

Usage of Massive Open Online Courses (MOOCs) and Learning Effectiveness among Students in the Introduction to Service Management Course: A Concept Paper

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ABSTRACT

Massive Open Online Courses (MOOCs) are now an integral aspect of digital transformation in higher education as universities continue to support blended, flexible and technology enhanced learning in the post COVID-19 environment. MOOCs provide wide access to course content, interactive assessments and scalable course delivery. The educational impact of MOOCs is yet to be empirically investigated. Recent research has identified factors that influence MOOC outcomes such as learner engagement, motivation, platform quality, self-regulated learning, teaching presence, social interaction, and perceived value. The value of MOOCs is particularly relevant to business and management education where students are able to translate conceptual knowledge into practical skills in the areas of service quality, customer experience, service recovery and operational workflows. Although MOOCs have great potential, few studies have investigated the association between MOOC use and learning effectiveness in the Introduction to Service Management course. This concept paper proposes a quantitative study to measure the effect of MOOC use on the learning effectiveness of students enrolled in this course. Drawing on the Community of Inquiry framework and the recent literature on online learning, the paper defines the usage of MOOCs in terms of frequency of use, content quality, accessibility, interactivity, self-paced learning and engagement. Learning effectiveness is conceptualised in terms of perceived knowledge acquisition, conceptual understanding, application ability, learning satisfaction, academic confidence and performance improvement. The proposed study will contribute theoretically to scholarship on digital learning and practically to the refinement of curriculum design, MOOC development, and blended learning implementation.

Keywords: Massive Open Online Courses (MOOC), Learning Effectiveness, Service Management, Student Engagement, Online Learning

INTRODUCTION

The digital transformation of higher education is changing the way universities design, deliver and assess teaching and learning. Online learning platforms, learning management systems, digital assessment tools, and open online courses are no longer optional instructional supplements but strategic mechanisms to increase access, enhance flexibility, and support learner-centred education. Recent evidence from higher education suggests that online learning can impact student engagement, participation, and academic performance when digital tools are used in alignment with pedagogical design, rather than simply as repositories of teaching materials (Akpen et al., 2024; Gökoğlu et al., 2024). This transition is of particular importance in business and management education where students are expected to remember concepts, understand service-related problems, assess customer experience and apply service management principles to real-life organisational contexts.

The most visible forms of technology-enhanced learning are the Massive Open Online Courses (MOOCs). MOOCs are online courses that offer structured learning materials to a large number of learners, such as videos, readings, quizzes, discussion forums, assignments and other digital learning activities. MOOCs have been widely used in higher education to support open learning, blended learning, flipped classrooms, lifelong learning, micro-

credentialing, and supplemental learning. MOOCs embedded in formal higher education courses with a clear pedagogical intent can promote student engagement and attendance (Azevedo et al., 2024). Similarly, Huang & Qi (2025) claimed that MOOC effectiveness is affected by factors such as learning behaviour, learning motivation, perceived value, learning environment, previous experience, and self-regulation. These findings indicate that MOOCs may contribute to learning efficacy, but the students' actual usage of the platform and the course design are important for its success.

In the post-pandemic higher education environment, there is a culture of increased expectations for flexible and blended learning. Many universities switched to emergency remote teaching during pandemic, but this current phase requires more intentional and quality-oriented design of digital learning. Akpen et al. (2024) conducted a systematic review and found that online learning has a measurable effect on student performance and engagement. However, the effect depends on instructional strategy, technological preparedness, availability of support, and learner actions. This implies that MOOC use should not be judged solely based on the availability of platforms. Rather, the emphasis should be on meaningful engagement with videos, quizzes, discussions, readings, feedback, and reflective learning activities that can help students achieve the course learning outcomes.

In Malaysia, MOOCs have been promoted as part of the higher education digital learning agenda, and Malaysian universities have developed MOOC-based courses to support open and blended learning. The Malaysia MOOCs platform on OpenLearning presents MOOCs from Malaysian higher education institutions and reflects the continuing national commitment to digital learning access and flexible learning delivery (OpenLearning, 2026). Nevertheless, Malaysian MOOC implementation still faces challenges related to student readiness, platform usability, engagement, self-regulated learning, and the alignment between MOOC activities and formal course assessment. Recent Malaysian discussions on MOOC implementation have emphasized that the effectiveness of MOOCs may be limited when students lack self-regulated learning skills or when MOOC activities are not pedagogically integrated with classroom learning (Zhang et al., 2024). Therefore, examining MOOC usage in specific courses is necessary to understand whether MOOCs truly enhance student learning.

The course Introduction to Service Management provides a relevant context for examining MOOC usage and learning effectiveness. Service management is a foundational subject in business and management programmes that introduces students to service characteristics, service quality, customer satisfaction, service encounter, service blueprinting, service recovery, service operations, customer experience, and the role of employees and technology in service delivery. These topics require students to connect abstract concepts with real-life service situations. For example, understanding service quality requires students to interpret how reliability, responsiveness, assurance, empathy, and tangibles affect customer evaluation. Understanding service recovery requires students to analyse how organizations respond to service failure. Therefore, a MOOC for Introduction to Service Management should provide videos, examples, cases, quizzes, reflective activities, and discussions that help students to build conceptual understanding and application ability.

Despite the potential value of MOOCs, concerns still arise about the learning effectiveness. It was found that the performance of MOOC may not be consistent with traditional courses, especially the pass rate, and the results of MOOCs are influenced by various factors of learners and the environment. (Huang & Qi, 2025) Engagement and dropout remain hot topics in MOOC research, according to Molina (2024). These results are important because they suggest that the presence of a MOOC does not ensure effective learning. Students can enrol in or access a MOOC without doing the activities, participating in discussions, revisiting the materials, or applying what they have learned. Low involvement in teaching service management may limit students' ability to relate MOOC content with practices in the service industry.

Earlier studies examined MOOC acceptance, students' satisfaction, online learning engagement, and technology acceptance in different educational contexts. However, fewer studies have focused on the use of discipline-specific MOOCs in service management education (Yunus et al., 2024). Also, many studies focus on overall e-learning outcomes, not on specific indicators of learning effectiveness particularly relevant in business education such as understanding of concepts, ability to apply them, confidence in explaining concepts and perceived readiness to analyse service cases. This gap justifies the need for a study to explore how MOOC usage contributes to learning effectiveness among students taking Introduction to Service Management.

Therefore, this concept paper presents a study on utilisation of MOOCs and learning effectiveness of students enrolled in Introduction to Service Management. The aim of the proposed study is to investigate the impact of MOOC usage on perceived learning effectiveness, and to identify the MOOC usage dimensions that may contribute the most to learning effectiveness. The paper is divided into four main sections. The first part of the section describes the background, problem context, research gap and proposed focus of the study. The second section surveys recent literature on MOOCs, online learning effectiveness, learner engagement, self-regulated learning, and service management education. The third section presents the proposed methodology which includes research design, population, sampling, instrument development, data collection, data analysis and ethical considerations. The last section concludes the paper with the expected theoretical and practical contributions.

LITERATURE REVIEW

MOOCs in Higher Education

MOOCs have evolved from open-access online courses to structured digital learning ecosystems that support formal and informal learning. MOOCs are often used in higher education to deliver lecture videos, notes, quizzes, discussion activities, peer interaction, automated feedback, and flexible access to course materials. Azevedo et al. (2024) stated that MOOCs improve student engagement when students are convinced that the platform is useful for their formal learning experience. This suggests that the pedagogical value of MOOCs is related to the integration of MOOCs into the course structure, the alignment of activities with learning outcomes, and the ways in which instructors encourage students to use MOOC resources in a meaningful way.

Recent literature has shown the multidimensionality of MOOCs' effectiveness. Huang & Qi (2025) found that learning behaviour, learning motivation, perceived value, learning environment, prior experience and self-regulation influence MOOC performance in higher education. These factors are particularly crucial because MOOCs usually demand more learner autonomy than traditional classroom learning. Students are expected to plan when they will use materials, monitor their progress, complete activities independently and seek clarification when needed. Students may become passive users, only logging into videos or quizzes near assessment deadlines without sufficient self-regulation.

Quality of platform and learning design also play a role in MOOC implementation. According to Huimin et al. (2024), the quality of MOOC platforms might affect students' independent learning ability because high-quality platforms offer accessible content, easy navigation, reliable technology, and valuable learning activities. The quality of the platform is important because students may disengage if they find it difficult to access materials, instructions are unclear, feedback is poor or interaction is limited. Moreover, contemporary MOOCs increasingly embed interactive elements, analytics, and adaptive features to enhance the learning engagement and outcomes (Yu et al., 2023). These developments indicate that MOOCs need to be seen not only as content delivery mechanisms, but also as learning environments that shape students' behaviour.

In the Malaysian higher education context, MOOCs are relevant to the national objective of increasing access to flexible learning. The Malaysia MOOCs platform provides a centralised digital learning environment allowing higher education institutions to offer structured courses to learners (OpenLearning, 2026). But availability at the national level does not necessarily equate to effectiveness at the course level. There is a need for course-level investigations because students' MOOC experience may vary by discipline, instructor, assessment design, and learner attributes. Introduction to Service Management The activities in the MOOC should support both conceptual learning and practical interpretation of issues in the service industry.

Learning Effectiveness in Online and MOOC-Based Learning

Learning effectiveness is the degree to which a learning experience helps students to realise the intended learning outcomes. In the study of online learning, the effectiveness of learning is often measured by perceived learning, academic achievement, conceptual understanding, engagement, satisfaction, knowledge retention and applying knowledge. Akpen et al., (2024) stated that online learning can impact engagement and performance, but it depends on course design, instructor support, technological readiness, and student participation. This means that

the effectiveness of learning is not just about access to digital resources but the interaction between learners, content, technology, instructors and assessment practices.

The Community of Inquiry perspective has been widely adopted to account for the learning effectiveness in online environments. The model highlights the significance of teaching presence, social presence, and cognitive presence as essential components of meaningful online learning. The teaching, social, and cognitive presences significantly affected students' satisfaction in online courses (Nasir & Ngah, 2022). Likewise, Zhang et al. (2023) revealed how Community of Inquiry presences could impact college students' online learning experience. In an Introduction to Service Management course with support via MOOC teaching presence can be illustrated through unambiguous instructions, structured weekly learning paths, lecturer guidance and feedback. Social presence can be achieved through forums, peer discussions and collaborative activities. Cognitive presence may be reflected in students' understanding and application of service management concepts.

The learning effectiveness in MOOCs is also linked to students' engagement in learning activities. Gökoğlu et al. (2024) discovered a significant relationship between student engagement and the Community of Inquiry and transactional distance in online learning settings. This finding is important as it is common that MOOCs are characterised by physical and psychological distance between learner and teacher. Poorly designed MOOC courses can result in students feeling alienated or disconnected from the learning process. However, when MOOC activities are based on interaction, reflection, and feedback, students may experience higher cognitive engagement and better learning effectiveness.

In service management education, learning effectiveness should be more than students' ability to recall definitions. Students will need to be able to explain the concepts of service, interpret problems related to the customer, analyse service encounters and apply frameworks of service management to realistic situations. The study proposes a conceptualisation of learning effectiveness with six dimensions: knowledge acquisition, conceptual understanding, application ability, learning satisfaction, academic confidence and perceived improvement of performance. Such dimensions are consistent with the latest studies on online learning that have treated learning effectiveness as a union of cognitive, affective, and performance-related outcomes (Akpen et al., 2024; Huang & Qi, 2025; Xue et al., 2023).

Student Engagement and MOOC Usage

Student engagement is an important mechanism through which MOOC use may influence learning effectiveness. Engagement typically consists of behavioural, cognitive, and emotional engagement. Behavioural engagement is defined as the participation in learning activities, including watching videos, answering quizzes, accessing materials, and participating in discussions. Cognitive engagement is mental effort, critical thinking and processing of learning content. Affective engagement is the level of interest, enjoyment, motivation, and sense of belonging. Engagement is of particular importance in MOOCs as students have more freedom to decide whether, when and how much they will engage in learning activities (Badali et al., 2022; Gökoğlu et al., 2024).

Azevedo et al. (2024) showed that MOOCs can support engagement and attendance when implemented within a structured higher education setting. This implies that MOOC engagement may be stronger when students understand the relevance of MOOC activities to classroom learning and assessment. In an Introduction to Service Management course, engagement can be strengthened by connecting MOOC videos and quizzes to weekly topics, tutorials, case discussions, and assessments. For instance, a MOOC topic on service quality can be followed by a classroom discussion on service quality problems in Malaysian airlines, restaurants, hospitals, or online retail services.

Engagement is also important because passive use of MOOC content may not produce meaningful learning. Huang & Qi (2025) found that learning behavior significantly influenced MOOC performance. This means that the frequency and quality of student interaction with MOOC activities could be an indicator of the effectiveness of learning. Students who regularly access materials, complete quizzes, reflect on feedback, and participate in discussions are more likely to develop stronger understanding than students who only superficially access materials. Thus, in this concept paper student engagement is being viewed as a dimension of MOOC usage and a possible explanatory mechanism between MOOC usage and learning effectiveness.

Nevertheless, engagement in MOOCs remains challenging. Molina (2024) identified engagement and academic dropout as important issues in MOOC research. In open online learning environments, students may discontinue participation due to low motivation, competing commitments, poor course design, lack of feedback, or low perceived value. In formal university courses, dropout may not occur in the same way because students are enrolled in a credit-bearing course, but disengagement may still occur when students do not interact meaningfully with MOOC materials. Therefore, lecturers must design MOOC usage as an integrated learning experience rather than an optional repository.

Self-Regulated Learning and MOOC Effectiveness

Self-regulated learning is a critical factor in MOOC effectiveness because MOOCs require students to manage their own learning process. Self-regulated learners set goals, plan learning time, monitor progress, evaluate performance, and adjust strategies when they experience difficulty. Onah et al. (2022) highlighted that self-regulated learning skills are significant in MOOC environments as learners are responsible for navigating materials and completing activities. Furthermore, Dinh & Yen (2024) reported that self-regulated learning interventions are able to help MOOC learners with their learning processes and performance. The results suggest that students' capacity for self-regulated learning may mediate the relationship between MOOC use and meaningful learning outcomes.

Self-regulated learning is particularly relevant in Introduction to Service Management because students need to connect theory to examples. For example, after watching a MOOC video on service failure and service recovery, students may be required to think of a service failure case, identify the type of failure, evaluate the company's recovery strategy and offer suggestions to improve it. Students who are more proficient in self-regulated learning are more likely to review content, search for additional examples, and review challenging concepts before assessment. Students with poor self-regulation might just do the minimum without deeper understanding.

Recent literature shows that the characteristics and learning process of learners impact the outcomes of online learning. Abdullah et al. (2024) discovered that online self-regulation influences students' engagement, satisfaction, and academic performance in online learning settings. This supports the argument that MOOC effectiveness depends not only on the features of the platform but also on how students regulate their own learning. Hence, the proposed study recognises self-paced learning and learner engagement as significant elements of MOOC usage. Although self-regulated learning is not included in the initial framework as a separate independent variable, it is embedded in the conceptualisation of MOOC usage and can be considered as a moderating variable in the future.

MOOC Usage in Introduction to Service Management

Introduction to Service Management is a good course for MOOC integration because service management topics can be taught in multiple digital formats. Videos are good for explaining theoretical concepts, case clips for illustrating service encounters, quizzes for reinforcing terminology, and discussion forums for sharing customer experiences. Examples are also useful in service management as students can better understand concepts when they can relate them to hotels, restaurants, hospitals, airlines, banks, government services, e-commerce and university services. Thus, MOOC-based learning has the potential to support both conceptual and contextual understanding.

Blended MOOC design is capable of meeting the learning needs of service management. Pham (2024) found that blended MOOCs supported student interaction and satisfaction by means of student interaction with content, instructors, peers, and technology. This is important because the Introduction to Service Management should not be taught only transmitting content. Students should be given opportunities to interpret service situations, compare experiences of service quality and discuss strategies for improving service. A blended MOOC model can help students to learn the basic knowledge before the class and use the face-to-face or synchronous time to apply, discuss and prepare for the assessment.

However, the effectiveness of MOOC usage in Introduction to Service Management is dependent upon alignment. The course design should integrate MOOC videos, quizzes, learning outcomes, classroom activities

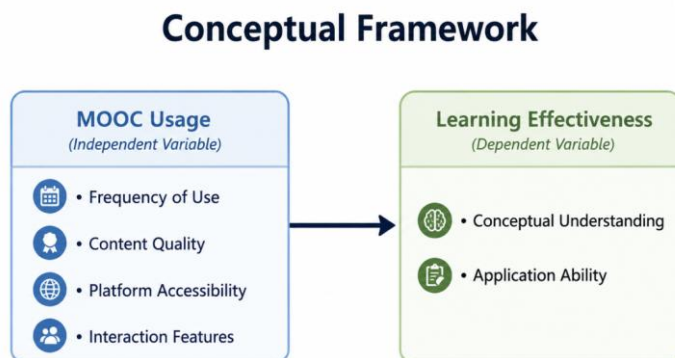
and assessment tasks. If the MOOC content does not match the syllabus of the course, students may perceive it as an extra burden rather than as a useful learning tool. Huang and Qi (2025) found that perceived value is associated with MOOC performance, suggesting that students are more likely to participate in MOOC activities if they perceive them as useful. Therefore, the lecturers should explain the purpose of the MOOC activities and explain the relation of the activities to the course learning outcomes.

The proposed study is limited to students enrolled in Introduction to Service Management since this course offers a clear applied business education context. The research examines the role of MOOC utilisation in the learning effectiveness of a particular subject rather than general studies on MOOC adoption. This focus may have practical implications for service management lecturers wishing to incorporate MOOCs into their weekly teaching, tutorials, assessments and student support activities.

Proposed Conceptual Framework and Hypotheses

Based on the reviewed literature, this concept paper proposes that MOOC usage positively influences learning effectiveness of the students who enrolled in Introduction to Service Management course.

Figure 1 Conceptual Framework



PROPOSED METHODOLOGY

Research Design

The proposed study will use a quantitative research design using a cross-sectional survey method. Regarding research design, the study follows a quantitative design as it seeks to explore the relationship between MOOC usage and learning effectiveness through measurable constructs and statistical analysis. The use of cross-sectional data collection is appropriate as responses can be gathered from students after they have experienced MOOC-supported learning in Introduction to Service Management. The design is in line with recent studies on online learning and MOOCs that have utilised survey instruments to investigate engagement, satisfaction, self-regulation, performance, and learning effectiveness (Abdullah et al., 2024; Huang & Qi, 2025; Pham, 2025).

The unit of analysis is the individual student enrolled in Introduction to Service Management. The study will be based on students who have been using a MOOC as a part of the course. The proposed design does not intend to compare MOOC and non-MOOC groups at the beginning, but to explore how the differences in the use of MOOCs by students can explain the differences in perceived learning effectiveness. This approach is appropriate for a concept paper because it allows the study to be conducted in a realistic course setting in which all students may be required to access the MOOC as part of blended learning.

Population and Sampling

The study proposed will be aimed at undergraduate students enrolled in Introduction to Service Management in higher education institutions in Malaysia. The course is for students from business, management, entrepreneurship, hospitality, retail or service-related programmes who are required to take the course. Purposive

sampling will be used to select respondents who meet the inclusion criteria, as the study targets students who have experienced MOOC-supported learning.

Inclusion criteria: students enrolled in Introduction to Service Management, students with access to the course MOOC and students who have completed a minimum period of MOOC-based activities prior to answering the questionnaire. The suggested minimum exposure period is six to eight weeks, because this period allows students to experience several MOOC topics, quizzes, discussions or learning tasks. The study should aim for a minimum sample size of 200 respondents for statistical analysis.

Instrument Development

The research instrument will be using a structured questionnaire which will consist of three sections. Section A will collection the demographic information of the respondents. Section B will measure the MOOC usage. Meanwhile Section C will measure the learning effectiveness. A five-point likert scale will be use due to its simplicity for undergradutae respondents and it is common to use in educational survey (Kusmaryono et al., 2022).

Table 1 Proposed Measurement Constructs and Sample Items

Construct	Dimension	Sample Item	Supporting Literature
MOOC Usage	Frequency of use	I regularly access the MOOC materials for Introduction to Service Management.	Azevedo et al. (2024); Huang & Qi (2025)
MOOC Usage	Content quality	The MOOC content helps me understand service management concepts.	Huimin et al. (2024); Huang & Qi (2025)
MOOC Usage	Platform accessibility	The MOOC platform is easy to access and navigate.	Huimin et al. (2024)
MOOC Usage	Interaction features	The MOOC activities encourage interaction with learning content or peers.	Gökoğlu et al. (2024); Pham (2025)
Learning Effectiveness	Conceptual understanding	The MOOC improves my understanding of service quality, service encounters, and service recovery.	Akpen et al. (2024); Nasir et al. (2022)
Learning Effectiveness	Application ability	The MOOC helps me apply service management concepts to real service situations.	Xue et al. (2023); Zhang et al. (2023)

Data Collection Procedure

Data will be collected after the students has at least completed certain part in the MOOC platform for the course. The questionnaire will be distributed online to the students and statement explaining the purpose of the study will be provided to the respondent before they start answering the questionnaire.

Data Analysis Plan

Data collected will then analyzed using SPPSS. The first stage will include data screening. Then the data will run through the reliability and validity testing. And finaly the date will involve the hypothesis testing using Pearson correlation as well as multiple regression. used to test whether MOOC usage dimensions significantly predict learning effectiveness.

Expected Contributions

The proposed study is expected to make several theoretical contributions. First, it extends MOOC literature by examining MOOC usage in a specific course context, namely Introduction to Service Management. This is important because course-level evidence can provide more precise understanding compared with general studies of online learning. Second, the study contributes to learning effectiveness literature by conceptualizing learning effectiveness as a multidimensional outcome that includes knowledge acquisition, conceptual understanding, application ability, satisfaction, academic confidence, and perceived performance improvement. Third, the study supports the application of Community of Inquiry and self-regulated learning perspectives in MOOC-supported business education.

The study is also expected to provide practical contributions. For lecturers, the findings may identify which MOOC usage dimensions should be strengthened to improve learning effectiveness. For example, if content quality and quizzes are found to be strong predictors, lecturers should focus on improving video clarity, examples, quiz feedback, and alignment with assessments. If engagement and interaction features are significant, lecturers should design forums, peer discussions, and case-based activities that require students to interact with content and classmates. For curriculum designers, the findings may support the development of blended course structures that integrate MOOC activities into weekly teaching plans.

For higher education institutions, the study may provide evidence for improving MOOC development policies, lecturer training, and digital learning support. Institutions often invest resources in digital platforms, but effectiveness depends on pedagogical use. Therefore, evidence from this study can help universities move beyond platform adoption toward quality-oriented MOOC implementation. For students, the study may highlight the importance of active and self-regulated MOOC usage. Students may benefit more when they use MOOCs consistently, complete activities, reflect on feedback, and connect MOOC content with class discussion and assessment tasks.

CONCLUSION

MOOCs represent an important digital learning innovation in higher education because they provide flexible access to learning materials, support self-paced study, and allow large-scale delivery of structured educational content. However, the effectiveness of MOOCs should not be assumed simply because the platform is available. Recent literature shows that MOOC effectiveness depends on learning behavior, motivation, engagement, perceived value, self-regulated learning, platform quality, teaching presence, and learning environment (Azevedo et al., 2024; Huang & Qi, 2025; Onah et al., 2024; Zhang et al., 2024). Therefore, research is needed to examine how students actually use MOOCs and whether such usage contributes to learning effectiveness.

This concept paper proposed a quantitative study examining the relationship between MOOC usage and learning effectiveness among students enrolled in Introduction to Service Management. The paper argued that this course is a suitable context because service management requires students to understand concepts and apply them to real service situations. A well-designed MOOC can support this process through videos, quizzes, case examples, discussions and self-paced learning activities.

The proposed framework conceptualises the MOOC usage by frequency of use, content quality, platform accessibility, interaction features, self-paced learning, and learner engagement. Conceptualising Learning Effectiveness Knowledge Acquisition Knowledge Conceptual Understanding Application Ability Learning Satisfaction Academic Confidence Perceived Performance Improvement The proposed methodology is based on a cross-sectional survey of students who have used MOOCs in Introduction to Service Management and the data were analysed through descriptive statistics, reliability analysis, correlation and regression.

The proposed study should contribute to digital learning research and service management education by providing course-specific evidence on the educational value of MOOCs. The findings may assist the lecturers, curriculum designers and universities to design MOOCs that are more than merely digital repositories but meaningful learning environments that enhance student understanding, application and learning satisfaction. As

higher education moves to blended and flexible learning, there is a need for such evidence to ensure the implementation of MOOCs is promoting real learning effectiveness.

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