

The Impact of MOOC Platform Quality on the Independent Learning Ability of Higher Education Students: A Critical Review of the Literature

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Abstract

The critical review of literature is carried out by analyzing articles, journals, books, theses, and dissertations, as well as information obtained through online databases. Furthermore, this paper provides a critical overview of literature on MOOC platforms and self-directed learning. It gives an overview of the current state of research on MOOC platforms, examining their design, organization, and management aspects. It also investigates the theoretical underpinnings and conceptual understanding of independent learning, as well as the existing challenges and influencing factors.

Keywords: MOOC Platform Quality, Independent Learning Ability, Information System (IS) Success Model, Technology Acceptance Model (TAM), Higher Education Students.

Introduction

The global educational setting experiences a significant shift as digital technologies persistently advance, granting students unparalleled accessibility to information and resources. Educational institutions and learners alike are actively pursuing innovative methods of instruction as conventional practices are challenged. Massive Open Online Courses (MOOCs) have become an essential element of an adaptable and unified educational framework within this particular context (Li et al., 2021). MOOCs provide an extensive range of elements, encompassing video sessions, discussion forums, online lectures, and slide presentations, thereby offering a creative technique that is easily accessible to individuals driven to acquire knowledge (Guo et al., 2019). MOOCs, which first gained recognition with courses such as Connectivism and Connective Knowledge 08 (CCK08), have since transformed into a global phenomenon that attracts in thousands of students. Currently, the global reach of MOOCs is significant, as evidenced by the engagement of more than 1200 renowned

organizations (Kim et al., 2021). In light of the evolving landscape of higher education, it is critical to evaluate the quality of Massive Open Online Course (MOOC) platforms and their potential impact on the development of independent learning skills among students. This review emphasizes on the higher education sector, specifically investigating the aspects of quality on Massive Open Online Course (MOOC) platforms and the potential consequences for students' independent learning. The scope of this study comprises a diverse range of sources, such as academic papers, reports, and scholarly articles, in order to present a comprehensive and up-to-date account of the knowledge in this field.

The emergence of concerns regarding the quality and effectiveness of MOOCs Gu et al (2021) has been prompted by the high dropout rates, which typically range from 7 to 13%, and even lower completion rates. Nevertheless, researchers have discovered that Massive Open Online Courses (MOOCs) have the potential to generate more advantages compared to conventional on-campus courses. Furthermore, arguments continue concerning the degree of active learning that occurs within MOOC environments (Kim et al., 2021). The aforementioned contradiction highlights the necessity for a comprehensive analysis of the quality of MOOCs from the context of independent learning ability. In the context of the ever-changing MOOC environment, the issue of quality acquires the greatest significance (Alqaidoom & Shah, 2019). While there are established factors that influence the effectiveness of online learning, the distinctive characteristics on the quality of Massive Open Online Courses (MOOCs) necessitate a review of critical success factors that impact quality of independent learning ability. The purpose of the literature review is to examine previous studies, with a particular emphasis on empirical evidence and frameworks that specify quality dimensions and elements that are specific to MOOCs.

The study aims to investigate the quality of MOOC platform on the learning ability of higher education students. By investigating previous literature review, their objectives, method used and findings the research seeks to identify factors related to MOOC platform quality and how it impacts individual learning ability of higher education students along with providing suggestions for enhancing the efficacy of Massive Open Online Courses (MOOCs) in fostering independent learning skills among students pursuing higher programs. The research will encompass an evaluation of internal and external factors, including students' motivation, learning objectives, and capacity for independent learning, in addition to MOOC service and resource quality. It also investigates the theoretical underpinnings and conceptual understanding of independent learning on the influencing factors.

In doing so, it contributes to the progression of online education techniques. Therefore, this research intends to fulfil the following objectives

- To identify the quality factors of MOOC platforms relevant to independent learning ability.
- To investigate the theoretical underpinnings and conceptual understanding of independent learning from the context of MOOC platform.

In order to conduct a thorough review, relevant literature is identified and analyzed using a systematic approach. The search methodology involves using academic databases including PubMed, IEEE Xplore, and Google Scholar Kim et al (2021), in conjunction with specific keywords including "quality of MOOC platforms," "independent learning," and "students in higher education." By utilizing Boolean operators, the search results are refined to ensure their comprehensiveness and relevance (Alqaidoom & Shah, 2019). The inclusion criteria for this study consist of peer-reviewed articles that were published within the past five years and

specifically address the convergence of Massive Open Online Course (MOOC) platforms and independent learning in the context of higher education. Furthermore, the source in inquiry has been selected on the basis of its widely recognized credibility. The selected databases are widely recognized for their sharing of reputable scholarly journals, which ensures the credibility and accuracy of the sources incorporated in this evaluation. Furthermore, a citation analysis is conducted in order to assess the scholarly community's perception of the impact and influence of particular articles.

This study is significant as it addresses the higher education sector in the midst of the growing number of MOOCs. Through an examination of the relationship between the quality of Massive Open Online Course (MOOC) platforms and the independent learning capabilities of students, this study provides a valuable contribution to the continuous endeavors to enhance practices in online education. In addition, policymakers, educators, and MOOC providers can be updated of the findings regarding techniques to maximize the impact of MOOCs on the independent learning of students.

1 Materials and Method

The literature review draws on a diverse selection of 29 scholarly papers, including research by Al-Rahmi et al (2019); Albelbisi et al (2021); Alturki & Aldraiweesh (2023), and others. These papers cover a wide range of perspectives and methodologies, providing a thorough examination of key aspects of MOOC platform quality.

Table 1
Studies used to conduct review analysis

No	Ref.	Criteria	Concept(s)	Method	Results
1	Al-Rahmi et al. (2019)	Integration of innovation diffusion theory with TAM	Attitude	Survey questionnaire	Supported students' attitude towards using MOOC systems
2	Alamri et al. (2020)	Personalized learning in online higher education	Independent Learning	Literature review, case study, surveys	Identified learner self-determination and intrinsic motivation as outcomes of personalized learning
3	Albelbisi et al. (2021)	Impact of quality antecedents on satisfaction	Service Quality, Independent Learning	Survey questionnaire, structural equation modeling	Found a positive impact of quality antecedents on satisfaction

					towards MOOC
4	AlQaidoom & Shah (2019)	Educators' attitudes towards MOOC platforms	Attitude	Survey questionnaire	Explored digital literacy and educators' attitudes towards MOOC platforms in GCC countries
5	Alturki & Aldraiweesh (2023)	Actual use of MOOCs in higher education	Independent Learning, Attitude	Survey questionnaire	Integrated TTF and self-determination theories, found a positive relationship with actual use of MOOCs
6	Cheng, Yuen & Chiu (2022)	MOOC research in mainland China	Independent Learning	Systematic review	Provided insights into MOOC research trends and themes in mainland China
7	Chiu (2021)	Student engagement in K-12 online learning	Teaching Resources, Independent Learning	Qualitative approach	Explored student engagement during COVID-19 pandemic from a self-determination theory perspective
8	Granic & Marangunic (2019)	TAM in educational context	Technology Acceptance Model (TAM)	Systematic literature review	Reviewed applications of TAM in educational settings, identified factors

					affecting technology acceptance
9	Gu, Xu & Sun (2021)	MOOC quality and continuance intention	System Quality, Service Quality	Survey questionnaire, structural equation modeling	Found a positive relationship between MOOC quality and continuance intention
10	Joo, So & Kim (2018)	Self-determination, technology acceptance, etc.	System Quality	Survey questionnaire	Investigated relationships among self-determination, technology acceptance, satisfaction, and continuance intention
11	Kamal et al. (2020)	Acceptance of telemedicine services	Technology Acceptance Model (TAM)	Survey questionnaire, structural equation modeling	Explored acceptance of telemedicine services using TAM, provided insights into user behavior
12	Kemp et al. (2019)	Factors affecting attitudes towards edtech	Technology Acceptance Model (TAM)	Literature review	Developed a taxonomy of factors affecting attitudes towards educational technologies
13	Khan et al. (2021)	MOOCs retention and IT mediation	Independent Learning	Survey questionnaire	Investigated factors influencing MOOCs retention, identified IT mediation as a critical factor

14	Kim et al. (2021)	Course design factors, learner commitment, etc.	Teaching Resources	Structural equation modeling	Explored relationships between course design factors, learner commitment, self-directed learning, and intentions for further learning in MOOCs
15	Li et al. (2021)	Online learners' continuance intentions	Information System Success Model	Survey questionnaire, structural equation modeling	Investigated factors influencing online learners' continuance intentions in China
16	Lijuan & Xiaofeng (2018)	MOOC characteristics and platform construction	Independent Learning	Literature review	Explored characteristics of MOOCs and their platform construction
17	Namaziandost et al. (2019)	Cooperative learning and oral proficiency	Service Quality	Experimental study, surveys	Investigated the effect of cooperative learning on oral proficiency and English learning motivation
18	Reeve & Shin (2020)	Teacher support for students' agentic engagement	Teachers' Role	Literature review	Explored how teachers can support students' agentic engagement
19	Shanshan & Wenfei (2022)	Quality elements and MOOCs continuance intention	Teaching Resources	Survey questionnaire	Explored impact of quality elements on MOOCs

					continuance intention
20	Shurygin et al. (2021)	Learning management systems in distance education	System Quality	Review article	Reviewed the use of learning management systems in academic and corporate distance education
21	Song (2018)	MOOC-based College English Learning Environment	Teachers' Role	Conceptual framework	Developed a framework based on Biggs's 3P Model to understand elements in MOOC-based college English learning environment
22	Su, Guo & Shao (2021)	Quality evaluation index system of MOOC platforms	System Quality	Conceptual framework	Developed a quality evaluation index system of MOOC platforms from the user perspective
23	Sun et al. (2019)	Students' engagement in MOOCs	System Quality, Service Quality	Survey questionnaire	Explored students' engagement in MOOCs using self-determination theory and theory of relationship quality
24	Wang & Zhu (2019)	MOOC-based flipped learning in higher education	Teachers' Role	Survey questionnaire	Investigated students' participation, experience, and learning performance

					in MOOC-based flipped learning
25	Wei et al. (2019)	Machine learning in materials science	Teaching Resources	Review article	Reviewed the use of machine learning in materials science
26	Wu & Wang (2022)	Popular courses on MOOC platforms	Quality Dimensions of MOOC platform	Configurational analysis	Explored formation mechanism of popular courses on MOOC platforms
27	Yang et al. (2017)	Factors influencing continuance intention in MOOCs	Information System Success Model	Survey questionnaire, structural equation modeling	Investigated quality factors influencing students' continuance intention towards participation in MOOCs
28	Yasmin, Naseem & Masso (2019)	Teacher-directed to self-directed learning	Teachers' Role	Survey questionnaire	Explored barriers in Pakistan to transition from teacher-directed to self-directed learning
29	Yousef & Sumner (2021)	Reflections on the last decade of MOOC research	Service Quality	Literature review	Reviewed MOOC research trends and developments over the last decade

The selected studies will be systematically analyzed to extract relevant information on various aspects of MOOC platform quality, such as system quality, teaching resources, service quality, teacher roles, independent learning, attitude, and technology acceptance. Each paper will be thoroughly examined to identify key findings, theoretical frameworks, and empirical evidence relevant to these dimensions. The extracted data will then be synthesized to provide a

comprehensive overview of the factors that influence the quality of MOOC platforms. In addition, studies will be compared and their methodologies critically evaluated to ensure the reliability and validity of the review findings.

Literature Review

Overview of MOOC Platform

The landscape of education has undergone a profound transformation with the advent of Massive Open Online Courses (MOOCs). These virtual learning environments have become essential tools for expanding educational opportunities and giving a wide range of students never before possible options for independent study. With MOOCs becoming more and more popular, it is critical to comprehend the factors that affect how well they support independent learning. Open access, enormous scalability, and a wide variety of course offerings are what make MOOCs so popular in today's educational discourse (Rulinawati et al., 2023). These platforms present concerns about the caliber of the education they provide, given their capacity to democratize education. In an attempt to answer these questions, scholars have focused on a number of MOOC platform aspects, attempting to decipher the complex interactions that exist between system elements, instructional materials, service standards, teacher responsibilities, and student attitudes.

Although there are many educational opportunities available due to the widespread use of MOOCs, it can be difficult to determine how these platforms affect students' capacity for independent learning. The changing roles of system quality, instructional resources, service quality, teacher involvement, and learner attitudes in forming the MOOC-based education landscape highlight the necessity of navigating this difficult terrain. The goal of this review of the literature is to offer a thorough investigation of the body of knowledge regarding MOOC platforms and their effects on self-directed learning. Through the synthesis of research results using previous researches, theoretical frameworks like the Technology Acceptance Model (TAM) and the IS Success Model, this review aims to provide insights into the complex aspects of MOOCs and clarify their implications for higher students' capacity for independent learning.

Quality Dimensions of MOOC platform

The literature significantly demonstrates the significant impact that MOOC platforms have on the educational sector in the context of Quality Dimensions. The variety of quality assessment is emphasized by Su et al (2021), who identified content relevance, user experience, and pedagogical efficacy as components. According to Gu et al (2021), it is crucial to use quality assurance techniques that are compatible with technological innovation. A range of quality models, including those proposed by the Commonwealth Educational Media Centre for Asia and OpenupEd, provide all-encompassing frameworks for assessing the quality of Massive Open Online Course (MOOC) platforms (Wu & Wang, 2022; Su et al., 2021). As key components of MOOC quality standards, these models emphasize course overview, learning materials, learner interaction, and learner support (Yuniwati, Yustita & Hardiyanti, 2020). Furthermore, assessments of MOOC quality integrate technical components, which ensure the platform's dependability and efficacy (Sun et al., 2019; Chen et al., 2022).

Based on the previous literature reviews such as Sun et al (2019); Su et al (2021); Al-Rahmi et al (2019); Albelbisi et al (2021) and others, this research endeavor will discuss the influence of four pivotal elements of quality—System Quality, Teaching Resources, Service Quality, and

Teacher Role—on the independent learning capabilities of higher education students via Massive Open Online Courses (MOOC) platforms.

System Quality

In the context of MOOC platforms, system quality includes overall functionality, usability, and technical features. Research demonstrates the influence of a well-designed platform on student motivation and engagement, as demonstrated by Su et al. (2021). Easy navigation, quick loading times, and efficient delivery of content are some of the elements that enhance user satisfaction and encourage engagement in the course.

System quality in the context of MOOC platforms includes technical dependability, functionality, and user-friendliness, which are essential to facilitating effective online learning experiences (Gu et al., 2021; Chen et al., 2022). Gu et al (2021) investigated the influence of information quality, system quality, and service quality on students' intention to continue using MOOC platforms, finding that system quality had a significant impact on user satisfaction and intention to continue using the platform. Sun et al (2019) discovered that a well-designed platform with easy navigation and fast loading times improved student motivation and engagement with course materials. Furthermore, Shurygin et al (2021) emphasized the significance of a user-friendly platform design in encouraging deeper interaction with course materials among higher students. Joo et al (2018) investigated the impact of system dependability on student satisfaction, finding that technical issues or disruptions to platform functionality hampered students' ability to interact with course materials and engage in self-directed learning. Investigating the specific system quality factors that have a significant impact on the independent learning capacities of higher students in China will provide useful insights for improving user learning outcomes and experiences on MOOC platforms.

Teaching Resources

MOOC platforms provide a wide range of content components for teaching, such as reading materials, tests, assignments, video lectures, and additional resources. The usefulness and caliber of these materials are crucial in determining how motivated and content students are. Comprehensive and well-structured teaching resources increase students' propensity for exploratory learning and active engagement, according to (Baafi, 2020; Elfeky et al., 2020). Teaching resources on MOOC platforms have a significant impact on higher students' learning experiences and self-directed learning skills. Comprehensive and well-structured resources promote exploratory learning and active participation in course materials (Kim et al., 2021). Different instructional tools, such as multimedia and interactive activities, improve comprehension and retention (Chiu, 2021). Alignment with course objectives and real-world relevance increases active student engagement (Wei et al., 2019). Evaluating the quality of teaching resources entails taking into account interactivity, comprehensiveness, and applicability, all of which have a direct impact on student engagement and academic success. Conceptual models that combine teaching-based quality components with platform-related factors provide insights into user experience on MOOC platforms, emphasizing the importance of teaching methods, course resources, workload, and instructor empathy (Shanshan & Wenfei, 2022).

Service Quality

On MOOC platforms, "service quality" refers to the total support and experience given to students during their academic journey. Key factors influencing higher students' motivation

and level of engagement in independent learning efforts are responsive communication, technical support, and user satisfaction. The impact of service quality on student engagement and satisfaction is highlighted by (Albelbisi et al., 2021; Aithal, 2023). This includes the platform's responsiveness to student inquiries and the availability of timely assistance. Service quality on MOOC platforms plays an important role in enhancing higher students' learning experiences and developing their self-directed learning abilities (Sun et al., 2019). It includes aspects like responsiveness, technical support, communication, and overall user satisfaction (Albelbisi et al., 2021). Albelbisi et al (2021) conducted research on service quality, as well as system and information quality, to determine students' self-regulated learning skills, emphasizing their importance in facilitating effective learning environments. Prompt responses to inquiries, access to learning resources, and satisfaction with support services all have an impact on students' attitudes and self-regulated learning in the MOOC environment (Albelbisi et al., 2021). Furthermore, transparent policies and clear communication boost students' confidence and sense of control over their learning experience (Yousef & Sumner, 2021; Namaziandost, 2019). Personalized support mechanisms, such as study groups and peer mentoring, address a wide range of learning needs while also improving students' independent learning experiences (Collins et al., 2019). These findings highlight the importance of service quality in increasing student engagement and satisfaction on MOOC platforms.

Teachers' Role

Teachers' responsibilities are changing to prioritize interactive, captivating, and adaptable content delivery as MOOC platforms reimagine traditional teaching techniques. Research by Pedler et al (2020); Fletcher & Chróinín (2022), highlights the critical roles that educators play in developing a strong pedagogical environment that encourages higher levels of motivation and engagement from their students. It has been discovered that interactive learning environments have a positive impact on higher students' motivation for independent study. The teacher role dimension in MOOC platforms includes several aspects, such as effective communication, responsiveness to student inquiries, and the ability to create an interactive and engaging learning environment (Wang & Zhu, 2019). Song's (2018) conceptual model depicts a dynamic framework for successful college English learning in MOOCs, emphasizing the mutual influence of student factors, teaching context, learning activities, and achievements. Teachers' evolving roles prioritize interactive content delivery and active student participation (Song, 2018). Despite MOOCs' self-paced nature, instructors play an important role in guiding students' educational journeys (Wang & Zhu, 2019). According to research, active teacher involvement increases student engagement and motivation for self-directed learning (Yasmin et al., 2019), and instructor feedback contributes to improved understanding and motivation (Alamri et al., 2020). However, excessive instructor control can undermine students' autonomy (Reeve & Shin, 2020). Striking a balance between guidance and autonomy is critical for encouraging self-directed learning in MOOC environments.

Independent Learning

Two important factors that determine the quality of an online course are learner engagement and the role of the instructor. According to Lumanta & Garcia (2020); Khan et al (2021), The International Council for Open and Distance Education (ICDE) has developed extensive quality standards that include support from instructors and students, instructional strategies, course design, and institutional coordination.

The quality of Massive Open Online Courses (MOOCs) has a significant impact on the extent to which learners engage in independent learning. Learner engagement and satisfaction are strongly related to the perceived usefulness and credibility of the course materials, as well as the overall learning experience (Lijuan & Xiaofeng, 2018). Quality criteria developed by organizations such as the International Council for Open and Distance Education (ICDE) include instructional methods, course structure, and institutional support (Li, 2021). Perceptions of MOOC credibility influence learners' trust in MOOC providers as well as their intention to participate Khan et al (2021); Alturki & Aldraiweesh (2023), while course quality has a direct impact on satisfaction and completion rates. Furthermore, learners' intentions to continue engaging with MOOCs are influenced by their learning motivational beliefs (Chiu, 2021). Research on self-regulated learning (SRL) and mixed-method methodologies sheds light on the relationship between quality perceptions and learners' ability to learn autonomously (Albelbisi et al., 2021; Cheng et al., 2022). These findings highlight the importance of MOOC quality in promoting independent learning experiences.

Attitude

Attitude play a significant role in shaping people's perceptions and behaviors, especially in the context of Massive Open Online Courses (MOOCs) (Al-Rahmi et al., 2019). Students' attitudes toward MOOC platforms have a significant impact on their motivation, engagement, and success in self-directed learning (Alqaidoom & Shah, 2019). Positive attitudes toward MOOCs, as measured by perceptions of their flexibility and value as learning tools, are linked to increased intrinsic motivation for independent learning (Pan, 2020). Furthermore, a positive attitude is associated with increased perseverance and dedication among MOOC participants (Al-Rahmi et al., 2018). Understanding the factors that influence students' attitudes toward MOOCs is critical for increasing the quality of self-directed learning experiences (Kim et al., 2021). According to Alturki and Aldraiweesh (2023), self-determination theory influences attitudes toward MOOC use. Investigating these attitudes and their impact on higher vocational students' independent learning abilities is critical to improving the quality of online education platforms. Learners' attitudes toward utilizing MOOC platforms have a significant mediating effect on their motivation, engagement, and overall learning process. Past research by Alturki & Aldraiweesh (2023), highlights the beneficial effects of attitudes that are characterized by MOOCs' perceived value, flexibility, and accessibility on learners' motivation for independent learning.

Theoretical Framework

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), created by Fred Davis in 1989, is a well-known framework in information systems and technology management (Granic & Marangunic, 2019). TAM focuses on understanding users' adoption of technology, including its use in educational settings such as online education (Granic & Marangunic, 2019). TAM depend heavily on perceived ease of use (PEOU) and perceived usefulness (PU), which influence users' behavioral intention to use a system (Kemp et al., 2019). TAM has been used extensively to analyze user behavior and technology acceptance in a variety of domains, including online learning platforms (Kamal et al., 2020). It provides information about users' perceptions of technology usability and effectiveness. TAM is a fundamental framework for assessing students' attitudes and behavioral intentions toward MOOC platforms, shedding light on

factors that influence independent learning behavior and identifying areas for improvement (Kamal et al., 2020).

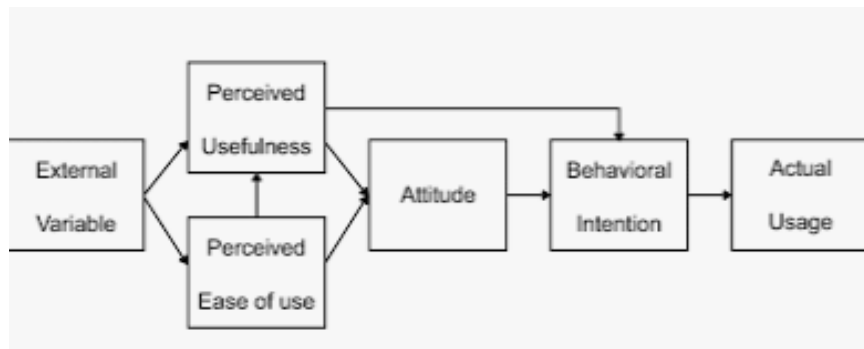


Figure 1: Technology Acceptance Model (TAM) proposed by (Davis, 1989)

Information System Success Model

According to Yang et al (2017), the Information Systems (IS) Success Model, which was created in 1992 by William DeLone and Ephraim McLean, is a foundational framework in systems research. This model identifies six critical dimensions of IS success: information quality, system quality, service quality, system use/usage intentions, user satisfaction, and net system benefits (Yang et al., 2017). This model, which is widely cited in scholarly literature, explains the relationships between these dimensions and their impact on user satisfaction and system continuation intentions (Gu et al., 2021). The IS Success Model, which has been used in studies investigating MOOC platform quality and user continuance intention Li et al (2021); Albelbisi et al (2021); Gu et al (2021), emphasizes the importance of system quality, information quality, and service quality in fostering user satisfaction and facilitating independent learning experiences on MOOC platforms.

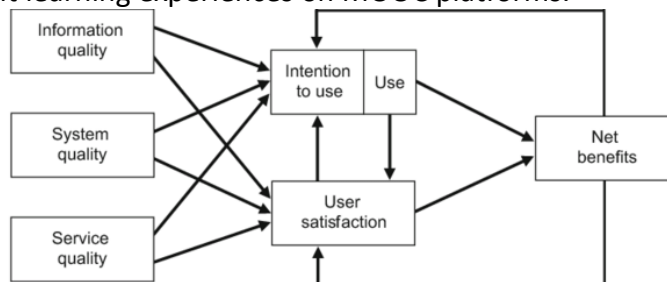


Figure 2: IS Success Model proposed by (DeLone & McLean, 1992)

Conclusion

In conclusion, investigating various dimensions within MOOC platforms yields significant findings for improving the quality of online learning experiences. System quality, teaching resources, service quality, teacher roles, independent learning, attitude, and technology acceptance all play important roles in student engagement and satisfaction. Future research could delve deeper into the nuanced interactions between these dimensions, possibly using longitudinal studies or cross-cultural comparisons. Furthermore, looking into the impact of emerging technologies like artificial intelligence or virtual reality on MOOC platform quality could provide useful insights. Furthermore, investigating the efficacy of interventions aimed at improving specific aspects of platform quality, such as personalized learning pathways or adaptive assessments, could help us better understand and contribute to the ongoing

evolution of online education. On one hand, it will identify the quality factors of MOOC platforms relevant to independent learning ability, on the other hand, it will enrich theoretical research of independent learning ability on the MOOC platform.

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