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ADOPTION AND USE OF MOOCS IN HIGHER EDUCATION: AWARENESS, BENEFITS, AND BARRIERS

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ABSTRACT

This study examined university students' awareness, perceived benefits, and barriers related to MOOCs using a concurrent mixed-methods design. Data were collected from 155 students via a structured survey and from eight participants through semi-structured interviews. Findings indicate that most students are aware of MOOCs and recognize benefits such as accessibility, networking, flexibility, cost-effectiveness, diverse courses, innovative learning, and skill development. However, barriers include limited interaction, the need for self-motivation, technical issues, assessment difficulties, and concerns over credibility and recognition. Interviews highlighted themes like platform accessibility, flexible learning, enriched experiences, and integrating MOOCs with traditional education. Recommendations emphasize enhancing student-teacher interaction, personalized feedback, effective pedagogy, and quality content to address these challenges.

Key Words: *Massive Open Online Courses, Students' awareness, Perceived Benefits, and Barriers.*

INTRODUCTION

Massive open online courses (MOOCs) have changed the educational environment of digital education by providing learners with plenty of online learning resources and interactive environments (Bitakou et al., 2023). The type of student interaction may enhance students' satisfaction with MOOCs. These interactions can be among students, teachers, content material and technology. Beside all students face several challenges in MOOCs: such as limited face-to-face communication, less collaboration, lack of immediate feedback, technical issues, institutional support and low quality of content (Pham, 2025). Even though, increasing academic performance and engagement of students in MOOCs remains a challenge and, in many cases, resulted in low retention and high dropout rates (Rizwan et al., 2025).

The global world in this technological development era has grown almost equally in all life disciplines. The world economy is now controlled by knowledge, wrought by technology and progressed by information (Dessai & Kulkurni, 2008). ICT meaningfully contributes to the education field. Now leading universities are adopting an all-inclusive method to encourage Information and Communication Technologies universally. The distance learning concept changed in to e-learning due to computers introduction. Even e-learning concept is also diminishing gradually and evolving to novel concepts acknowledged as MOOCs. They are online courses offered with free in some cases, have open registration and offer certification on the completion of course. It offers social networking opportunities and online resources facilitated by renowned educational organization and professionals. MOOCs are suitable for students who are self-regulated learners and having focused learning goals (Chauhan, 2014).

Several factors contribute to the development of rapidly evolving online education landscape. Cooperative learning strategies in massive open online courses enhance social interaction, engagement and academic performance among students. However, students also face obstacles such as unequal participation, language difficulties, and technological problems. Effective leadership, clear task assignments, and collaboration can help to

lessen these problems (Dinh, 2025). Students are required to work on various effective learning strategies in MOOCs. These strategies are strategic planning, goal setting, and time management. Students engaged in MOOCs schedule learning sessions, prioritize learning tasks and set academic goals and employ several learning approaches such as summarization or mnemonic devices to improve retention and comprehension (Dinh & Phuong, 2025). xMOOCs are structured courses for individual learning while cMOOCs are interactive courses for collaborative learning. xMOOCs are useful for behavioral and cognitive engagement, while cMOOCs enhances the students' cognitive and social engagement. However, students face challenges in MOOCs such as complexity of learning content and technical problems (Watted & Barak, 2024). Now MOOCs can be integrated into classroom teaching. Blended MOOCs is an educational model that combines online learning with traditional in-person teaching (Pham, 2025). MOOCs are also needed to help students with disabilities. It is necessary to design a comprehensive policy framework of inclusivity in MOOCs for students with disabilities. Inclusive learning environments and supportive online learning experiences can significantly enhance students' retention and engagement of students having disabilities in MOOCs (Mohd Ashril, et al., 2024).

Pakistan is a developing country where people don't have access to quality education. Many Pakistani youngsters do not have university education access (Javaid, 2014). MOOCs accessibility to students of higher education may overcome these problems that don't have adequate resources. MOOCs offer a platform to university students which are cost effective. Consequently, the rationale behind conducting research on MOOCs is to investigate the awareness, perceived benefits and barriers of MOOCs in Pakistan. The underlying theme is to know the perspective of university students about MOOCs and see how they can use this platform for the enhancement of their knowledge and maximize learning. In addition to this present research also find out the perceived benefits and barriers university students faced in MOOCs.

Objectives

1. To investigate the awareness of MOOCs among university students.
2. To determine the perception of university students regarding the benefits of attending MOOCs.
3. To assess barriers faced by university students while attending MOOCs.
4. To explore the role of university in the implementation of MOOCs at university level.
5. To explore the ways of incorporating MOOCs into the traditional education system.

Significance of the Study

The present study highlights the importance and necessity of designing MOOC programs for university students, especially with a focus on the enhancement and development of knowledge. Students are prime beneficiaries of MOOCs. Universities may design MOOCs to provide opportunities to students for skill development, and self-paced learning in diverse subjects according to the needs of students. University departments that are dealing with online offerings may use the findings of present research to upgrade systems to enhance their capacity in digital education. Future researchers who are working around education technology may benefit from the present research findings to bring enhancements to online learning practices. MOOCs for university students hold substantial benefits for stakeholders such as university administrators, faculty and especially students which will ultimately contribute to knowledge progression in a digital age.

Literature Review

MOOCs offer open access of variety of courses to the participants. According to Chauhan (2014) two key features of MOOC are open access and second is scalability. First time MOOC term was used on the launched of course which is "Connectivism and Connective Knowledge" in year 2008 introduced by educationist Dave Cormier (Nova, 2007). Success rate of MOOCs depends on the students' engagement. It works as potential driver for success and in persistence MOOCs (Lan & Hew 2020; Sun et al., 2020). In MOOCs, successful course completion is a major concern where there is a need of further research studies. Moreover, barriers described in various research studies are presented generally whereas there are diverse types of MOOCs (Watted & Barak, 2024).

Learner engagement in prior studies was discussed as a unidimensional concept in context of MOOCs those emphases on behavioral or social engagement facets (Barak & Watted, 2018; Sunar et al., 2020). Behavioral engagement is described as participation patterns of students in course activities such as watching videos, completing assignments and asking questions (Campbell et al., 2015; Coffrin et al., 2014). In MOOCs, engagement is defined as activities attempted and percentage of assignments by each member during the course (Williams et al., 2018). Social interactions among teachers or students in working groups, discussion forums and networks other than platforms of MOOCs are called social engagement with the objective to know others and learn from their knowledge (Chiu & Hew, 2018; Sunar et al., 2020). According to Barak et al. (2016) social engagement of learners in online forums like MOOCs has positive relations with motivation gain. Less observable and more nuanced aspects of engagement are cognitive and emotional due to their complex nature and assessment difficulties. In MOOCs, emotional engagement is described as presence of emotional reactions either positive or negative toward tutors and students and MOOC content (Li & Baker, 2018). In MOOCs, cognitive engagement is the mental investment of learners exerted while performing learning activities. It is ability of learner to grasp novel concepts and master skills which are challenging (Deng et al., 2020). MOOC students who are having high cognitive engagement attained good grades as compared to students who followed tracks of instructed learning (Li & Baker, 2018).

MOOC learners faced many challenges that hinder learning which led to dropout rates (Barak & Usher, 2021). Barriers related to MOOCs include course design (Henderikx et al., 2018), lack of support from faculty (Gutiérrez-Santiuste et al., 2015), lack of presence of instructor (Mohan et al., 2020), unsuitable learning situations (Li et al., 2016), and native language diversity of students (Barak & Usher, 2021). For example, in the group of cMOOC where students mentioned barriers such as technology especially hardware related technical problems, insufficient digital capability, personal and social problems and low self as well as team commitment. In fact, students engaged in MOOCs are not well prepared with necessary skills and abilities required for learning in MOOCs environment. Students faced difficulty they are unfamiliar with online learning design and work in collaborative way in inclusive groups (Watted & Barak, 2024).

Research Methodology

The present research was mixed methods study with concurrent design. Concurrent mixed methods research design focuses on simultaneous collection of qualitative and quantitative data. The study was delimited to the population of two higher educational institutions falling within the Islamabad Capital Territory. Current research employed mixed-method data collection approach which includes quantitative data analysis and qualitative semistructured interviews.155 respondents were selected for survey research through simple random sampling technique while eight participants were selected for semi structured interview through purposive sampling. Data were collected from students who have experience of Massive Open Online Courses in their academic career or those who have some knowledge about the process involved in MOOCs. A structured questionnaire developed by researchers which was used to collect data which consists of three sub-scales based on awareness, perceived benefits and barriers. For quantitative research mean score was calculated while for qualitative section of research thematic analysis was done based on framework of Braun and Clark (2006). Cronbach Alpha reliability of the structured questionnaire was 0.78 whereas subject experts were consulted for reliability and validity of semi structured interview questions.

Results

The present research study is mixed methods having two sections quantitative and qualitative. The quantitative section of the research explores the students' awareness of MOOCs, their benefits and barriers. While qualitative section covers the eight student interviews who were asked about the role of the university in the implementation of MOOCs and how MOOCs can be incorporated into the traditional education system.

Quantitative Section

Table 1

Understanding and Utilization of MOOCs (N=155)

MOOCs	Mean	Remarks
Awareness Of MOOCs Among Students	3.98	Agree

Table 1 revealed that university students agreed that university students are aware of Massive Open Online Courses (Mean = 3.98).

Table 2

Perceived benefits of MOOCs

Perceived benefits	Mean	Remarks
Accessibility	4.17	Agree
Networking Opportunities	4.16	Agree
Flexibility	3.91	Agree
Cost-Effectiveness	4.05	Agree
Diverse Course Offerings	4.09	Agree
Innovative Learning Methods	3.45	Neutral
Skill Development	3.69	Agree

Results of Table 2 showed that most of the students agreed that MOOCs are beneficial in the context of accessibility, networking opportunities, flexibility, cost-effectiveness, diverse course offerings, innovative learning methods, and skill development. However, regarding innovative learning methods, they responded in the neutral category.

Table 3

Barriers related to MOOCs

Barriers	Mean	Remarks
Limited Interaction	4.07	Agree
Personal Initiative Required	4.12	Agree
Technical Problems	3.91	Agree
Assessment Challenges	4.15	Agree
Credibility and Recognition	3. 69	Agree
Quality Variability	3.43	Neutral
Overwhelming Choices	3.79	Agree

Table number 3 showed that students faced barriers such as limited interaction, personal initiative required, technical problems, assessment challenges, credibility and recognition, and overwhelming choices. However, students responded neutrally in the category of quality variability.

Qualitative Section

Eight students who were attending the MOOCs were selected as participants. Braun and Clark (2006) thematic analysis steps were used for generating themes and subthemes. Students were asked to respond to questions regarding role of the university in the implementation of MOOCs and how MOOCs can be incorporated into the traditional education system.

Theme 1: *Access to MOOCs Platforms*

Students' access to various MOOCs platforms will make learning accessible. University may provide information about various MOOCs platforms. Additionally, universities may make partnership with various MOOCs platforms and experienced faculty in the field of online learning to enhance students learning experiences with online platforms.

Subtheme 1.1. Response on Collaboration with MOOCs Platforms

Universities collaboration with MOOCs providers is important to facilitate students to approach

quality courses (Respondent 2).

- University provided financial support to the students who enrolled and completed Coursera courses (Respondent 3)

Subtheme 1.2. Response on Experienced Faculty

- Courses are taught and designed by renowned qualified instructors from prestigious educational institutions (Respondent 1)
- MOOCs provide opportunity to learn from highly qualified experiences faculty (Respondent 5)

Theme 2: *Flexible Learning Approach*

Subtheme 2.1. Response on Self-Paced Learning

- MOOCs provide opportunities to students where they can learn at their own pace (Respondent 4).
- MOOCs are helpful in the way that students can set their own time and watch the video many times to get mastery in the content (Respondent 6)

Subtheme 2.2. Response on Flexible Schedule

- MOOCs are flexibility in terms of time and space so I can accommodate my personal and work responsibilities (Respondent 7).
- During my examinations I take break and after that I continue the course from the same stage (Respondent 3)

Theme 3: Enriched Learning Experiences and Opportunities

MOOCs also provide diverse learning experiences and opportunities. Students can attend wide range of course where they develop their skills, collaborate with international students and have access to various e resources.

Subtheme 3.1. Response on Varity of Courses

- MOOCs offer variety of subjects for specialization and exploration (respondent 4).
- Courses offer by MOOCs platforms are of various levels. You can select the course according to your level of learning (Respondent 2).

Subtheme 3.2. Response on Skill Development

- MOOCs platforms provide practical skills courses that are aligned with job market (Respondent 5).
- I learn data analysis course which help me in my research work (Respondent 8)

Subtheme 3.3. Response on Networking Opportunities

- I get opportunity to make connection with international students and faculty (Respondent 5).

Subtheme 3.4. Response on Access to Resources

- I save the learning resources which I can use even after completion of course (Respondent 1).
- MOOCs provide links of various learning resources (Respondent 7).

Theme 4: Integrating MOOCs into Traditional Learning Environment

Teachers may design courses where they can incorporate the online courses in their traditional course to facilitate students learning.

Subtheme 4.1. Blended Learning

Teachers can add the online courses when planning the blended learning (Respondent 5)

Where I feel difficulty in understanding of some subject, I enroll myself in the similar course which is providing similar learning experience to get understanding of subject (respondent 3)

Subtheme 4.2. Course Assignment

Teachers may give assignments where they accommodate online courses (Respondent 5).

Assignments can be designed where students can apply learned concepts from MOOCs such as practical application of learned knowledge, reflective essays and presentations (Respondent 2)

Discussion and Conclusion

MOOCs have a positive impact on education system especially in a country like Pakistan where students have limited access to economical educational resources. Students want to get advantage from MOOCs, but they suffer as universities are seldom utilizing MOOCs as learning approaches in Pakistan. In developing countries like Pakistan most students cannot access to quality educational platforms. 24 million people with the age range of 17 to 23 can't afford higher educational institutions (Javaid, 2014). Lack of resources is one of the barriers of quality education. MOOCs offer educational opportunities which are easily accessible and economical. Thus, present research was conducted with the intent to explore MOOCs from the perspective of students. A study found that most of the teachers and students believe that MOOC content is easy to understand and helps them understand the complex concepts taught in regular courses. Participants expressed satisfaction with the MOOC, and they hope to continue to learn more courses (Liyanagunawardena, Adams, & Williams, 2013). However, some countries still have low penetration of MOOCs. Integration of MOOCs effectively into various educational institutions is required in countries, especially with high resistance (Pörzse & Kenesei, 2025).

The present study revealed that university students agreed that they adopt and utilize Massive Open Online Courses in their academic journey. Studies have shown that MOOC students learn good learning and like group learning. A study was conducted in a classroom environment where they used flipped classroom for teaching and learning. MOOC videos were used as online mode of learning. The survey results show that overall satisfaction is high in this environment. Students like to synchronize in the group. A balanced approach is important in context of selection of synchronous and asynchronous modes for more effective learning experiences (Li, 2014). Alumu and Padma (2016) did a work on MOOCs and eLearning where they highlighted the importance of MOOCs at the higher education. MOOC seems to have the power to redefine education and achieve a golden era by adhering to strict ethical rules.

Results of the present study showed that most of the students agreed that MOOCs are beneficial in the context of accessibility, networking opportunities, flexibility, cost-effectiveness, diverse course offerings, innovative learning methods, and skill development. However, regarding innovative learning methods, they responded in the neutral category. Results of the present study also showed that students faced barriers such as limited interaction, personal initiative required, technical problems, assessment challenges, credibility and recognition, and overwhelming choices. However, students responded neutrally in the category of quality variability. In present research study, four main themes emerged from the semi structured interviews. These are access to MOOCs platforms, flexible learning approach, enriched learning experiences and opportunities, integrating MOOCs into traditional learning environment.

Pörzse and Kenesei (2025) in a research study revealed that people do not use MOOCs due to psychological barriers, functional barriers and value-associated barriers. The need for interaction and lack of knowledge are other factors that contribute to these obstacles. The MOOCs rejection can reduce individual as well as societal advancements. Dinh and Phuong (2025) research study concluded that students are required to manage their workload in MOOCs to achieve academic success. In addition to this students' engagement, motivation, persistence in learning, conducive learning environments, and self-regulated learning in MOOCs also contribute to the success of students.

Although MOOCs have revolutionized learning atmosphere, however their efficacy is undermined due to low completion rates. Factors behind the dropout rate in MOOCs are context-specific reasons and temporal dependencies. AI practices can help in course designing, improve course completion rates and enhance learning outcomes by providing personalized educational experiences (Alghamdi et al., 2025). Student interaction is also linked to their satisfaction with MOOCs. In addition to this students' usage of MOOCs also depends on the types of interaction among learner, instructor, content and technology. Besides all, students face challenges during the use of MOOCs such as lack of collaboration, technical issues, lack of immediate feedback, limited interaction, low-quality content, and less support from the institution (Pham, 2025).

Potiwan and Chinnavongsa (2025) also highlighted the matters related to curriculum construction and assessment of online lessons in MOOCs. Time management is another element that needs vigilant attention. In addition to video clip, each course is required to present teaching content with other means such as reading materials and learning activities. The development of guidelines by teachers for the preparation of online lessons is essential in MOOCs. Teaching and learning management with classroom management skills and information technology skills should be considered while developing online lessons in MOOCs (Potiwan & Chinnavongsa, 2025).

Recommendations

Universities may arrange training programs for both the students and teachers to effectively utilize the MOOCs for the enhancement of skills.

Encourage direct interaction among students and teachers, offer personalized feedback, employ effective pedagogies, and opt for quality content may overcome barriers to using MOOCs among students.

Online courses should be offered at all levels including schools and colleges.

University teachers may provide awareness of the various online platforms like Future Learn, Coursera and edX to support students in their educational journey.

Universities may encourage students to enroll and complete MOOCs by providing extra credit hours and financial assistance.

Universities may provide financial support to students for attending the MOOCs.

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