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Massive Open Online Courses (MOOCs) as Catalysts of Educational Transformation in the Higher Education Sector of Sri Lanka: A Systematic Literature Review

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Abstract

This systematic literature review evaluates the transformative effects of Massive Open Online Courses (MOOCs) in Sri Lanka's higher education and library services. It explores how MOOCs democratize education by broadening access to previously costly and limited educational infrastructure and integrating them into library practices for enhanced access and professional development. The review synthesizes various sources to assess MOOC utilization, challenges like low completion rates, inconsistent quality, and digital divides. Strategic improvements are proposed to align MOOCs with educational and socio-economic goals in Sri Lanka. The findings highlight MOOCs' current uses, barriers, and potential as supplements to traditional education, aiming to optimize learning outcomes and support educational transformation in both academic and library environments.

Keywords: Massive Open Online Courses (MOOCs), Higher Education, Educational Transformation, Systematic Literature Review

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Introduction

Massive Open Online Courses (MOOCs) are a significant disruptor in the digital education world, which aims to provide online courses to unlimited participants at very little to no cost. (Baturay, 2015). As such, MOOCs were born out of a) a need for access to flexible and scalable learning experiences and b) a realization that the Internet could be used to reach global audiences with educational content. (Flynn, 2013). They are an exemplary case of disruptive innovation, redefining traditional educational models by making high-quality education accessible to everyone. MOOCs have many advantages; for example, they offer educational resources to the economically underprivileged, increase accessibility to admitting institutions without the need for physical presence, provide the opportunity to learn at one's own pace and engage with diversified learners. (Clarke, 2013). In addition, MOOCs also promote lifelong learning, enabling all of us to develop and build on new skills and knowledge endlessly.

MOOCs have profoundly changed higher education by providing colleges and universities with ways to extend their reach and increase the depth and breadth of educational programs (Alhazzani, 2020). For instance, in higher education, MOOCs may complement traditional classroom experiences or even replace specific courses (Hollands & Tirthali, 2015). They offer a channel for universities to demonstrate their talent and reach an international audience. This widens the student base and makes the learning experience more informative due to various perspectives and interactions. Yonkin further echoes Professor Flynn (2013), highlighting MOOCs as a means to democratize education by making courses of the highest standard from top universities available to anyone with Internet access (Flynn, 2013).

Academically rigorous MOOCs will likely be instrumental in sparking revolutionary changes in education as they drive innovation, help alleviate systemic issues, and bridge the gap between education and entrepreneurship. (Beltrán Hernández De Galindo et al., 2019). They point to a trend towards more individualized, learner-centred learning paths where learners can customize their educational journeys to fit their interests and career options. (Ahmad et al., 2022). MOOCs create the most potent online education system to help learners in the third world and developing countries with no or minimal access to education. (Liyanagunawardena, 2015). In addition, MOOCs encourage lifelong learning, allowing educators and working professionals to keep up to date with the latest developments in their field. Due to their technology and versatility, MOOCs are increasingly essential for educational institutions to address diversified learning needs and the rapidly changing digital education landscape.

With all their promise, MOOCs face several hurdles to becoming more effective. One of the critical problems is high drop-out rates, where many students still need to complete the course (Annabi & Wilkins, 2016). There are various reasons for this, but they all stem from a lack of motivation, little support, and how hard self-paced learning is. Courses are also plagued by worries about whether MOOCs offer high-quality educational experiences, as some deliver a different academic rigour and quality than others (Conole, 2015). The split between those with and without digital opportunities and digital cohesion is one of the most significant hurdles, especially in many developing countries with limited internet access or access to technology. These issues must be addressed through a multi-pronged approach that includes better course design, more robust learner support mechanisms, and the provision of more equal access to digital resources as digital divides widen. This will only effectively unblock the promise of MOOCs to democratize high-quality education. Massive open online courses (MOOCs) are a widely known open education approach that enables learners to access many non-levying or less paid courses worldwide (Jemni et al., 2017).

Research background

MOOCs, dating back to 2000, function as an innovative educational process enriched with digital technologies to connect today's academia internationally (Baturay, 2015). One way MOOCs can be identified as a prominent portion of OER is that they provide complete course modules, the entire curriculum, related reference materials, teaching materials, feedback and evaluation and further discussion forums to actively engage learners and educators. (Alhazzani, 2020). This is done through continuous assessments, projects, assignments, certification awarding, encouraging learners and keeping them in touch throughout the course. However, the beauty behind MOOCs is that they are provided at a lower cost or free of charge for anyone across the world. The only requirement is having connected to the internet at any time anywhere in this world. (Hollands & Tirthali, 2015).

Intellectual progress, innovation and socio-economic development are expected through higher education. This includes colleges and universities, technical colleges, and professional institutions providing education opportunities beyond high school graduation. (Galán et al., 2022). Higher education is an essential component of the worldwide knowledge economy, involving further study at universities, colleges, and other educational institutions after high school. (Neborsky et al., 2020). This level of education generally includes undergraduate and postgraduate courses and vocational training. Our higher education programs, which lead to bachelor's or master's degrees or certificates, have been thoughtfully developed to develop extensive expertise, knowledge, and abilities throughout academic and professional domains. (Vivek & Nanthagopan, 2023).

The higher education system in Sri Lanka is engaged and increased by a long-standing tradition of higher education institutions providing an extensive selection of degree programs. Constraints include inadequate facilities, limited funds, and a failure to sustainably keep up with the increasing demand for higher education (Ekanayake & Weerasinghe, 2020). It utilizes MOOCs to enhance and update our higher education system as it adapts to changes in the educational environment. The Covid-19 pandemic has primarily driven the digitalization of the higher education sector (Vivek & Nanthagopan, 2023). Traditional in-person teaching had been expected throughout the pandemic, although several institutions moved to blended learning models after the worldwide outbreak. Based on the research Evaluation of Student Dropout Rate in Alternative Higher Education Sector of Sri Lanka: A Case Study, most Sri Lankan educational institutions successfully utilized online teaching (Bandara et al., 2022). The growing demand for high-quality education at each academic level has brought about significant changes in the educational system, highlighting the importance of enhancements in higher educational institutions in Sri

Lanka (Lakshmi et al., 2023). Public-private partnerships (PPP) in construction initiatives, particularly those related to higher education, have significance for economic benefits and innovation. Essential requirements for effective project execution in Sri Lanka have been discovered and identified (Kandawinna N. et al., 2022).

MOOCs are in Sri Lanka's higher education sector, primarily since the outbreak of the transition to E-Learning in universities. Gamage et al., 2023 concluded that 70.7% of undergraduates adopt E-Learning approaches (Gamage et al., 2023). Additionally, research suggests that MOOCs might successfully expand teacher education programs nationwide by improving online teaching capacities (Perera & Abeysekera, 2022). Open and distance learning (ODL) challenged traditional education in Sri Lanka. Employability improvement was a result of ODL (Karunananda, 2007). Establishing and popularizing MOOCS and e-learning in Sri Lanka was a burning necessary during the pandemic and crisis period (Hettiarachchi et al., 2021). MOOCS, as an answer to the insufficient infrastructure and increasing educational demands in Sri Lanka, can be developed to enrich the Sri Lankan higher education sector.

This study aims to provide insights to policymakers, academia, and educational organizations on the level of awareness and access of undergraduates to online learning opportunities by studying the factors driving the popularity of MOOCs and identifying ways of adapting MOOCs to be a part of the higher education system in Sri Lanka. (Lazarus & Suryasen, 2022).

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Research Objectives

- Analyze the present deployment of MOOCs in the higher education sector globally.
- To identify barriers and opportunities in implementing MOOCs in Sri Lanka.
- To provide recommendations for harnessing MOOCs for educational transformation.
- To evaluate the impact of MOOCs on the LIS profession and how they can be integrated into library services and practices.

Research Questions

- How are Massive Open Online Courses (MOOCs) now being implemented in the higher education sector in Sri Lanka?
- What are the difficulties and advantages linked to the execution of MOOCs?
- How might MOOCs improve the quality and accessibility of higher education?
- How can MOOCs be utilized within library settings to enhance professional development and user engagement?

This study is expected to provide significant insights into the transformative potential of MOOCs in Sri Lanka. The research intends to identify effective techniques for implementing MOOCs in higher education by examining the latest research. That will assist in overcoming challenges while providing new opportunities for learners nationwide.

Materials and Methods

This article presents the findings from a systematic literature review study complying with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement and its associated procedures.(Stracke & Trisolini, 2021).

Systematic literature reviews and meta-analyses continue to gain prominence and utility in the educational field, mainly due to frequent inadequacies in validating and reviewing studies within academic research. These reviews maintain a rigorous and responsible methodology for searching, selecting, and critically analyzing relevant studies. They aim to encapsulate the existing state of research on a specific topic through meticulously pre-planned and documented methods within a review protocol. Such reviews are based on a thorough evidence analysis derived from a careful evaluation of the available literature based on uniform criteria. Conducting a systematic review requires mastery over a sophisticated work methodology, explicitly involving a well-structured process that clearly defines the review question and outlines the procedures for locating, evaluating, selecting, and synthesizing studies. The methods outlined in the PRISMA statement were followed to ensure adherence to these rigorous standards (Stracke & Trisolini, 2021).

Systematic Review Process: The Methodology in the PRISMA Statement

The methodology of the PRISMA Statement includes a 27-item checklist covering aspects such as methods, results, discussion, and funding, along with a four-phase study flow diagram that addresses record identification and screening, study eligibility, and studies included. Adherence was maintained to all 27 items on the PRISMA checklist.(Stracke & Trisolini, 2021).

The review encompasses literature published from January 2013 to January 2024. The scope was deliberately limited to the most recent eleven years to manage the volume of studies included, and previous systematic reviews on the educational transformation of MOOCs covered the period up to 2013. Recent systematic literature reviews on MOOCs have yet to specifically address the topic of Massive Open Online Courses (MOOCs) as Catalysts for Educational Transformation in the Higher Education Sector in Sri Lanka.

Before the initial screening, two inclusion criteria were established based on formal aspects: firstly, studies had to be published in English, and secondly, they were required to be published in journals or peer-reviewed proceedings of scientific conferences. Additionally, a protocol for checking duplicates using EndNote was implemented before the screening. The abstracts of the studies that passed this initial check were then analyzed in a second screening to evaluate their eligibility based on their relevance and relation to the research question. The exclusion criterion for this phase was relevance, specifically questioning, "Does this study have any relevance to the research question?" Due to the potential vagueness of this criterion, it was applied solely to eliminate studies that significantly diverged in topic or discipline. In cases of uncertainty, studies were not excluded but were retained for further full-text analysis. The final criterion for inclusion in this analysis was the availability of full texts. The studies meeting all these criteria were then subjected to quantitative and

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qualitative synthesis. The outcomes of the quantitative analysis are detailed in the Results section, while the qualitative findings are discussed in the Discussion section.

Systematic Review Process: The Realization of the PRISMA Statement Procedures

Following the procedures outlined in the PRISMA Statement, as depicted in the flow chart (see Figure 1), the initial phase involved record identification through searches conducted in Five electronic databases: Emerald, EBSCO host, Google Scholar, JSTOR, and Scopus.

Figure 1:

Selection of studies using PRISMA Procedure.

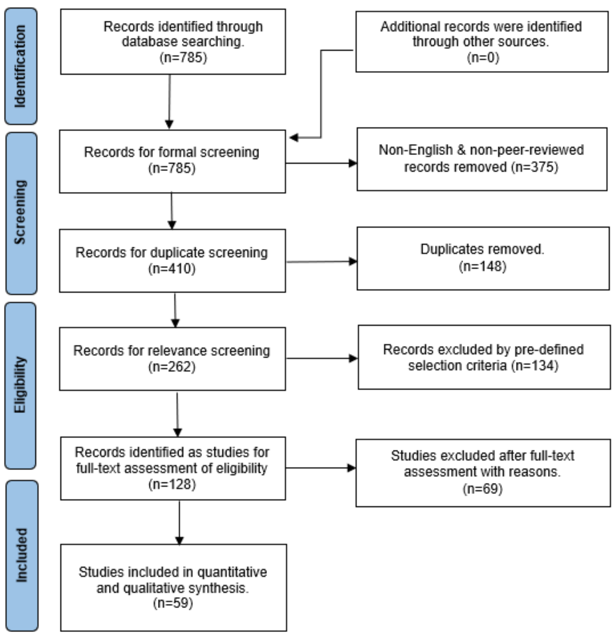

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Figure 1 above presents the flow chart for the PRISMA Statement procedures and the results from the selection of studies for the systematic literature review following the PRISMA methodology.(Page et al., 2021).

Initially, the broad search term "Massive Open Online Course (MOOCs) AND Higher Education Sector" was tested in five databases, resulting in 2,114 records. Analyzing this large number of records within the given timeframe could have been more practical. Therefore, the search term was refined to “Massive Open Online Course (MOOCs) AND Higher Education Sector AND Educational Transformation,” yielding 785 records. This number was deemed feasible for a systematic literature review. The amendment “AND Educational Transformation” was selected due to the primary interest in the educational aspects of MOOCs in higher education.

Methods of data collection

Starting with these 785 records, the pre-defined PRISMA Statement procedures were followed. Initially, non-English studies and non-peer-reviewed journal and scientific conference publications were screened out, reducing the number by 375 to 410 records. Then, 148 duplicates were removed, leaving 262 records. These remaining records were assessed for eligibility based on pre-defined selection criteria, analyzing their titles, keywords, and abstracts. This step eliminated 134 records, resulting in 128 records considered for full-text evaluation.Of these, full texts for 69 studies could not be obtained, leading to a final total of 59 selected studies.

The datasets of the systematic literature review are publicly available in the annexes to allow other researchers to re-use them and benefit from their collection and data.

Results

Research approaches

Following the selection process, 59 studies were incorporated into the quantitative and qualitative analysis for the systematic literature review, as outlined previously. This section details the findings.

The 59 studies analyzed were published in a range of journals and proceedings. Three publications each contributed three studies: Education + Training (CLA13, OLS16, SEM15), Asian Association of Open Universities Journal (AHM17, AYO20, BOR20), and Educational Technology (MIL13, NGA15, TAE14). Additionally, six journals each provided two studies: Sustainability (STR21, AHM22), Higher Education, Skills and Work-Based Learning (HOS22, ROS17), International Journal of Educational Management (ANN16, GUP21), International Journal of Sustainability in Higher Education (CAN24, HUE22), On the Horizon (BJE14, SPE17), and again, Educational Technology featured MIL13 and TAE14.

The remaining 39 studies each originated from distinct publications. These include Studies in Higher Education (CAR21), Social Sciences & Humanities Open (HAB23), Revista de Gestão (DOS22), Reference Services Review (WUK13), Library Hi Tech (HUA16), Proceedings of the IETEC’13 Conference (KAM13), Lecture notes in

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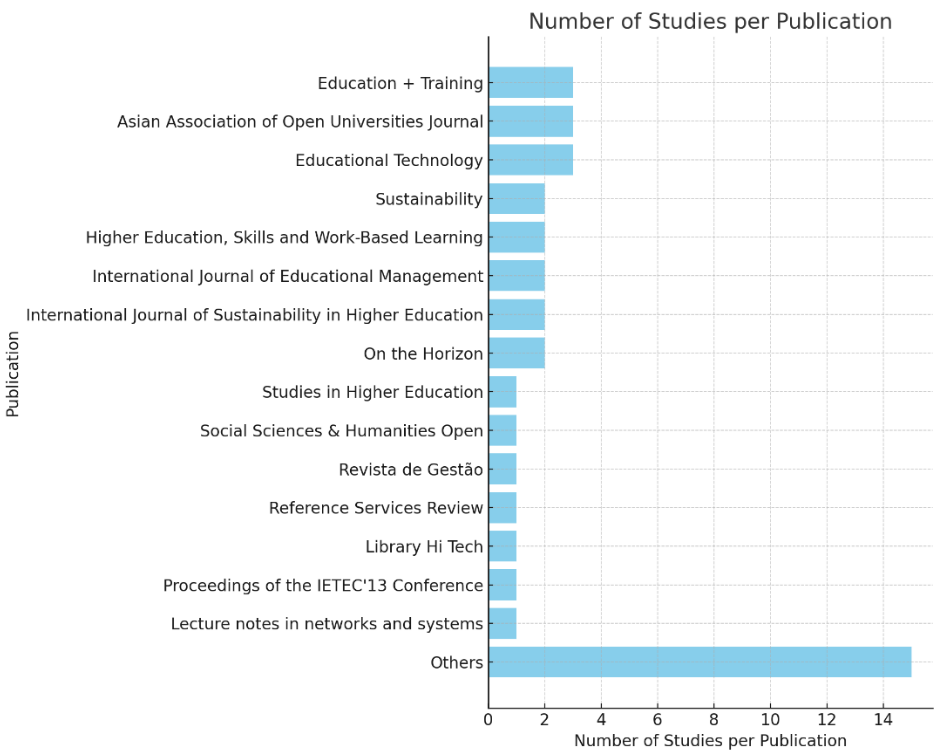
networks and systems (KOP23), and many others, totaling one study from each publication.

Figure 2:

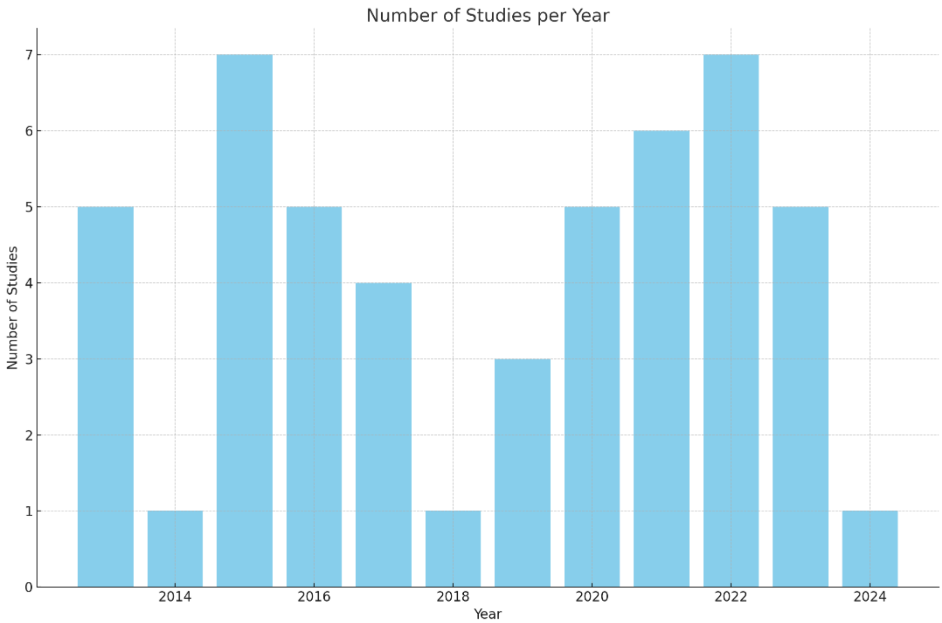
Number of studies per publication.



The temporal distribution of these studies spans from 2013 to 2024, with a specific count per year: five studies from 2013, one from 2014, seven from 2015, five from 2016, four from 2017, one from 2018, three from 2019, five from 2020, six from 2021, seven from 2022, five from 2023, and one from 2023. Over a decade, this timeline shows continuous interest and consistent contributions to research on the subject area.

Figure 3:

Number of studies per year.

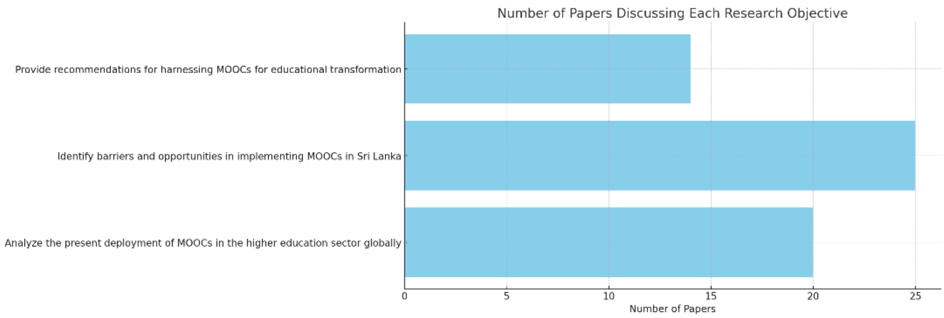


Number of papers discussing each research objective

There are many papers on the three research objectives of implementation and impact of MOOCs (Figure 4). The data indicates that the most common objective is to analyze the current deployment of MOOCs in the higher education sector worldwide (around 25 papers). Just under 25 papers were focused on barriers and opportunities in MOOC implementation in Sri Lanka. Over 20 papers deal finally with recommendatory trends on deploying MOOCs to trigger an educational transformation. This distribution focuses on global deployment and issues in Sri Lanka and, to a lesser extent, recommendations aimed at educational transformation through MOOCs.

Figure 4:

Number of papers discussing each research objective



The Role of MOOCs in Transforming Global Education

Massive open online courses have become the force that transforms global education, especially in countries like Sri Lanka, where severe educational disparities are still an issue. As a tool that provides opportunities to enhance academic quality and make learning more accessible and affordable, MOOCs blend perfectly into local education systems and offer a means of reacting to the increasing demands. The present paper is designed to explore the aspects of MOOC implementation in Sri Lanka, their uses as tools for bridging the gap between different groups of learners, facilitating lifelong learning and the process of gaining new skills, and facilitating a new social and technological education model. The problem is currently being addressed with the help of MOOCs that contribute to the substantial improvement of learning outcomes and the enhanced efficacy of the education process. The analysis conducted in the paper reveals a range of implications for MOOCs about educational policy and strategic planning in Sri Lanka.

Bridging Educational Gaps: MOOCs and Lifelong Learning

The information shows that MOOCs are vital in addressing educational inequalities in Sri Lanka, especially in remote or underserved areas. They deliver much-needed remedial education, which is critical in helping students prepare for the demands of higher education. Agasisti et al., (2022) state that they provide students with extra coursework that is crucial in improving the foundational understanding that the learners have in different fields of study. It is important to note that access to more basic MOOCs prepares students well to succeed in the more demanding university academic programs even though the institutions do not offer them online. They are also essential pathways to broader curriculums, as highly reputable international universities design most courses. This means they enhance the student's learning opportunities while considerably improving the overall quality of education that the learners can access in Sri Lanka, especially in remote areas without traditional education.

Addressing Educational Inequalities in Remote Areas of Sri Lanka

The information given by Raja & Kallarakal (2021) supports that MOOCs are a significant advancement in addressing educational disparities. They add that education technology is changing the institutional level by democratizing access to quality education. MOOCs can also address educational disparities by giving learners many flexible learning options that may break geographical and economic access limitations, as noted by Ayoub et al., (2020). The conclusion is that, given the above information, MOOCs will play a vital role in creating equity in learning by ensuring equal opportunities for all learners to take and pass higher education, regardless of where they are located or their economic status.

The Impact of MOOCs on Institutional and Educational Equity

Considering the needs, MOOCs are established as critical aspects of improving the quality of education due to their convenient and affordable learning measures. Ahmed et al., (2017) noted that MOOCs are a crucial enabler of continued learning and growth, strategies deemed essential to supporting the needs of current and future generations (Ahmed et al., 2017). Continued and easy access to convenient educational provisions allows individuals to remain aware of current trends and maintain up-to-date skills. Besides, it assists people in meeting their diverse academic needs, ensuring optimal quality. (Raja & Kallarakal, 2021).

MOOCs as Tools for Lifelong Learning and Professional Development

Moreover, the increased MOOC use contributes significantly to the accessibility of education, especially for individuals from far-off areas. According to Brown (2014), the cost-effectiveness linked to MOOC use and the freedom to choose one’s working hours have become critical drivers of access to education (Brown, 2014). Therefore, as research shows, the advantage of flexibility that allows students to access materials at any time and attend classes at a place irrespective of any factor reimposes the traditional barriers like limited access to educated materials due to distance or financial constraints, which limits quality education access (Agasisti et al., 2022).

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Blended Learning Models: Combining MOOCs with Traditional Education

In addition, MOOCs are also essential mechanisms for professional development and lifelong learning to accommodate changes in the job market and dynamics of the economy. According to Ayoub, Amin, and Wani (2020), MOOCs are linked to platforms such as SWAYAM and incorporate credit transfer systems, presenting the learner with a structured curriculum but with areas for personal customization and flexibility (Ayoub et al., 2020). Therefore, MOOCs are priceless toward lifelong professional development and skills playbook defined by market trends. (Annabi & Wilkins, 2016).

Advanced Educational Technologies and Digital Literacy in MOOCs

Thus, MOOCs have shown the possibility of improving the traditional purely face-to-face (f2f) system and developing an inclusive and flexible higher education system. Annabi & Wilkins 2016, state that combining MOOCs and conventional educational models allows for the development of blended learning models, uniting all the benefits of f2f and online education (Annabi & Wilkins, 2016). This suits all learning styles and needs, improves the quality of learning experiences, and makes it more available for students. (Ahmed et al., 2017).

Strategic Use of MOOCs for Sustainable Education Models

Moreover, MOOCs have adopted advanced educational technologies for interactive learning and enhanced digital literacy. According to Goglio and Bertolini (2021), MOOCs promote the best practices in the technology-enhanced learning process (Goglio & Bertolini, 2021). Interaction of students with advanced technologies creates an essential experience supporting a modern demand for critical skills in the digital age. (Carannante et al., 2021).

Eliminating Geographical and Financial Barriers to Education

Using MOOCs strategically increases the university's performance and helps advance sustainable education models. Gamage et al., 2023 suggests that MOOC research can inform policymakers' expectations in Sri Lanka and the strategic uses of MOOCs to ensure realistic implementation (Gamage et al., 2023). Such measures are vital for correlating the educational targets with the framework of national development and making education support society (Nunez, 2017).

Ensuring Educational Equity through MOOCs

At the same time, MOOCs are well suited to eliminate geographical and financial barriers to obtaining knowledge. Nunez (2017) said that focusing on affordability and open accessibility to good education might help democratize access. (Nunez, 2017). Therefore, the new way of giving away knowledge of good quality leads to the possibility that one may be able to afford a good education (Knoedler, 2015).

The Strategic Role of MOOCs in Enhancing Education in Sri Lanka

First of all, MOOCs have a significant influence in ensuring educational equity. It offers students the chance to take courses at various universities and access multiple resources from different universities around the globe. According Al-Rahmi et al., (2019) MOOCs have done away with "the above geographical and monetary entry barriers," contributing to fairer access to education. They believe that "education's optimal opportunity" now exists because all learners have access to the best educational opportunities, regardless of where they reside and how much money they make. (Knoedler, 2015).

In summary, MOOCs present a strategic tool to address Sri Lanka's educational issues. They provide the required horizontal and vertical access, flexibility and affordability and can transform students and educators. MOOCs can fill the gaps in the formal education system in remote or poorly resourced locations and promote remedial education while enabling students to attend courses offered by other universities worldwide. Furthermore, it can increase the quality of education via CDP and equal the country's lifetime learning standards with the most advanced educational approaches. MOOCs democratize education, tearing down geographic and financial limitations and creating conditions for equitable educational experience. Finally, the strategic implementation of MOOCs can change the outcomes of all universities, make education policy changes, and build sustainable models; thus, they will reshape the education landscape of Sri Lanka.

Discussion

Bridging Educational Gaps

In addition, MOOCs have also proven to have a great potential to reduce educational inequalities in most rural and underserved areas of Sri Lanka. This transformative potential is demonstrated in its ability to provide both remedial and advanced courses online on one platform accessible from anywhere, diminishing the geographical and logistical hindrances to accessing education. (Agasisti et al., 2022). More than just supplementing formal education, these course platforms increase access to people who are generally not well served, thus enhancing the inclusiveness and equity of the education offered across the country.

Enhancing Educational Quality

Therefore, the uncharted paths of these versatile and cost-effective MOOCs derive a flexible model of education that addresses multiple diverse students' requirements and contributes to better educational quality. Furthermore, MOOCs support a continuous education process that complements a lifetime career development due to the fast dynamics in the global labour market (Ahmed et al., 2017). Thus, implementing MOOCs expands educational establishments' capabilities in the method and form assortment, improving academic performance.

Increasing Accessibility

As a result, MOOCs have contributed dramatically to a broader spread of higher education in Sri Lanka. The opportunity to adapt the learning process to different life situations, the emphasis on distance and affordable access is beneficial for students of remote regions, which makes it possible for the quality of education for them to obtain the same quality of education as urban peers (Raja & Kallarakal, 2021). Thus, through digital platforms, higher education reduces its limitations from infrastructure.

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Supporting Lifelong Learning and Professional Development

In conclusion, MOOCs' necessity in promoting lifelong learning and professional development cannot be ignored and is considered a prerequisite for sustainable economic growth. MOOCs promote an uncomplicated blending of on-the-job learning and professional development, enabling workers to continually acquire the skills necessary for the present and future labour market (Ayoub et al., 2020). The current skill development is necessary to promote and develop a strong, sturdy, and adaptable workforce capable of assisting states in attaining national and economic goals.

Integrating with Traditional Education

Combining MOOCs with conventional face-to-face (f2f) education has contributed to more inclusive and flexible higher education sector in Sri Lanka. Since different learners have preferred approaches to studying and learning, integrating online and face-to-face approaches has served these learner differences. Moreover, as research has increasingly established, learners who experience tailor-made learning from their educationists exhibit more student participation and improved learning outcomes (Annabi & Wilkins, 2016). Generally, the hybrid approach allows education providers to maximize resource utilization and increase product and service lines with minimal resource allocation.

Leveraging Technology for Educational Enhancement

Moreover, using advanced educational technologies in MOOCs presents many interactive and collaborative learning resources and tools that support student engagement and, most importantly, develop digital literacy skills among learners. This manner, as proven by Raja and Kallarakal (2021), makes learning more engaging and efficient and allows a student to become better prepared for a workplace that has solid and numerous digital requirements (Raja & Kallarakal, 2021). Finally, the teacher who created a MOOC course has the capacity to update and expand existing offerings to guarantee that educational content is current and aligned with the latest academic and industrial trends.

Strategic and Policy Implications

The strategic effect of MOOC adoption is high, leading to policy implications at multiple levels—national policies and those developed by tertiary education providers. The knowledge and experience acquired from MOOC implementation will enable policymakers and tertiary education leadership in Sri Lanka to formulate a set of strategies that allow them to develop relevant education through digital means to level the field. (Gamage et al., 2023). These strategies will have to depend on both the technological and pedagogical sides of implementing digital but also the socio-economic repercussions of it.

Promoting Educational Equity

MOOCs are vital for educational equity to make quality education more accessible and affordable. Through courses that can be accessed from anywhere at any time, MOOCs level the playing field, especially for disadvantaged students. In this regard, the potential of MOOCs to bridge learning disparities and provide equitable classes is critical to the future of educational reform in the Sri Lankan context. (Gamage et al., 2023).

The current analysis presents a comprehensive overview of how MOOCs can transform higher education in Sri Lanka by linking the literature review findings to broader theoretical consequences. In this respect, it takes into consideration the existing practices. It presents some expectations for the future and policy ideas to ensure MOOCs will continue taking a prominent place in every educator's toolkit.

Relevance and Future Application

Over recent years, the relevance of Massive Open Online Courses (MOOCs) in many countries' higher education sectors, such as Sri Lanka, is growing, notably since there is an urgent need for fundamentally new educational models, which would be both democratizing and flexible. With the existing and widely reinforced challenges in the Sri Lankan educational infrastructure adapting to the exponentially growing need for higher education, MOOCs may represent an adequate compensatory measure. More specifically, the closely integrated use of MOOCs in the existing educational infrastructures could mean the transition to more scalable, flexible, and cost-effective vectors of educational system maintenance. Given the pandemic experience, when digital learning became not an alternative but an integral continuation of education, the above approach deserves attention.

In summary, looking to the future, the use of MOOCs in Sri Lanka is likely to continue and expand. As digital literacy rises and technological infrastructure develops, MOOCs are destined to be several of the vital building areas of higher education. This can involve using MOOCs to increase a wider variety of programs, such as vocational education and professional development while adjusting them to meet the needs of the country's economy and the job market. Moreover, MOOCs' function in encouraging lifelong learning could expand to create a lifelong learning climate. This stimulating state of mind can help employees in all sectors of the world work more creatively and effectively.

All in all, MOOCs are a way forward to achieving social inclusivity. Disadvantaged people may use MOOCs for a high-quality education; hence, overhead costs, physical limitations, extreme poverty, and other factors might not impede learners from getting a proper education. MOOCs may thus be used to achieve community development in rural areas or remote locations as there are little to no education centres available in such locations; in fact, MOOCs would help by offering a broader range of topics and advanced programs.

From a policy standpoint, the anticipated use of MOOCs in Sri Lanka must be utilized via strategic plans developed by government bodies in collaboration with private businesses and educational establishments. Such practices ensure that MOOCs are aligned with broader educational objectives and economic goals, which helps to use available resources and educational technology more effectively.

Furthermore, new ways to deliver MOOCs, such as using artificial intelligence to offer a more personalized learning experience or augmented reality to improve practical learning, could revolutionize digital education. This would lead to greater interest and improved results for learners and position Sri Lanka as a major player in digital education within the region. Finally, continuous monitoring and enhancement of MOOC plans are essential for their success. Since educational priorities will shift in response to current events and new technologies, the capacity to respond and the willingness to change will determine how effective MOOCs are in supporting Sri Lanka's educational reform.

Limitations

The limitations of the current research are essential to point out. To begin with, a meta-analysis of all 59 studies selected above proved impossible as they were not supported with appropriate and no effect sizes. Second, it was not feasible to use an alternative method, including comparing effect sizes with the help of the Standardized Index of Convergence (SIC) (Bernstrøm & Houkes, 2018);(Wielenga-Meijer et al., 2010);(Stracke & Trisolini, 2021). SIC has been proven beneficial in determining the findings from the studies examining the same relationships and does not require using compatible effect sizes. However, since a minimum of three studies for any sub-category based on effect sizes were not reported, it was impossible to utilize this method.

Moreover, the analysis of the importance of the study categories posed a limitation. Indeed, the number of studies per category formed research interest of now but not its actual importance. Finally, the defined research range is limited to the last eleven years (2013 - 2024) and particular search terms for databases could have omitted some crucial studies, limiting the intended coverage of the systematic review. Among other limitations, it is essential to notice that only English peer-reviewed papers were considered, thereby omitting the contributions published in different languages or presented via non-scientific channels.

Furthermore, the distribution of the 59 studies over four dimensions and multiple sub-categories also indicates the urgent need for

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more comprehensive research on MOOC quality. To collect information on more under-represented dimensions, future systematic reviews may use more extensive search terms and restrict the selection to a single database. In such a way, it will be easier to track all included works and ensure all existing literature is analyzed.

Conclusions

Raja & Kallarakal 2021 and Agasisti et al. 2022 conducted a meticulous analysis that reviewed how MOOCs are currently being used in Sri Lankan higher educational institutions, to what extent they have been used or implemented, key barriers and opportunities, and how they can be utilized to transform education. The analysis found that most MOOC usage in Sri Lanka aimed to improve educational access and quality across demographically diverse groups of students, with the most vulnerable populations experiencing expansion and extension of educational opportunities. (Raja & Kallarakal, 2021); (Agasisti et al., 2022).

While discussing barriers, infrastructural insufficiencies, low digital literacy levels among the target population, and the necessity to reconfigure pedagogical processes shared the highest significance (Gamage et al., 2023). Meanwhile, MOOCs' opportunities are based on the ability to accompany a person throughout their life, develop professionally in the environment of the general education system, and form an environment of continuous and flexible education: "Lifelong learning can address these concerns and offer workers the training opportunities they need to have careers in new high-growth fields." (Ayoub et al., 2020).

The conclusion drawn from addressing the general research objectives and questions highlights that the predominant use of MOOCs in the Sri Lankan higher education sector primarily serves as an alternative means of accessing education. In scenarios such as these, MOOCs in Sri Lanka help to surmount access barriers, particularly those presented by geographical and financial constraints. Reflecting global trends in educational resource availability, MOOCs play a pivotal role in advancing the agenda to democratize access to new educational opportunities by opening educational resources more broadly. Upon addressing the study's questions, it is evident that the incorporation of MOOCs not only yields substantial benefits in both application and financial terms, notably through cost reductions, but also emphasizes the need for their usage to align with the strategic objectives of educational policy at the national level. (Annabi & Wilkins, 2016).

Moreover, the potential for MOOCs to revolutionize the LIS profession is significant, emphasizing their integration into library services and practices. This integration could enhance professional development and user engagement, fostering an environment of continuous learning and accessibility.

In conclusion, the recommendations derived from this research call for a multi-stakeholder perspective centered on the government, the institutions of learning, and the private sector to formulate cohesive strategies that optimize MOOCs. Some strategies developed include investment in technological advancement, improvement of digital literacy projects, and creating guidelines to see MOOCs accredited and contained within the formal education systems (Gamage et al., 2023).

To conclude, MOOCs have the transformative capacity for Sri Lanka's higher education, which can revolutionize the quality and availability of education within the country. For MOOCs to support education transformation, an integrated approach is required, including policy-making, infrastructure development, and collaboration with stakeholders. Further research may explore how MOOCs can be embedded into the existing educational systems and the long-term effects of such embedding on the quality of education and employment opportunities.

Data Sharing Statement:

The data supporting the results of this systematic literature review are included within the paper and are supplemental.

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