Effectiveness of eQIU Learning Management System (LMS) on University Students Satisfaction

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**ARTICLE DETAILS**

**ABSTRACT**

**Purpose:** Initiating an LMS is an educational change that may seem technically simple yet socially complex. This study aimed to explore students’ satisfaction with the university’s eQIU LMS and their perception of eQIU LMS’s effectiveness impact on their academic achievement.

**Methodology:** A qualitative interpretive methodology was employed by interviewing six QIU students with semi-structured interviews. The study findings were analyzed based on a modified theoretical framework of the Delone and McLean Information System Success (D&M) Model.

**Findings:** The findings revealed that students were mostly satisfied with eQIU LMS; however, they perceived that eQIU’s effectiveness had a moderate impact on their academic achievement. For an effective LMS implementation, the study emphasizes empowering students to voice their needs and participating in the decision-making process of developing eQIU LMS.

**Implications:** So, it is concluded that more investigation should be done on students’ engagement with LMS technology and the role of LMS technology in inclusive education.

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**Introduction**

The COVID-19 pandemic was the critical benchmark that pushed toward transitioning the education system from traditional learning to digital learning, indicating that e-learning and e-learning tools are not limited to online learning, and their usage will still resume. E-learning is an approach to teaching and learning based on the use of electronic media and devices to improve access to communication and interaction that facilitates the adoption of new ways of understanding and developing learning (Sangrà et al., 2012). Hence, more universities are investing seriously in e-learning management system (LMS) technology soaring the need to study
the field of e-learning management and organization (Alagarsamy & Vijay, 2019; Altunoğlu, 2017). Subramanian et al. (2014) define LMS as a digital infrastructure of an educational organization that enables delivering course content, monitoring student participation, assessing students, and facilitating communication. The LMS web-based application provides built-in software tools for administrating, documenting, tracking, reporting, and delivering educational courses or training programs (Panda, 2020). Consequently, Quest International University (QIU) administration launched a new learning management system (LMS) and called it eQIU. eQIU is an open-source learning management system powered by Moodle (Modular Object-Oriented Dynamic Learning Environment) (see Figure 1). eQIU can be a learning resource in the form of uploaded documents, plain text, links, or references. It also supports learning activities such as discussion forums, chatting and messaging, assignment submission, and quizzes, all of which can be used for interactive learning. However, initiating an LMS such as eQIU is considered an educational change, which may seem technically simple but socially complex. Such changes may be resisted or come with new challenges of planning and coordinating a multilevel social process on an organizational level.

According to Emelyanova and Voronina (2014), the success of an e-learning LMS depends on how it is organized, managed, and adopted. Hence, a well-timed evaluation of the recently built-in eQIU LMS is a crucial measure to guarantee its effective implementation (Altunoğlu, 2017). Since students are the end-users of the LMS technology, their satisfaction is an affective response to the e-learning process and LMS implementation that will indicate the effectiveness of LMS implementation (Altunoğlu, 2017). Understanding students' satisfaction with eQIU LMS is key to cultivating the effective qualities of eQIU and improving any shortcomings from their perspective, thus preventing the waste of valuable resources and unsatisfied learners that might result in organizational failures (Altunoğlu, 2017). In addition, students' perspective of eQIU LMS allows them to play an active role in managing their own learning and be included in the decision-making process (Altunoğlu, 2017). However, Shahzad et al. (2021) state that educational technology adoption success studies like e-learning portals and LMS among students are seldomly researched in Malaysian universities. Also, most studies on LMS implementation are quantitative in nature (Annamalai et al., 2021). Moreover, Mwalumbwe and Mtebe (2017) state that there is little evidence that LMS technology actually improves students' learning performance. Alagarsamy and Vijay (2019) and Peerapolchaikul et al. (2019) suggest that understanding how LMS is linked to students' satisfaction and their academic achievement could improve e-learning materials on an institution's LMS. Therefore, this study aims to explore students' satisfaction with eQIU, and explore students' perception of the impact of eQIU LMS effectiveness on their academic achievement.
Benefits and Effectiveness of LMS Implementation

Many studies explored the features of open-source LMS powered by Moodle and its benefits in improving teaching and learning. In a study by Duangjai and Rutaikarn (2019), students found using Moodle evaluation features beneficial, despite the complex process, because it provided support for students with learning problems. To determine the relationship between LMS usage and students' academic performance, Mwalumbwe and Mtebe (2017) developed an LMS Learning Analytics tool and found that students active on discussion forum posts during course delivery performed better than those who were less active. However, Mwalumbwe and Mtebe (2017) noticed that the number of file downloads, login frequency, or time spent using the LMS had no significant impact on students' performance. On the other hand, Peerapolchaikul et al. (2019) stated that the main challenges of LMS occur when lecturers attempt to design learner-centered online activities that involve collaborative, reflective, experimental, or participatory elements. According to Panda (2020), e-content can be learner-centered by applying suitable online learning structures such as flipped classrooms and blended learning. Correspondingly, Egorov et al. (2021) concluded that a successful implementation of an LMS lies in specifying the planned goals suitable for the designed online learning structure. Both Egorov et al. (2021) and Pandey and Pandey (2009) supported that Moodle works exceptionally well with a blended learning structure.

Investigating LMS Effectiveness with DeLone and McLean’s (D&M) Model

A model is a theoretical framework representing the relationship between the main constructs of using LMS (Alturki & Aldraiweesh, 2021). Hence the model uses factors of LMS usage and explains the correlation between independent and dependent variables. In 1992, DeLone and McLean developed the D&M model to measure the dependent construct of information system success (ISS) (Shahzad et al., 2021). The model D&M (see Figure 2) measures the ISS construct based on the following six interdependent success factors; System Quality, Information Quality, Service Quality, Intention to Use/Use, User Satisfaction, and Net Benefits. According to Sabeh et al. (2021), System Quality (SQ) is the desired characteristic of the system. Information Quality (IQ) is the quality of the system's information outputs. Service Quality (SQ) is the quality of support the system provider offers to the users. Intention to Use/Use (IU) is the intention to use the system or users' perception of the actual use of the system. User Satisfaction (US) is defined as the user's level of satisfaction when utilizing the system. Net Benefits (NB) are the extent to which the system contributes to the success of individuals and the organization.

![DeLone and McLean (D&M) model](image)


Sabeh et al. (2021) stated that the dependent variable of NB makes it flexible for researchers to
apply the D&M model to the context of their study. For example, a study by Shahzad et al. (2021) applied the D&M model to measure e-learning portal success, compared male and female usage of the E-learning portal, and found that all independent variables are significantly interrelated. In addition, they observed that SQ and IQ have a direct with US, and in turn, US has a positive relationship with the NB of the E-learning portal. Shahzad et al. (2021) argue that the SQ construct is fit to be used in an E-learning context as it the perceived ease of use, convenience of access, and usefulness of system features. Another study by Eom (2014) aimed to understand e-learners' satisfaction with LMS and found that user satisfaction with an LMS depends on the IQ of the LMS. Thus, students become satisfied with an LMS if the content is relevant to learning, easy to understand, and up-to-date (Eom, 2014), determined by the lecturer who designs and delivers the course contents. Therefore, the flexibility and comprehensiveness of the D&M model, as well as the significant interrelation between the model's variables, have set the D&M towards an upward trend in recent years among studies that measure e-learning system success, especially in countries such as Taiwan, Yemen, US, and Malaysia (Sabeh et al., 2021). According to the systematically reviewed literature by Sabeh et al. (2021), the D&M model is suitable for investigating an e-learning system's success, utilization, or even adoption of the system. Also, Eom (2014) argues that the D&M model strength stems from the crucial component of the IU construct because many empirical studies failed to provide the link between ‘use’ and ‘satisfaction’. Moreover, Sabeh et al. (2021) state that 95% of the research that applies the D&M model to understand the effectiveness of LMS implementation employed the quantitative methodology. Therefore, this qualitative study adds a unique perspective on students' satisfaction with LMS implementation that will shed light on students' intentions, behavior, and expectations when using eQIU LMS technology.

Methodology

This study is designed based on qualitative interpretive methodology. It was conducted at Quest International University (QIU), because it recently launched the new eQIU LMS in April 2021 to disseminate the educational processes beyond Malaysian borders to international students from various backgrounds. Therefore, a total of six students was selected through purposeful sampling, one student from each faculty, as each faculty applies different modes of learning, such as online learning, blended learning, and practical classes, in the duration between April 2021 and April 2022. Since the eQIU LMS has been in use for a year, the criteria for choosing the participant is that the student has been using eQIU for the duration of two consecutive semesters to ensure they would have had sufficient opportunities to use eQIU for their e-learning activities. Table 1 summarizes the participants’ details.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Country of Origin</th>
<th>Current Location</th>
<th>Program</th>
<th>Faculty</th>
<th>Using eQIU LMS since</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Male</td>
<td>Indonesia</td>
<td>Ipoh/Malaysia</td>
<td>Bachelor of Science in Biotechnology</td>
<td>Faculty of Integrated Life Sciences</td>
<td>APRIL 2021 INTAKE</td>
</tr>
<tr>
<td>P2</td>
<td>Male</td>
<td>China</td>
<td>Shanghai/China</td>
<td>Master of Education</td>
<td>Faculty of Social Sciences</td>
<td>APRIL 2021 INTAKE</td>
</tr>
<tr>
<td>P3</td>
<td>Female</td>
<td>Malaysia</td>
<td>Ipoh/Malaysia</td>
<td>Bachelor of Pharmacy</td>
<td>Faculty of Pharmacy</td>
<td>APRIL 2021 INTAKE</td>
</tr>
<tr>
<td>P4</td>
<td>Female</td>
<td>Malaysia</td>
<td>Ipoh/Malaysia</td>
<td>Foundation in Business</td>
<td>Faculty of Business and Management</td>
<td>JULY 2021 INTAKE</td>
</tr>
<tr>
<td>P5</td>
<td>Male</td>
<td>Malaysia</td>
<td>Perak/Malaysia</td>
<td>Bachelor of Science (Hons) Actuarial Sciences</td>
<td>Faculty of Computing and Engineering</td>
<td>APRIL 2021 INTAKE</td>
</tr>
<tr>
<td>P6</td>
<td>Female</td>
<td>Bangladesh</td>
<td>Taiping/Malaysia</td>
<td>Bachelor of Medicine-Bachelor of Medicine</td>
<td>Faculty of Medicine</td>
<td>APRIL 2021 INTAKE</td>
</tr>
</tbody>
</table>
This study applies the DeLone and McLean (D&M) Information System Success Model modified by Alagarsamy and Vijay (2019). Alagarsamy and Vijay (2019, pg 147) identify seven core dimensions of LMS implementation and success since they add the Educational Quality (EQ) construct to the DeLone and McLean's (D&M) Model. Alagarsamy and Vijay (2019) define EQ construct as the LMS features that facilitate innovative teaching and learning pedagogies, such as effective collaboration and interactions between users.

The qualitative data in this research are collected through semi-structured interviews; in which respondents answer pre-set open-ended questions intended to draw participants' views and opinions about a particular topic (Jamshed, 2014). Zakre (2018) asserts that semi-structured interviews are typically used in policy research; thus, it is very suitable for this study since it delves into eQIU LMS implementation. The study instrument is semi-structured pre-existing interview questions divided into three parts. The first part begins with five preliminary questions adapted by Peerapolchaikul et al. (2019) that provide data about the participants' context. The second part is an adapted version of Alagarsamy and Vijay's (2019) questionnaire instrument that measures students' satisfaction with e-QIU LMS based on the D&M model. Although the original questionnaire includes 44 items, for this study, only 21 Items will be adapted to fit the study purpose. Finally, the third part collects data about 1) students' experiences regarding their satisfaction with eQIU LMS, 2) their personal perception of the eQIU effectiveness 3) and its impact on their academic achievement. The data were subjected to thematic analysis, according to the five phases of Lester et al. (2020). The researcher classified clusters of similar sub-themes categorized into seven dimensions of LMS success based on the theoretical framework modified by Alagarsamy and Vijay (2019).

Preliminary Findings
From the preliminary findings, the researcher concluded two patterns of participants’ responses. The first pattern is that eQIU LMS is suitable to be implemented in all QIU faculty programs in e-learning settings, whether in blended, online, or hybrid learning modes.

P1 explains “For us, we do have online learning and also physical teaching method, and we also have practical, which is also physical, so it's a hybrid learning mode.”

However, the second pattern concluded that participants prefer to access eQIU LMS from their PC; hence the researcher inferred that eQIU might not be optimized for mobile phone screens since participants experienced lagging and smaller appearance when accessing eQIU LMS by their phone.

P3 explains “I prefer to use eQIU on the PC Lab because PC, the screen is more, bigger, useful. Sometimes on phone it will be lagging and the screen will be smaller.”

Findings on Student Satisfaction
The following discusses the findings that were concluded from the first research question results. Hence the findings are presented within seven dimensions; System Quality, Information Quality, Service Quality, Educational Quality, Intention to Use/Use, User Satisfaction, and Net Benefits.

Technical System Quality
The researcher noticed three patterns in the technical system quality dimension. The first pattern demonstrated that students face an initial struggle when using eQIU for the first time; therefore, it
is not seen easy to use. When asked ‘Do you believe that eQIU LMS is user-friendly/ easy to use?’, the participants did not exhibit high satisfaction. Some participants compared their current eQIU usage experience with their past experience of using Google Classroom.

P5 compares “I said not friendly because if comparing the eQIU system with the earlier we use for example like Google Classroom, the Google Classroom when the lecture will be sending out the activities, files or whatever that one the lecturer will send out and we will receive the notification.”

The second pattern signified that students are mostly satisfied with the quick access and flexibility of eQIU LMS. This demonstrates that students value technology that allows speedy access. However, the third pattern emphasized how important an attractive interface and system icons are to participants to be satisfied with eQIU LMS. Most of the participants exhibited low satisfaction with eQIU features, as they agreed that the appearance was traditional and basic and expressed hope for future enhancement.

P2 suggests “I think the appearance part maybe if the eQIU they can do better. Just look like more beautiful, more friendly. Right now the eQIU is just there. But some part like the button or the link, the color. They can improve this part and to make more friendly for students, some part you have to give a highlight so you can easily find the function.”

Educational System Quality
There are two patterns noticed in the educational system quality dimension. The first pattern showed that students mostly use eQIU for educational functions that include downloading and uploading materials, searching for resources, and completing quizzes and assignments.

P2 states “I think not much because the part of the course we make connection with teacher or with supervisor because they will provide the materials about the course before the class to download the materials and review some information about the course and after if the teacher gives us assignments, group assignments or individual assignments. So, you also have to download some materials from eQIU LMS. So, I think that's the connection between the students and the system.”

In the second pattern, most students expressed that they had fewer opportunities to fully utilize the eQIU features and functions. When the researcher asked ‘Have you experienced collaborative and active learning provided by eQIU LMS?’ there were mixed responses, half of the participants demonstrated the lack of collaboration activities in eQIU. However, the other half explained that collaboration activities were in the form of sharing videos, lecture recordings and files for revision.

P1 shared “No, I have not, because I think the only thing, we use it for is for submission and to download. I don't see any collaboration even. We don't use the chat feature. We don't use the help feature. No collaboration whatsoever.”

Information Quality
The information quality dimension included three patterns of participants’ responses. The first pattern is that students expressed their satisfaction with the organized layout of information on eQIU. P6 was happy that eQIU acts like a personal folder that organizes her notes. The second pattern demonstrated that students were satisfied with the database availability on eQIU, and it made it easier for students to search for resources and references.
P4 states “Yes, the information is actually very organized and it's there. Like once you go in, then it's already there. You don't have to search all over the place.”

Even though students were mostly satisfied with the information quality of eQIU LMS; however, the third pattern exhibited the pivotal need for a notification alert feature in eQIU for in-time information. Almost all participants suggested developing an eQIU notification feature as it is an inevitable need when using any e-learning application. This pattern demonstrates that students expect to be notified with an email alert or a mobile phone notification instead of feeling anxious and accessing eQIU to check for any updates.

P5 said “Everything is satisfied with me but just the things that I dislike is about the notification. Things like I said earlier. Right. Every time when the lecture sending announcements will be not receiving.”

Service Quality
Participants were highly satisfied with eQIU service quality, so the researcher noticed only one pattern in this dimension. The participants’ answers emphasized the importance of IT staff in guiding new eQIU users in all the systems functions. The researcher inferred that QIU IT department staff are playing their role effectively.

P4 stated “Yes. In the beginning, like when they helped us to assist the new students on how to use it and all.”

Intention to Use
The researcher tried to apprehend students’ intention to use eQIU; however, she noticed one pattern in participants’ answers. Generally, students were willing to use eQIU LMS out of necessity, either for course work-related activities, to search for resources, or as a further reference, but their usage becomes less frequent when they do not feel they are required to use it.

P5 explained “Probably not anymore because like everything on the sources will not appear in eQIU so I will be less frequently using it.”

User Satisfaction
The user satisfaction dimension concluded four patterns from participants’ replies. The first pattern was that students’ confidence in using eQIU LMS grew over time and exposure to eQIU functions. This pattern supports the finding in the technical system quality dimension above that eQIU was viewed as not user-friendly. The second pattern showcased students’ confusion when unfamiliar with eQIU functions. This pattern also supports the educational system quality dimension finding, where students expressed that they had fewer opportunities to utilize all of the eQIU features.

P2 explains “Yeah, I think yes. If you don't have the obstacle of the language, I think it's not much harder for us to use. Just like I said before, just now, you know where to search the reference, where to use the class and to check the materials to upload the download, how to use that. But you use more or you're much familiar with the function, you know how to use it better.”

The third pattern demonstrated that students tend to compare their experience of using eQIU LMS with previous experiences of using other LMS platforms. Therefore, they might have expectations and needs that they feel are not met. Hence, students suggested adding more features to eQIU, such as color-blindness feature, language translation, voice input, and sign-language
videos. However, there is a strong need for more research to investigate the role of LMS technology in inclusive education e-learning.

P5 said “I can say that depends. for a person who's sight is not very good. Maybe like the color blinded. So far for now I haven't seen the function that is special to the color blinded, for example.”

Finally, the fourth pattern exhibited students’ strong sense of hope for the future improvement of eQIU, which indicates they are open to new technological advancements. This sense of hope may explain why participants showed conflicting feelings since most of them had a positive attitude towards eQIU LMS, yet explained the reason behind some negative attitudes towards using eQIU LMS.

P4 justifies “I think it's both positive and negative. Positive is because you get all your information there. It's easy to access because all the lectures they give, our work there, our notes and everything negative. I think it's because you don't get pinged when a new information comes in. You have to be told that there's new information coming in. So like I said, it's not like if there was a notification thing.”

Net benefit
In the net benefits dimension, there are two patterns concluded. The first pattern demonstrated that eQIU LMS had a moderate impact on improving students’ learning performance. Students could see their progress when receiving feedback through quizzes, assignments, or professional exams. However, the researcher concluded that many of eQIU’s formative assessment tools are not used effectively.

P1 justifies “I would say no, but I also don't have a negative intention to that because I think if I were to compare the two platforms, I think they have full effect. I don't think the two platforms improve or decrease the students’ performance.”

On the other hand, although each participant had their own opinion on how eQIU LMS contributed to the success of individuals and QIU organization, the researcher concluded a second pattern from the responses. The second pattern is that eQIU has been a great asset for QIU as an organization and for students as well, for example, P2’s comment that eQIU was created to face the academic challenges during the COVID-19 pandemic.

P2 justifies “Yes, I think because it's an Internet system, so it's much easier. It's much important for eQIU LMS to give response for this situation because we can get offline courses or all the online activities. So we just can do all the things online. So I think that's why they design eQIU LMS these two years.”

Findings on eQIU Effectiveness on Students’ Academic Achievement
The following discusses the findings that were concluded from the second research question, and it included two patterns. In the first pattern, the researcher inferred that participants had moderate satisfaction with eQIU effectiveness.

P4 suggests “Good. And I think they can actually do better on it. I think if they actually have their own application, it will be much useful for us. We don't have to go to Google and then go to eQIU LMS and to log in and find your information.”

However, participants had a moderate perception of eQIU’s impact on their academic achievement. the researcher noticed that participants view eQIU as a tool only, and that the real
impact was the lecturers’ effort and their interactions with others. This finding is important because the researcher wanted to understand how students’ satisfaction with eQIU LMS is linked to their academic achievement, yet the researcher found no meaningful link between them.

P6 states “Yes, like 50/50 just for note downloading and all, so it is like, okay. But we are not getting that much, like, for a teacher, they are just explaining the notes. But if we are only downloading, so it's not like explaining something, we have to read and understand.”

Discussion & Implications

Through the analysis of findings based on the D&M Model theoretical framework modified by Alagarsamy and Vijay (2019), the discussion of findings and practical implications are presented in seven dimensions.

Technical System Quality

Participants were satisfied by the quick access and flexibility of eQIU LMS, yet developing an eQIU phone application is crucial for ultimate access (Dobre, 2015). This will give users ultimate access to eQIU LMS without constraints on time, place, or even device (Alturki & Aldraiweesh, 2021). However, there is a need to improve the interface and appearance of eQIU LMS. This implication will increase the attractiveness of eQIU design and the functionality of icons that will make it easy to use. According to Altunoğlu (2017), the acceptance of new technology is strongly linked to users’ perceived ease of use. For example, eQIU developers can create video guidelines to use eQIU features and place them on the users’ interface dashboard for easy access. In addition, developing inclusive education features in eQIU is crucial to accommodate the diverse needs of QIU students and students with special needs; for example, by adding features such as color-blindness, or language translation. Moreover, eQIU developers should consider relocating eQIU to a cloud-based LMS in the future since Dobre (2015) claims that the advantages of a cloud-based LMS make it more suitable for small and medium-size higher educational institutes.

Educational System Quality

The pedagogical features of eQIU LMS should be utilized more to avoid limiting the use of eQIU LMS as a deployment system where users only download and upload course content files (Naveh et al., 2012). Although students use eQIU for other functions such as searching for resources and completing quizzes and assignments, however, QIU lecturers should incorporate eQIU LMS pedagogical tools to complete daily e-learning activities. Duangjai and Rutaikarn (2019) assert that teachers play an essential role in developing and introducing LMS pedagogical tools to complete daily e-learning activities. Also, Swart and Meda (2021) state that an LMS enables lecturers to provide scaffolding for a student to construct knowledge through interactive and collaborative online activities. Hence to create a learner-centered and collaborative virtual atmosphere, QIU lecturers must introduce eQIU features such as chat rooms, wikis, and discussion forums (Altunoğlu, 2017). This does not imply that the lecturer must create all the content; in fact, the lecturer should scaffold and empower students to become content creators and take responsibility for their own learning (Swart & Meda, 2021).

Information Quality

The information quality dimension implications are focused on improving eQIU’s information outputs. The students expressed their satisfaction with the organized layout and database availability on eQIU. However, students suggested developing an eQIU notification feature that alerts them either by email alert or a mobile phone application. This suggestion is sought to improve students getting in-time information about any updates in their eQIU classroom.
Service Quality
Participants were highly satisfied with eQIU service quality and emphasized the importance of IT staff in guiding new eQIU users in all the systems functions at the beginning of a new intake. Since eQIU LMS is a digital infrastructure for e-learning activities thus, including a virtual tour for eQIU LMS is crucial in the orientation process of new students. Also, it can be in the form of an automated digital tour that is activated once a new student accesses eQIU for the first time. These digital tours would be best when coupled with the video guidelines suggested earlier in the technical system quality dimension. Thus, they will allow students to become familiar with eQIU features and learn all functions effortlessly, without needing IT staff’s constant assistance (Swart & Meda, 2021).

Intention to Use
The researcher realized that students were willing to use eQIU LMS out of necessity to get course materials, but their usage becomes less frequent when they do not feel they are required to use it. In fact, the frequency of using eQIU does not imply that users are actually engaging with the LMS effectively (Swart & Meda, 2021). Thus, there should be more investigation on how to increase students’ engagement with the LMS in order to reach the complex goal of increasing students’ willingness and joy to use eQIU (Subramanian et al., 2014).

User Satisfaction
Users’ satisfaction was strongly linked to the ease of use and utilization of eQIU LMS features which is in line with Altunoğlu’s study (2017). Therefore, QIU lecturers and IT department staff should work together to help students become more familiar with the functions of eQIU LMS. Also, participants perceived eQIU to be moderately effective; hence, it moderately impacted their academic achievement. This complexity is consistent with the findings of Duangjai and Rutaikarn (2019), who reasoned that most participants find Moodle LMS beneficial despite it not being user-friendly, hence their moderate satisfaction with the LMS. The researcher wanted to understand how students’ satisfaction with eQIU LMS is linked to their academic achievement, yet the researcher found no meaningful link between them. This finding is consistent with Mwalumbwe and Mtebe (2017), who developed a Moodle Learning Analytics tool to determine the causation between LMS usage and students’ performance. Mwalumbwe and Mtebe (2017) state that students’ time spent on an LMS, the number of downloads a student makes, and the frequency of logging in had no significant impact on their learning performance.

Therefore, eQIU developers should create an eQIU Learning Analytics tool to help lecturers determine the correlation between eQIU usage and students’ learning performance (Mwalumbwe & Mtebe, 2017). Moreover, participants viewed eQIU LMS as a tool only, and the real impact was the lecturers’ effort and interactions with others. Therefore, QIU lecturers need professional development training on incorporating eQIU’s collaborative and formative assessment tools in their teaching and learning pedagogies, which in return, will empower student-centered learning and enhance interactive engagement (Swart & Meda, 2021). Besides, since lecturers are the curriculum implementers, they need to partner with instructional designers to create meaningful e-learning experiences for eQIU LMS users.

Net Benefit
The participants were mostly satisfied with the flexibility and responsiveness of eQIU LMS to the educational changes that occurred rapidly during the COVID-19 pandemic. Therefore, a high level of coordination should be maintained in the multilevel social processes in QIU that involves administrators, IT staff, and lecturers (Altunoğlu, 2017). Moreover, there should be more empowerment for QIU students to participate in the decision-making process of developing eQIU LMS in order to respond effectively to their diverse needs.
Recommendations

More qualitative research is encouraged in investigating the use of educational technology such as eQIU LMS, to understand users’ experiences and provide better learner-centered services for e-learning in the future. This study recommends conducting more studies about the challenges that lecturers and students face when using an LMS and how to increase students’ academic achievement through engagement via LMS. Furthermore, there is a strong need to investigate the role of LMS technology in inclusive e-learning education. Theoretically, although the D&M model’s explanatory power lies in its merit in explaining the ‘Intention to use/use’ factor, the researcher questions the significance of this dimension and suggests modifying it to become ‘Users’ Engagement’ dimension. Because according to Mwalumbwe and Mtebe (2017) and Swart and Meda (2021) findings, students’ frequent access to an LMS cannot be equated to students’ engagement. Hence future theoretical frameworks should investigate the validity of this dimension.

Conclusion

The study findings were analyzed under the D & M success model dimensions, which demonstrated that users’ satisfaction was strongly linked to the technical system quality and educational system quality dimensions since ease of use and utilization of eQIU LMS features were high values displayed by the study’s participants. In addition, students were primarily satisfied with eQIU LMS, especially in aspects such as quick access, organized layout, database availability, IT support, and flexibility. However, students expressed the need to enhance eQIU to develop an eQIU phone application, making it easier to use, improving interface design and attractiveness, and the need for more opportunities to utilize eQIU LMS features. Hence this study allowed students’ empowerment by voicing out their needs and participating in the decision-making process of developing eQIU LMS. Moreover, the study revealed that students viewed eQIU LMS as moderately effective and thus had a moderate impact on their academic achievement. In conclusion, the implementation of eQIU LMS was an educational change that positively impacted QIU students, it is hoped that eQIU LMS technology would be a promising solution for shifting the educational paradigm toward more student-centered e-learning.

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