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Towards the Successful Adoption of MOOCs in Libyan Higher Education: A Case Study of the University of Misurata

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Abstract This paper focuses on the adoption of Massive Open Online Courses (MOOCs) in the Libyan university environment. MOOCs have become a much-discussed phenomenon in the online learning world, and can provide learning opportunities for large numbers of students from anywhere, as long as they can access the course materials through the Internet. With the growing trend towards online education, implementation models have become important to examine the factors affecting adoption processes. Although MOOCs are of growing importance in Higher Education Institutes (HEIs) in general, their adoption and implementation still face many challenges in Libya. The aim of this paper is to establish the existing level of adoption of MOOCs in one Libyan university, and identify the factors that are impeding the take-up of this form of education. The research adopts a qualitative approach, focusing on a case study of the University of Misurata, where a survey and interviews were undertaken. This has produced new insights that can guide future strategy and operational plans for adopting or improving existing MOOCs adoption processes in Libya. A multi-dimensional model was used to map and assess the MOOC adoption process. The research findings can benefit online learning facilitators and policymakers by increasing the successful implementation of MOOCs.

Keywords: Digital technology, Higher Education Institutes, Libya, MOOCs, online learning.

نحو الاعتماد الناجح للتعليم المفتوح MOOC على شبكة الإنترنت في التعليم العالي في ليبيا: جامعة مصراتة (دراسة حالة)

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المخلص تركّز هذا البحث على تعزيز تبني الدراسة والتعليم المفتوح عبر الإنترنت بتقنيات (MOOCs) في بيئة الجامعة الليبية. أصبحت تقنيات التعليم المفتوح MOOCs ظاهرة نوقشت كثيراً في عالم التعلم والتعليم عبر الإنترنت، ويمكن لهذه التقنية أن توفر فرصاً تعليمية لأعداد كبيرة من الطلاب عن بعد، طالما يمكنهم الوصول إلى مواد الفصول الدراسية أو التدريبية عبر الإنترنت. مع الاتجاه المتزايد نحو التعليم عبر الإنترنت، أصبحت ضرورة الاطلاع على نماذج التنفيذ مهمة لدراسة العوامل التي تؤثر على عمليات تبني تقنيات التعليم المفتوح. على الرغم من تزايد أهمية MOOCs في مؤسسات التعليم العالي (HEIs) بشكل عام، لا يزال اعتمادها وتنفيذها يواجه العديد من التحديات في ليبيا. الهدف من هذه الورقة هو تحديد المستوى الحالي لتبني تقنيات MOOCs في الجامعات الليبية، وتحديد العوامل التي تعيق تنفيذ وإدارة هذا النمط من التعليم. يتبنى البحث مقاربة نوعية، مع التركيز على دراسة حالة جامعة مصراتة، حيث تم إجراء مسح ومقابلات شخصية. وقد أسفر ذلك عن رؤى جديدة يمكن أن توجه الإستراتيجية المستقبلية والخطط التنفيذية لاعتماد أو تحسين تبني تقنيات MOOCs الحالية في الجامعات الليبية. استخدم الباحث نموذج متعدد الأبعاد لرسم خريطة اعتماد تقنية MOOC وتقييم واقعها الحالي. يمكن لنتائج البحث أن تفيد واضعي ومنفذي خطط تبني تقنيات التعلم المفتوح عبر الإنترنت وكذلك واضعي السياسات المتعلقة بضمان نجاح تقنيات MOOCs في الجامعات الليبية.

الكلمات المفتاحية: التكنولوجيا الرقمية، التعليم العالي، ليبيا، MOOCs، التعلم عبر الإنترنت.

Introduction

The steady increase in the use of Massive Open Online Courses (MOOCs) is significantly expanding capacity to meet the growing demand for educational and learning content worldwide, resulting in a growth in online learning [1]. A MOOC “represents open access, global, free, video-based instructional content, videos, problem sets, and forums released through an online platform to

high volume participants aiming to take a course or to be educated” [2]. In addition, a MOOC has “the potential to support lifelong learning, eliminate barriers in the learning process, provide equality of opportunity in education, and, most importantly, ensure the liberalization of knowledge” [3]. Today, MOOCs are offered by many Higher Education Institutes (HEIs), while many more are exploring

the potential of such activities. However, in the developing world, the adoption of MOOCs in HEIs is still in its infancy, and faces numerous challenges, notably the sustainability of an effective technology base [4], and the lack of a positive response from many academics [5]. From a process perspective, a major obstacle is the execution of the change required to adopt innovative technology, such as that required by MOOCs [6]. Given the lack of international language skills and computer literacy issues, MOOC based learning - even in its simplest form - constitutes a significant challenge for many public universities in Libya [7]. Access to digital technologies in many Libyan universities (notably those outside the capital and other metropolitan areas) is still insufficient for supporting online learning. The use of multiple learning courses, overload of information and cultural sensitivity are other issues that present major challenges to the introduction of MOOCs in developing countries.

This paper investigates this situation in the context of Libya, and attempts to establish a way forward for the adoption of MOOC based learning and teaching in the country. Based on the findings from a survey and follow-up interviews at the University of Misurata, the paper assesses the factors impeding the successful adoption of MOOC learning courses in HEIs in Libya. Following this Introduction, recent relevant literature is reviewed and some existing models and classifications are discussed. From an analysis of the literature, a provisional conceptual framework is established, which is used as the basis for developing interview questions at the case study university. The research methodology is then explained, being based on a qualitative inductive approach. In the following sections, the findings are set out and discussed. Finally, some concluding remarks summarise the paper and discuss the need for further research.

Literature Review

The extant literature reveals a number of classifications and models relating to the introduction of MOOCs. Previous research drew the distinction between “cMOOCs” and “xMOOCs” (Fig. 1) [8]. In the cMOOC - the “c” stands for connectivist - students generate knowledge and can search beyond the range of the course through other digital based applications such as blogs, images, videos, articles, etc. Students are directed towards recommended reading and weekly schedules are established for students to follow. Students develop their own knowledge to gain understanding of interested topics. On the other hand, the xMOOC has a more structured and linear approach, in which students and learners have pre-structured content for the classroom based course. Students undertake specified study tasks as a preparation for examinations. The xMOOC involves fewer learner actions, and does not include student-created content. The

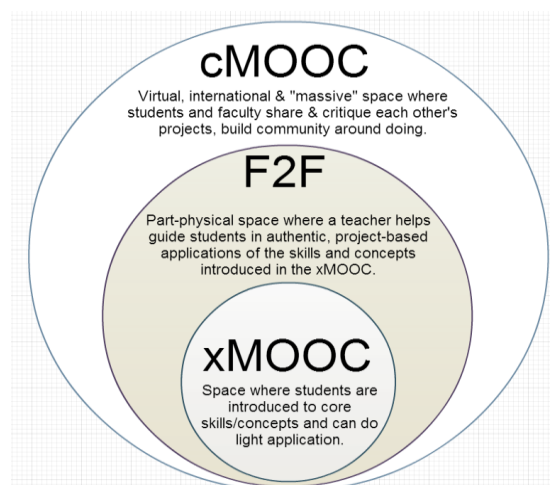


Fig. 1: A classification of MOOC teaching and learning [8]

cMOOCs “embraced a decentralized, learner-centered approach”, whilst the xMOOCs are “characterized by teacher-centered teaching and learning” [3]. In this research, the xMOOC learning approach is the focus of investigation, where the traditional relationship between lecturers and students in the classroom is replicated through a digital based approach.

There are a number of established MOOC adoption models, most of which relate to two key domains or dimensions of online learning - communication (facilitating interactive learning by using the internet or web) and content (created digitally for use on the web). These two dimensions can be used to form a model of MOOC adoption (Fig. 2) [9], with stages in the adoption of MOOCs combining progression in both dimensions.

Abbreviations and Acronyms

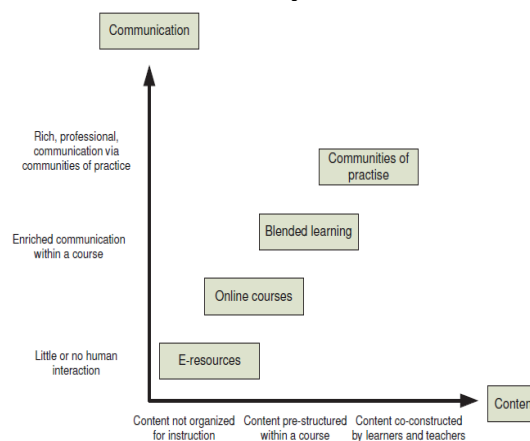


Fig. 2: A two dimensional model of MOOC adoption [9]

The four basic stages in this model are as follows. The *E-resources* stage refers to online information and learning resources that are available for access by teachers and students for education. At the *online courses* stage, the university starts delivering digital content on the web and offering

online courses, often reflecting the classroom based courses, as part of a university academic degree. *Blended learning* combines two different methods of learning activities - through the web but also by face-to-face teaching. *Communities of practice* (CoPs) are groups of learners (students or even teachers) who share a common academic interest and work in collaboration through joint benchmarking to identify good practices and highlight areas for improvement. This may involve institutions sharing examples of their MOOC adoption activities that can help other universities discover different tools, systems and processes to enhance learning and teaching activities and generally support the wider adoption of MOOC technology. This model is being increasingly applied to university adoption of MOOC teaching and learning.

A number of challenges in MOOC based learning are also explored in the literature, and these can be seen as critical success factors for MOOC adoption. Learners and facilitators need to *obtain the necessary skills to create a MOOC environment* and choose the right application to fit their personal and learning purposes. Challenges include the lack of experienced MOOC facilitators, students' knowledge and understanding of the process, digital knowledge and English Language proficiency [10]. The success of MOOC adoption needs students to be active and capable of communicating and collaborating with the academic team in new ways. Facilitators and learners need a shared understanding of MOOC adoption learning goals, strategies, objectives, resources, and activities. However, there is the risk facilitators will make their decisions based on favourites and self-interest. Students need to feel comfortable, trusted, and valued in this environment in order to achieve the required level of MOOC based learning [11].

Access to digital technologies is critical to MOOC operations, and not just the technology per se, but also the necessary skills, knowledge and experience with digital technologies [12]. MOOC adoption enables participants to use multiple learning locations, but lack of computing skills, knowledge and support could discourage some students and lead to disengagement. There is also the related and broader issue of having the necessary *infrastructure* in place for users of MOOCs from developing countries, who come from geographical locations with various levels of infrastructural facilities [13]. While there are some exceptions, the majority of locations in developing countries suffer from poor digital infrastructure. In the case of Libya, for example, an undergraduate student from rural areas may typically have to make a long journey (one-way) to get to an Internet access center, whilst in the country's main cities, other students may have good broadband access, not realizing that there are other students on the same course without such access. Download speeds of Internet connections in many developing countries are not sufficient to allow download of large files or the viewing of streamed videos. Hakami [14] argued that the university website speeds and browser loading times were significant

impediments to the successful adoption of MOOCs. *Language and cultural issues* are another challenge. The majority of the MOOCs today are run in English and this limits the access to students and facilitators from the developing countries such as Libya, because not many have the language capabilities necessary to take on MOOC based applications.

Chen and Yao [15], in their empirical evaluation of critical factors influencing learner satisfaction in blended learning, propose a six dimensional model for MOOC based learning adoption, with each dimension or stage requiring a set of actions. This model (Fig. 3) has been used as the provisional conceptual framework for this study. The stages are as follows. *Determination of the subject area* refers to the selection of the priority topic for MOOC deployment. If this is not clear, brainstorming activities can contribute to the making of this decision. *Acceleration practice* concerns the nomination of university participants who are familiar with and/or interested in MOOC based learning activities. The facilitators of a MOOC adoption process may benefit from collaborating with other educators and experienced online instructors, technology experts, and administrators [16]. *Syllabus development* provides the context for an online course. There are several educational materials that provide easy-to-follow instructions on what is important and how to create a syllabus for an online course [17].

Platform development is considered as one of the success factors for MOOC based learning. This will be based on the University's website and should preferably be simple and easy-to-use, so that the participants feel they can move in and out of the platform as required. The web hosting services companies provide a set of online services and applications that can support the integration of MOOC activities, such as webinars, design tools and online libraries. *Participation* refers to the invitation to university participants to engage in the project. For example, sharing of resources between different development stages must be based on reliable information and analysis and the university must create arrangements, which support this. Processes, practices, tools, skills and policies for collection, sharing and use of significant application and resources should be encouraged [18]. Finally, *Support* covers a range of activities to provide continuity and encouragement for all involved. Students feel welcome when the facilitators relate to them by name, inquire about their welfare, and offer help. A student that feels wanted is unlikely to leave a MOOC. Students like to interact with one another, but they gain confidence about their assignments and progress when the facilitator or teacher communicates with them. This is the kind of support that allows learners to succeed. MOOCs need to have as many facilitators as required to make such connections possible.

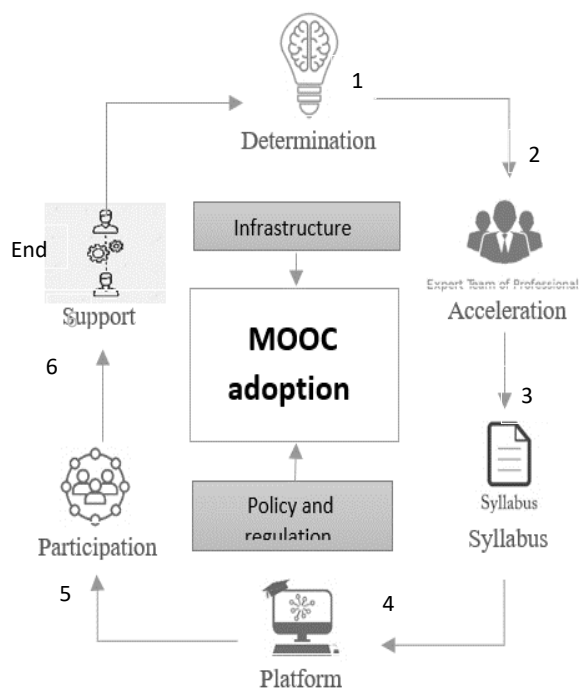


Fig. 3: The 6D Model of MOOC adoption.
Based on Chen and Yao [15]

Research Methodology

Saunders et al. [19] defined research strategy as the general plan of how the researcher will go about answering the research questions and they noted that a case study strategy can increase confidence in the resulting data and research findings. This research project adopts a qualitative case study method, and is based on findings from the University of Misurata (UoM). This follows other studies in this field that have adopted a similar approach [20], [21], [22] and [23]. An inductive approach is used, allowing some generalisations to be made from the case study findings.

The time horizon is cross-sectional as data are collected only once. For data collection, the study uses two main sources of evidence - an online survey and semi-structured interviews with key university actors. The study population is the UoM Libyan public university. A range of investigative activities are being undertaken to gather and analyse the data and information. These activities include determining overall strategy, mapping teaching and learning processes, assessing digital content, and overall review of MOOC based learning functions and capabilities at process level. Data was collected in two phases. In the first phase, an online survey was conducted during the period of April to May 2020. The online survey was sent to the online portal manager at UoM and his team, and involved two sections, one related to the respondent's background information and whether he/she had ever contributed to MOOCs, and the second to the respondent's attitude towards MOOCs. The first section contained a range of open-ended questions; the second section consisted of 35 questions covering attitude towards the six MOOC adoption stages contained in the provisional conceptual framework, and current achievements and intentions regarding the use of

MOOCs. In the second stage, short interviews were conducted with selected members of the academic management to further explore their experience and opinion on the adoption of MOOCs. The interview questions asked about the general experience of MOOC adoption, challenges, and suggestions for successful MOOC adoption based on their teaching and learning experiences. Descriptive and qualitative data analysis were conducted to analyse the data. Answers were categorized based on themes that had been identified in the 6D model in the literature.

Findings

Findings are oriented around the six dimensions noted above, and attempt to address the broader aim of establishing how HEIs in Libya can successfully adopt MOOC based learning and teaching.

1. Determination of the subject area: Responses revealed that some of the academic staff were involved in MOOC deployment as facilitators, but that the majority were not. Although there is some basic understanding of MOOCs, the University is not at the stage where it is able to adopt a high level of online courses delivered by MOOCs. Many reported that they did not have guidelines or a process for determining a subject area or targeted courses. The interviews indicated that there is interest in adopting and participating in MOOCs, but they did not have time for managing a development plan for MOOCs, or could not find a suitable approach for starting the identification of the most appropriate online-based courses or topics.

2. Acceleration practice: The MOOC facilitators participated in various preparation activities for online courses, with the majority of the prepared courses being social sciences and IT-related, such as Islamic studies, programming, and economics. The majority of these courses were prepared individually by the teachers, there being no standard format, team, committee or plan to provide guidelines to follow. The results indicate that there is still a lack of facilitation, management, and awareness regarding MOOCs in UoM. The portal facilitator stated that the majority of the non-MOOC users in this study did not have the necessary level of knowledge about MOOCs, and how to manage the related resources. The manager of academic affairs mentioned that some learners were familiar with MOOCs, but they are not interested in participating in the preparation of the MOOC materials for financial reasons. There is a lack of Acceleration in MOOC adoption at UoM, and developing a plan to address this will be critical in attaining a wider deployment of MOOCs at the university.

3. Syllabus development: Including online courses in the curriculum is still challenging, due to accreditation issues. Interview responses from teachers identified a number of related issues - the lack of skills and inability to use new technologies, the low motivation of a number of teachers for self-learning, and the low level of online readiness and quality of educational electronic content. The syllabus organization at UoM is not at the requisite

level to support wider MOOC adoption, although the capacity and infrastructure to create online courses exists. The problems mainly concern syllabus management and digital content.

4. Platform development: Technically, UoM has developed its MOOC platform based on the PHP programming language and integrated database technology, providing an adequate basis for successful MOOC applications - a user-friendly interface and an interactive learning management system, allowing, for example, users to revisit previous content. Findings indicate a range of devices is used to access the UoM MOOC portal over the period studied. The majority of learners (92%) use mobile devices to access the platform and interact with its digital content, whereas only 6.6% are using the desktop for access. This suggests that the platform needs to focus heavily in its design and future development to meet the needs of mobile users.

5. Participation: Eight colleges (out of a total 17 colleges in all) at UoM have, to date, participated in the preparation of MOOCs, whereas nine colleges are still at the early stages of the preparation or did not manage to start their online course development at all. The online courses development manager cited time commitment, motivation and awareness as the key factors for successful MOOC preparation. On the other hand, lack of time, busy schedules, and slow internet were mentioned as the three key reasons for not completing the preparation of MOOC based courses. In some cases, a slow internet connection hindered the learning process as students met buffering very often, when downloading course materials. The portal facilitator highlighted the importance of the course materials being accessible and downloadable for MOOC based learning and teaching activities. The MOOCs need to be pre-structured, detailed, brief and collaborative.

According to the portal manager, given the limited time for the participants to do their independent learning, properly structured materials are key to achieving effective and efficient learning. Respondents also noted that the use of the internet for accessing MOOCs could be expensive for many users, but they specifically referred to technical issues relating to the size of documents and speed of the portal, as the Internet is not reliable and readily available for many users. The manager of academic affairs observed that a number of colleges were not interested in adopting online courses, as they preferred face-to-face teaching and learning. Only two colleges clearly stated that they were not interested in MOOCs (the Education and Medicine colleges). There is still a general lack of awareness regarding MOOCs in UoM.

6. Support: The MOOC manager and facilitators were interviewed to further explore the motivations and support behind MOOCs adoption. The support activities of the online portal manager for potential MOOCs participants were limited to issuing technical guidelines for publishing documents and notes on the portal. More broadly, support was limited for two main reasons: limited time for developing online courses and associated activities,

and limited resources, notably expertise in technology aspects. Respondents also noted that they were motivated by the call from the Ministry of Education to develop online courses and MOOCs portals, and started looking out for online course development providers, MOOC platforms, and instructors. Other issues raised regarding support were the ramifications of the Covid-19 pandemic, and the problems arising from the political conflict and instability in the region.

Discussion

Findings from the UoM case study suggest a number of issues that warrant further consideration:

- *Quality assurance:* There would be value in introducing a quality assurance system for online learning at university level in Libya. MOOCs are often one element of courses delivered in blended mode (online MOOCs, CD-ROM, video streams, face-to-face) where the role of the teacher as facilitator is key. The Ministry of Education is currently in discussion with UoM and other HEIs to explore what can be done to promote and ensure quality of new MOOC deployment.
- *Language is a barrier* for using existing online courses. Both students and teachers expressed a preference for Arabic-based online portal tools and course materials.
- *Key requirements* were seen as the need for adequate planning, human capacity development, development of training materials, and availability of financial resources. Findings also indicated that the role of teachers is a key success factor in MOOC adoption progression. Current blockers to progression were identified as deficiencies in personal capability and knowledge, internet connectivity, the quality of the course content, and systems and technology failings, which can all negatively impact the potential of MOOCs adoption.
- *Adopting new ways of working* presents a range of problems and issues for both students and teachers. Online educational delivery and building connections among students and teachers are still not meeting the high level required for successful MOOC adoption. Those involved in MOOCs deployment at UoM are still coming to terms with the special conditions and limitations of online teaching and learning. A further challenge, and opportunity, is the rapid evolution of technology that is enabling new teaching and learning approaches in the MOOC context [24].

Conclusion

This paper has reviewed some of the relevant literature relating to MOOCs deployment and examined the current situation regarding MOOCs at UoM, using the 6D model. A number of factors

are currently holding back the increased use of MOOCs in Libyan universities. These include human capability and knowledge factors, technology issues, and factors relating to the process of course design and management. Improvements are needed in all these areas if the true potential of MOOCs is to be realized in the Libyan university sector.

This is an exploratory study, and future work could investigate the adoption of MOOC based learning technology in other public universities in Libya, examining its effectiveness and establishing ways of measuring success. Very little is known about the actual impact of MOOCs on educational outcomes, and investigations that compare different formats of instruction are needed. The results suggest that there is a growing interest in exploring how MOOCs can improve traditionally taught courses, and act as a catalyst for achieving teaching and learning objectives in a way that exploits the possibilities offered by new technologies. This could be to the mutual benefit of both teachers and students, but a “series of pedagogical and technical questions need to be addressed, along with exploring students’ experience with this mode of learning” [25]. It remains unclear to what extent the MOOC model limits or enhances the teaching of a particular academic discipline or subject, and how various technologies can be employed to address these limitations. The study calls for future research to explore these interesting and important questions, particularly in the context of Libyan HEIs.

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