUSION AND RECOMMENDATIONS

Massive Open Online Courses (MOOCs) have gained significant attention in the field of education as a means of delivering education on a large scale (Liyanagunawardena et al., 2013). However, there are several challenges and prospects to consider when implementing MOOCs in Malaysian

public universities. One of the main challenges in implementing MOOCs in Malaysian public universities is ensuring access to reliable internet connectivity and adequate technological infrastructure (Albelbisi et al., 2023; Liyanagunawardena et al., 2013). This is crucial for students to fully participate in online courses and access course materials. Efforts should be made to address this challenge and provide the necessary infrastructure to support MOOC implementation. Another challenge is the language barrier. Most MOOCs are offered in English, which may limit the participation of non-English speaking students in Malaysia (Albelbisi et al., 2023; Liyanagunawardena et al., 2013). To address this challenge, courses should be provided in multiple languages to cater to a diverse student population. Maintaining the quality assurance of MOOCs is also a challenge, as the courses are often developed by different institutions and instructors (Liyanagunawardena et al., 2013). Ensuring that the content is accurate, up-to-date, and aligned with the learning outcomes of the respective courses is essential. Another approach to addressing the challenges is by implementing strategies that have been shown to be effective in enhancing the adoption and engagement of MOOCs. For example, gamification has been found to increase student engagement and motivation in MOOCs (Romero-Rodríguez et al., 2019). Incorporating gamification strategies, such as challenges, leaderboards, and badges, into the design of MOOCs, can help universities enhance the learning experience and overcome challenges related to low completion rates and dropout rates (Romero-Rodríguez et al., 2019).

Furthermore, addressing the challenges of MOOC implementation requires considering the perspectives and needs of different stakeholders, including instructors and students. Instructors play a crucial role in designing and delivering MOOCs, and they need to be equipped with the necessary skills and knowledge to effectively engage with diverse student populations (Diordieva & Bonk, 2023). Providing professional development opportunities and support for instructors can help address the challenges associated with the large number of students from different backgrounds and motivational situations (Diordieva & Bonk, 2023).

Despite these challenges, there are several prospects for implementing MOOCs in Malaysian public universities. MOOCs have the potential to provide access to education for individuals who may not have the opportunity to pursue formal education due to financial constraints or

geographical limitations (Pursel et al., 2016). Implementing MOOCs in Malaysian public universities can help bridge the education gap and provide learning opportunities to a wider audience. MOOCs also offer flexibility in terms of time and location, allowing learners to study at their own pace and convenience (Pursel et al., 2016). The inclusion of student support services as one of the features of MOOCs is particularly beneficial for working professionals and individuals who are interested in lifelong learning. It will provide comprehensive student support services to enhance the learning experience and increase student engagement in MOOCs. This can include online tutoring, discussion forums, peer-to-peer support, and access to additional learning resources. Additionally, offering language support services for non-English speaking students can help overcome language barriers (Liyanagunawardena et al., 2013).

Implementing MOOCs in Malaysian public universities can cater to the diverse needs of learners and promote continuous learning. Furthermore, MOOCs provide opportunities for learners to collaborate with peers from different backgrounds and countries (Pursel et al., 2016). This can enhance cross-cultural understanding and facilitate networking among learners. Moreover, offering professional development programs and training for instructors to equip them with the necessary skills and knowledge to effectively design and deliver MOOCs. This can include pedagogical training, instructional design workshops, and technological support. Instructors should be encouraged to adopt innovative teaching methods and leverage the interactive features of MOOC platforms (Liyanagunawardena et al., 2013). Equally important, encouraging research and evaluation of MOOCs in the Malaysian context can give insights into their effectiveness, impact, and best practices. This can inform future improvements and help identify areas for further development. Collaboration with researchers and institutions that have conducted studies on MOOCs can provide valuable guidance (Liyanagunawardena et al., 2013).

In conclusion, addressing the challenges of implementing MOOCs in Malaysian public universities requires a multi-faceted approach. This involves taking specific actions to overcome barriers to issues such as access and infrastructure, language barrier, quality assurance, implementing effective strategies, such as gamification, to enhance student engagement and motivation, internet connectivity and considering the perspectives and

needs of instructors and students is crucial for successful implementation. Additionally, considering the prospects of providing access to education, flexibility, and collaboration of MOOCs can enhance the educational landscape in Malaysian public universities. By addressing these challenges, Malaysian public universities can harness the prospects of MOOCs and enhance the educational landscape in Malaysia.

ACKNOWLEDGEMENTS

We gratefully acknowledge the research grant provided by the Faculty of Business and Management, UiTM Selangor, Puncak Alam Campus that supported the completion of this work. The financial assistance enabled us to delve into this research and contribute to the advancement of knowledge in our field. We also extend our heartfelt appreciation to the individuals who generously offered their expertise and assistance during the completion of this research. Their guidance, feedback, and insightful discussions were invaluable in shaping the direction of our study. Their support and encouragement have been instrumental in the successful completion of this project. We are truly thankful for their involvement and contribution to our research endeavour.

REFERENCES

Al-Rahmi, W., Yahaya, N., Alamri, M., Alyoussef, I., Al-Rahmi, A., & Kamin, Y. (2019). Integrating innovation diffusion theory with technology acceptance model: Supporting students' attitude towards using a massive open online course (MOOCs) system. Interactive Learning Environments, 1–13. https://doi.org/10.1080/10494820.2019.1629599

Albelbisi, N. A., Al-Adwan, A. S., Habibi, A. (2023). A Qualitative Analysis of the Factors Influencing the Adoption of MOOC In Higher Education. Turkish Online Journal of Distance Education, 2(24), 217-231. https://doi.org/10.17718/tojde.973956

Alario-Hoyos, C., Pérez-Sanagustín, M., Delgado-Kloos, C., G, H. J., Munoz-Organero, M. (2014). Delving Into Participants' Profiles and Use of Social Tools in MOOCs. IEEE Transactions on Learning Technologies, 3(7), 260-266. https://doi.org/10.1109/tlt.2014.2311807

Abu-Shanab, E., & Musleh, S. (2018). The adoption of massive open online courses: Challenges and benefits. International Journal of Web-Based Learning and Teaching Technologies, 13(4), 62–76. https://doi.org/10.4018/IJWLTT.2018100104.

Albelbisi, N., Yusop, F. D., & Salleh, U. K. M. (2018). Mapping the factors influencing success of massive open online courses (MOOC) in higher education. Eurasia Journal of Mathematics, Science and Technology Education, 14(7), 2995-3012.

Albelbisi, N. A., & Yusop, F. D. (2019). Factors influencing learners' self–regulated learning skills in a massive open online course (MOOC) environment. Turkish Online Journal of Distance Education, 20(3), 1-16

Albelbisi, N. A., Al-Adwan, A. S., & Habibi, A. (2023). A qualitative analysis of the factors influencing the adoption of mooc in higher education. Turkish Online Journal of Distance Education, 24(2), 217-231.

Atiaja, L., & Proenza, R. (2016). MOOCs: Problems and Challenges in Higher Education. In International Conference on Advances in Education, Teaching & Technology, pp. 82-88, Canada: Unique Conference Canada

Azevedo, J., & Marques, M. M. (2017). MOOC success factors: Proposal of an analysis framework. Journal of Information Technology Education: Innovations in Practice, 16, 233–251. https://doi.org/10.28945/ 3861.

Bárcena, E., & Martín-Monje, E. (2014). Introduction. Language MOOCs: An emerging field. In E. Martín-Monje, & E. Bárcena (Eds.), Language MOOCs: Providing learning, transcending boundaries (pp. 1-15). De Gruyter Open. https://doi.org/10.2478/9783110420067.1

Bárcena, E., Martín-Monje, E., & Read, T. (2015). Potentiating the human dimension in language MOOCs. In Proceedings of the European Stakeholder Summit (pp. 46-54).

Bárcena, E., Read, T., Martín-Monje, E., & Castrillo, M. D. (2014). Analyzing student participation in foreign language MOOCs: A case study. In Proceedings of the EMOOCs 2014: European MOOCs Stakeholders Summit (pp. 11-17).

Bonk, C. J. (2020). Pandemic ponderings, 30 years to today: Synchronous signals, saviors, or survivors? Distance Education, 41(4), 589-599. https://doi.org/10.1080/01587919.2020.1821610

Bonk, C. J., & Wiley, D. (2020). Preface: Reflections on the waves of emerging learning technology. Educational Technology Research and Development, 68(4), 1595-1612. https://doi.org/10.1007/s11423-020-09809-x

Bonk, C. J., Lee. M. M., Reeves, T. C., & Reynolds, T. H. (2018). The emergence and design of massive open online courses. In R. A. Reiser & J. V. Dempsey (Eds.), Trends and issues in instructional design & technology (4th Ed., pp. 250-258). Pearson Education.

Bonk, C. J., Zhang, K., Reeves, T. C., & Reynolds, T. H. (2020). Preface: MOOCs and open education—Wandering and winding our way to today. In K. Zhang, C. J. Bonk, T. C. Reeves, & T. H. Reynolds, T. H. (Eds.), MOOCs and open education in the global south: Challenges, successes, and opportunities (pp. xvi-xxxiii). Routledge

Bozkurt, A., Keskin, N. O., & De Waard, I. (2016). Research trends in massive open online course (MOOC) theses and dissertations: Surfing the tsunami wave. Open Praxis, 8(3), 203-221.

Bozkurt, A., Kilgore, W., & Crosslin, M. (2018). Bot-teachers in hybrid massive open online courses (MOOCs): A post-humanist experience. Australasian Journal of Educational Technology, 34(3),39-59. doi:10.14742/ajet.3273

Brennan, K. (2013). In connectivism, no one can hear you scream: A guide to understanding the MOOC novice. Hybrid Pedagogy. http://hybridpedagogy.org/inconnectivism-no one-can-hear-you-scream-a-guide-to-understanding-the-mooc-novice/

Cheal, C. (2013). Creating MOOCs for college credit: SJSU's partnership with edX and Udacity (Research Bulletin). Louisville, CO: EDUCAUSE Center for Analysis and Research (August 14, 2013). Retrieved from http://www.educause.edu/ecar

Chen, Weiping. (2013). Perceived value in community supported agriculture (CSA): A preliminary conceptualization, measurement, and nomological validity. British Food Journal. https://doi.org/10.1108/BFJ-01-2011-0013

Class Central. (2021). Subjects (17 November 2021). https://www.classcentral.com/subjects

Clay, J. (2013). So, what if I am not connected? - eLearning Stuff. So, What if I Am Not Connected? - eLearning Stuff. https://elearningstuff.net/2013/04/15/so-what-if-i-am-not-connected/

Coursera. (2021). Impact report. https://blog.coursera.org/courseraimpactreport-2021

Daniel, J. (2012). Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility. Retrieved from http://sirjohn.ca/wordpress/wp-content/uploads/2012/08/120925MOOCspaper2.pdf

Davis, F.D., (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance for Information Technology, MIS Quarterly, 13(3), pp. 319-340.

Dewar, E., J. Uhomoibhi, M. Ross, and D. Hutty. (2014). MOOCs development and implementation: The challenges and prospects for higher education in emerging countries." Manuscript submitted for publication.

deWaard, I. (2011). Explore a new learning frontier: MOOCs. Learning Solutions Magazine. Retrieved from https://learningsolutionsmag.com/articles/721/explore-a-new learning-frontier moocs

Dillahunt, T. R., Wang, B. Z., & Teasley, S. (2014). Democratizing higher education: Exploring MOOC use among those who cannot afford a formal education. The International Review of Research in Open and Distributed Learning, 15(5), 1-20. doi:10.19173/irrodl. v15i5.1841

Ding, Y., & Shen, H. (2021). English language MOOCs in China: Learners' perspective. The Euro CALL Review, 28(2), 13-22. https://doi.org/10.4995/eurocall.2020.13090

Diordieva, C. (2020). Instructional strategies and challenges for language-based massive open online courses (LMOOC): An international investigation [Doctoral dissertation, Texas Tech University].

Diordieva, C., & Bonk, C. J. (2023). Instructors' perspectives in design and L-MOOCs: A qualitative look. Contemporary Educational Technology, 15(3), ep425. https://doi.org/10.30935/cedtech/13099

Downes, S. (2019). Recent work in connectivism. European Journal of Open, Distance and E-Learning, 22(2), 113- 132. https://doi.org/10.2478/eurodl-2019-0014 edX. (2021). Courses by subjects (17 November 2021). https://www.edx.org/subjects

Drake, J.R., O'Hara, M. & Seeman, E. (2015). Five Principles for MOOC Design: With a Case Study. Journal of Information Technology Education:Innovations in Practice, 14, pp. 125-143.

Education Intelligence Unit. (2021) MOOCs Then Now Next. Holoniq. https://www.holoniq.com/notes/moocs-then-now-next

edX. (2021). https://www.edx.org/subjects Fordham University. (2021). Types of online learning. https://www.fordham.edu/info/24884/online_learning/7897/types_of_online_learning

Fordham University. (2021). Types of online learning. https://www.fordham.edu/info/24884/online_learning/7897/types_of_online_learning.

FutureLearn. (2021). Subjects. https://www.futurelearn.com/subjects

Garcia-Loro, F., Martin, S., Ruiperez-Valiente, J. A., Sancristobal, E., & Castro, M. (2020). Reviewing and analyzing peer review Inter-Rater Reliability in a MOOC platform. Computers & Education, 154, 103894

Gerber, Joanna. (2014). MOOCs: Innovation, disruption, and instructional leadership in higher education. University of California, Los Angeles

Halim, A. A., Othman, N., Azri, N., Samir, N. M. (2022). Perceived Ease of Use and Perceived Usefulness of Mooc Titas Platform in The Era of Revolution Industri 4.0. International Journal of Academic Research in Business and Social Sciences, 10(12). https://doi.org/10.6007/ijarbss/v12-i10/15216

Hanover Research (2014). MOOC trends and implementation at community colleges. Retrieved from www.hanoverresearch.com/media/MOOC-Trends-and Implementation-at-Community-Colleges.pdf

Hansen, J. D., & Reich, J. (2015). Democratizing education? Examining access and usage patterns in massive open online courses. Science, 350(6265), 1245-1248. doi:10.1126/ science. aab3782

Hiltz, S.R. (1993). Correlates of Learning in a Virtual Classroom. Int. J. Man-Machine Studies, 39 pp. 71-98.

Ibhrahim Z., Norazlan A., Zatul Himmah A, K, & Mazuin, M. H., (2012). User's Usage Intention on E-Learning Portal: A Case Study of i-Learn Portal at UiTM Cawangan Kelantan.

Jitpaisarnwattana, N., Darasawang, P., & Reinders, H. (2022). Understanding affordances & limitations in a language MOOC from an activity theory perspective. RPTEL, 17, 9. https://doi.org/10.1186/s41039-022- 00186-y

Jordan, K. (2015). Massive Open Online Course Completion Rates Revisited: Assessment, Length and Attrition. The International Review of Research in Open and Distributed Learning, 3(16). https://doi.org/10.19173/irrodl.v16i3.2112

Kinuthia, & S. Marshall (Eds.), Open educational resources: Innovation, research, and practice (pp. 5–16). Vancouver: Commonwealth of Learning, Athabasca University

Khan Academy. (2021). Startpage. https://www.khanacademy.org

Koutropoulos, A., & Hogue, R. J. (2012). How to succeed in a MOOC – massive online open course. Retrieved from https://learningsolutionsmag.com/articles/1023/how-to-succeed-in-amassive-online-open-course-mooc

Liyanagunawardena, T. R., Adams, A. B., Williams, S. (2013). Moocs: A Systematic Study of The Published Literature 2008-2012. The International Review of Research in Open and Distributed Learning, 3(14), 202. https://doi.org/10.19173/irrodl.v14i3.1455

Ma, L., & Lee, C. (2018). Investigating the adoption of MOOC s: A technology–user environment perspective. Journal of Computer Assisted Learning, 35(1), 89–98. https://doi.org/10.1111/ jcal.12314.

Mansor, F., Latifah, A. L., & Amina, M. (2015). MOOCs in Malaysia: a preliminary case study. Paper presented at E-ASEM Forum: Renewing the Lifelong Learning Agenda for The Future. Bali, Indonesia.

Martín-Monje, E. & Bárcena, E. (Eds.). (2015). Language MOOCs: Providing learning, transcending boundaries. De Gruyter Open. https://doi.org/10.2478/9783110420067

Mathieu, J. E., Martineau, J. W. & Tannenbaum, S.I. (1993). Individual and Situational Influences on the Development of Self-Efficacy: Implications for Training Effectiveness, Personal Psychology, 46, pp. 125-147.

Ministry of Education Malaysia (2015). Executive summary: Malaysia Education Blueprint 2015-2025 (Higher Education). Retrieved from https://www.mohe.gov.my

MOOC List. (2021). Categories. https://www.mooc-list.com/categories

Motzo, A., & Proudfoot, A. (2017). MOOCs for language learning–opportunities and challenges: The case of the Open University Italian beginners' MOOCs. In K. Qian, & S. Bax (Eds.), Beyond the language classroom: Researching MOOCs and other innovations, 85-97. Research-publishing.net. https://doi.org/10.14705/rpnet.2017.mooc2016.673

Nor Fadzleen, S. D., A. A. Rose, and O. Naoki. (2015) "Stakeholders' view on MOOCs sustainability in Malaysian higher education: A preliminary study." ARPN Journal of Engineering and Applied Sciences 10 (23). 18104- 18112.

OpenLearning (2017). Malaysia Massive Open Online Courses (MOOC). Retrieved from https://www.openlearning.com/malaysiamoocs

Pant, T. and Pant, S. (2021). The Technology Shift for Mooc-based Libraries. Research Anthology on Collaboration, Digital Services, and Resource Management for the Sustainability of Libraries, 729-738. https://doi.org/10.4018/978-1-7998-8051-6.ch041

Putra, A. B. N. R., Mukhadis, A., Tuwoso, T., Ulfatin, N., Wonorahardjo, S., Habiddin, H., ... & Tee, T. K. (2020). The Innovation of Mooc Based E-marketing To Improve Entrepreneurship Administration Management for Vocational Education Students In Industrial Revolution 4.0 Era. JPP (Jurnal Pendidikan Dan Pembelajaran), 1(27), 1-10. https://doi.org/10.17977/um047v27i12020p001

Pursel, B. K., Zhang, L., Jablokow, K. W., Choi, G. W., & Velegol, D. (2016). Understanding MOOC students: Motivations and behaviours indicative of MOOC completion. Journal of Computer Assisted Learning, 32(3), 202-217.

Pappano, L. (2012, November 2). The Year of the MOOC. The New York Times. Retrieved from http://www.nytimes.com/2012/11/04/education/edlife/massive-open-online-coursesare-multiplying-at-a-rapid-pace.html

Qian, K., & Bax, S. (2017). Introduction to beyond the language classroom: Researching MOOCs and other innovations. In K. Qian, & S. Bax (Eds.), Beyond the language classroom: Researching MOOCs and other innovations (pp. 1-4). Research publishing.net. https://doi.org/10.14705/rpnet.2017.mooc2016.666

Rivas, M. J., Baker, R. B., & Evans, B. J. (2020, October). Do MOOCs Make You More Marketable? An Experimental Analysis of the Value of MOOCs Relative to Traditional Credentials and Experience. AERA Open, 6(4), 2332858420973577. https://doi.org/10.1177/2332858420973577

Roberts, G., Waite, M., Lovegrove, E. J., & Mackness, J. (2013). x v c: Hybridity in throughand about MOOCs. Proceedings of OER13: Creating a virtuous circle (pp. 1-8). Milton Keynes, UK. Retrieved from https://www.medev.ac.uk/oer13/file/79/9/

Rodriguez, O. C. (2012). MOOCs and the AI-Stanford like courses: Two successful and distinct course formats for massive open online courses. European Journal of Open, Distance and e-Learning, 2012(II). http://www.eurodl.org/index.php?p=archives&year=2012&halfyear=2&articl =516

Romero-Rodríguez, L. M., Ramirez-Montoya, M. S., González, J. R. V. (2019). Gamification In MOOCs: Engagement Application Test in Energy Sustainability Courses. IEEE Access, (7), 32093-32101. https://doi.org/10.1109/access.2019.2903230

Shah, D. (2019, January 6). Year of MOOC based Degrees: A Review of MOOC Stats and Trends in 2018.Class Central. Retrieved from https://www.class-central.com/report/moocs-stats-and-trends-2018

Shahar, F. M. (2016). Malaysia to become first country to develop credit recognition policy for online courses. New Straits Times. 18.

Siemens, G. (2005). A learning theory for the digital age. Instructional Technology and Distance Education, 2(1), 3-10

Siemens, G. (2013). Massive open online courses: Innovation in education. In R. McGreal, W.

Stracke, C. M., Downes, S., Conole, G., Burgos, D., & Nascimbeni, F. (2019). Are MOOCs open educational resources? A literature review on history, definitions, and typologies of OER and MOOCs. Open Praxis, 11(4), 331–341. https://doi.org/10.5944/openpraxis.11. 4.1010.

Stracke, C. M., Downes, S., Conole, G., Burgos, D., & Nascimbeni, F. (2019). Can MOOCs be considered as Open Educational Resources? In Proceedings of the Open Education Global Conference 2019.

Stracke, C. M., Burgos, D., & Tlili, A. (2023). Instructional quality and learning design of massive open online courses. In Handbook of Open, Distance and Digital Education (1391-1412). Singapore: Springer Nature Singapore.

Stepanyan, Karen, Allison Littlejohn, and Anoush Margaryan. (2013). "Sustainable e-learning: Toward a coherent body of knowledge." Journal of Educational Technology & Society, 16(2): 91-102.

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y. & Yeh, D. (2008). What Drives a Successful eLearning? An Empirical Investigation of the Critical Factors Influencing Learners Satisfaction. Computers and Education, 50 (4), pp.1183-1202.

Trainer, M. (2014, October 29). No Internet? Take an online course offline at MOOC Camp. ShareAmerica. https://share.america.gov/know-someone-doesnt-internet-maybe-go-mooc-camp/

Udemy. 2021. Startpage (17 November 2021). https://www.udemy.com

Ulrich, Catalina, and Anca Nedelcu. (2015). Moocs in our university: Hopes and worries. Procedia Social and Behavioral Sciences. 180. 1541-1547. https://doi.org/10.1016/j.sbspro.2015.02.304

Wahid, Ratnaria, Azizuddin Mohd Sani, Bakri Mat, Muhammad Subhan, and Khaliza Saidin. (2015). Sharing works and copyright issues in massive open online courseware (MOOC). International Journal for Research in Emerging Science and Technology (IJREST). 2(10): 24-29.

Wei, W., Lihuan, G., Ling, H., & Yenchun, J. W. (2018). Effects of social interactive engagement on the dropout ratio in online learning: Insights from MOOC. Behavior & Information Technology, 38(6), 621-636. https://doi.org/10.1080/0144929X.2018.1549595

Wenger, E. (1998). Communities of practice: Learning as a social system. Systems Thinker, 9(5), 2-3.

Yue, N. W. S. (2022). Exploring Mooc as a New Instructional Technology Tool: The Relationship of Students' Challenges, Perceived Benefits and Satisfaction. Journal of Advanced Research in Applied Sciences and Engineering Technology, 1(28), 126-138. https://doi.org/10.37934/araset.28.1.126138

Zalli, M. M. M., Nordin, H., Hashim, R. A. (2019). The Role of Self-regulated Learning Strategies on Learners' Satisfaction in Massive Open Online Course (Mooc): Evidence from Malaysia MOOC. International Journal of Innovative Technology and Exploring Engineering, 10(8), 2286-2290. https://doi.org/10.35940/ijitee.j1138.0881019

Zhang, C., Chen, H., & Phang, C. W. (2018). Role of instructors' forum interactions with students in promoting MOOC continuance. Journal of Global Information Management (JGIM), 26(3), 105- 120.

Zhang, J., Gao, M., & Zhang, J. (2021). The learning behaviours of dropouts in MOOCs: A collective attention network perspective. Computers & Education, 167, 104189.

Zhang, K., Bonk, C. J., Reeves, T. C., & Reynolds, T. H. (Eds.). (2020). MOOCs and open education in the Global South: Challenges, successes, and opportunities. Routledge. https://doi.org/10.4324/9780429398919

Zhang, G., Kim, D. W., Qi, J., & Zhao, C. (2022, November 22). What factors influence MOOC course completion? An investigation of course completion and workplace benefits from interpersonal attraction theory perspective. Frontiers in Psychology, 13. https://doi.org/10.3389/fpsyg.2022.1055108