The determine factors of student satisfaction with e-learning in Malaysia Higher Education Institutions: a scoping review

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Abstract. The aim of this scoping review is to investigate work published on student satisfaction with e-learning in Malaysia Higher Learning Institutions (HLIs). A scoping review was conducted using the methodological framework of Arksey and O’Malley to identify a broad range of relevant literature, regardless of study design. A systematic search was performed using Google Scholar in May 2020 and then was updated in October 2020. The database was searched for literature published between 1st January 2019 and October 2020. Two authors independently assessed literature eligibility and extracted data to answer our research question ‘From the previous literature, what is the effects of e-learning/LMS on student learning satisfaction in Malaysia Higher Learning Institutions?’ Seven articles were included in the review. There appears to be a paucity of research regarding student satisfaction with e-learning in Malaysia HLIs. Various theories and models have been included in the papers. However, all the articles mentioned the factors that determine student satisfaction with e-learning. The study demonstrates that when e-learning is delivered purposefully and effectively in the management and support of student learning, it has a positive effect on student satisfaction. However, more research in this area is required.

1. Introduction

An information and communication technology (ICT) infrastructure is the heart of an organization. The ICT and using computer technology is constantly creating and dissemination information, the lifeblood of the organization. This is especially important element in an educational institution as part of their educational management system to improve the teaching and learning experience in higher education system. The education industry creates, generates, processes, stores uses and reuses information every single day. Examples of information that has been generated are teaching materials, quizzes, test, assignment, student’s performance, student’s grade, performance analysis and so on. The use of technology in educational environments enables every step of the education process, from the preparation of courses to the implementation of classes and assessments. One of the most important advances in the use of ICT in universities over the last decade has been the use of e-learning to facilitate the teaching and learning process [1]. The e-learning has different names, such as online programmes, virtual systems, learning management systems, etcetera [2]. Thus, in this study e-learning and learning management system are used interchangeably. Recently, most of the universities are using e-learning or Learning Management Systems (LMS) for their academic activities. In addition, a successful LMS model would allow universities to develop their knowledge of individual management.

A learning management system (LMS) is a software programme or web-based technology used to prepare, execute and review a particular learning method that will rewrite your text. As its name implies, the learning management system helps instructor organise his/her courses by providing the instructor with a way to develop and distribute content, track student engagement, and analyse student performance online. It offers a range of services that allow content management, in particular by creating, importing and exporting learning objects. LMS offer students the capability of using collaborative tools such as threaded conversations, on-line video for meeting, and room for discussion. More precisely,
LMSs are connected to a variety of functions, such as educational subject management (developing, importing and exporting learning stuff), creation of individual training modules pathways, existence of sharing resources, distribution of media platforms, registration of students and maintenance of their records (training and results) and dissemination of information [3; 4]. The purpose of the LMSs is therefore to encourage learning activities and to enable them to be carried out in a more structured and scheduled manner.

2. Background
The implementation of learning management systems (LMS) has transformed the higher education learning environment from traditional face-to-face classrooms into mixed and online learning surroundings [5]. A number of Malaysian higher learning institutions have also embarked on LMS, a learning process involving the use of various information technologies to help students learn [3]. LMS supports the process of teaching and learning. The LMS has been included as a delivery system that can take the form of course improvement, blended learning and virtual classrooms. In reality, ICT and the use of computer technology features have enhanced the teaching and learning process [4]. As a result, the use of the LMS has had a huge effect on the way students participate in the learning process. According to Cigdem and Topcu [6], LMSs have made a significant contribution to education. In developed countries. Numerous higher learning institutions have widely introduced LMS. They have therefore managed to boost student learning performance, and reduce student drop-out rates, and increase student satisfaction with the courses offered [7].

This paper records LMS limited but growing research perspective, as reflected by an increase in the amount of academic and grey literature on the topic. Researchers, policy-makers and practitioners obviously need to consider how the LMS is handled. Nevertheless, little attempt has been made to synthesize what is known about the consequences of this activity. As a result, a scoping review of empirical studies of student satisfaction with LMS during the learning process was performed to systematically map knowledge on the use of LMS.

The goal of this scoping review was to review published research on student satisfaction with LMS or e-learning practices in Malaysia.

3. Methods
3.1 Design
The scoping review process was performed on May 2020. The first phase of this scoping review was to hold a team meeting to develop a scoping question and to identify keywords relevant to the scoping question that would serve as a valuable contribution to student satisfaction with LMS. An interpretive scoping review technique was designated for this study grounded on the basis of [8]. This approach chart, gathers, and summarizes the established literature on a given topic, and attempts to classify all existing literature on a topic irrespective of its quality [8], as opposed to systematic reviews that also include evaluation of the quality of the study. The framework consists of the steps below:

- Finding the research question
- Detecting appropriate research
- Research choice
- Information recording and organization
- Recapping and writing the outcomes

Stage 1: Identifying the Research Question
To explain the objective of the scoping review and to create an effective search strategy, the definition, target population and context were established. [8]. The research question for this scoping review was, “From the previous literature, what is the effects of e-learning/LMS on student learning satisfaction in Malaysia Higher Learning Institutions?”

Thus, to address this question, scholarly papers were collected in a systematic manner.
This study used PCC (population, concept and context) as the basis for the scoping review question [9]. This research question determines that the population is student in Higher Learning Institutions (HLIs); the concept is the effects of LMS on student learning satisfaction; and the context is Malaysia. In this situation, both LMS, student satisfaction concept and Malaysia HLIs provide some of the inclusion requirements that are used in the process of identifying relevant literature and selecting literature by Arksey and O'Malley [8] for the next stage.

Stage 2: Identifying Relevant Literature
The second step of the scoping review is to identify specific literatures. This study conceived a plan to search the English-language peer-reviewed publications to find the variety of sources that would help address the review question. It was decided that search would be carried out in Google Scholar databases as shown in Table 2. The recommended documenting elements for systematic review and meta-analysis (PRISMA) format were used to record the data [10].

That database was searched for literature published from 2019 to 2020. The time span was chosen because universities across the world were directly and indirectly impacted by the Covid-19 pandemic. In Malaysia, the Movement Control Order (MCO) was enforced and all universities in Malaysia were directed to conduct teaching and learning activities through online learning until the end of December 2020, within less than one month. [11]. Two of the authors built and revised the text search using words and subject headings which were adapted to each database. Keywords used in the search process were identified in the first phase. Shown in Table 1, selected keywords similar to and related to LMS, student satisfaction, and Malaysia were used based on previous studies and thesauruses. At this stage, after careful screening, duplicated articles were removed.

Table 1: The search string used for the scoping review process

| Databases     | Keywords used                                                                 |
|---------------|-------------------------------------------------------------------------------|
| Google Scholar| ("Learning management system" OR “LMS” OR "e-learning" OR "online programmes" OR “virtual systems” OR “Moodle” OR “iSpring”) AND ("student satisfaction" OR "satisfaction" OR "student performance") AND (“Malaysia”) |

Stage 3: Selecting Literature
At first, 5320 publications were listed in total. Titles and abstracts of 3988 papers were individually screened in batches by team members after duplicates were excluded in order to select literature to be included in the scoping analysis. Based on the inclusion and exclusion criteria set out in Table 2, the members of the team met and reached consensus on whether a given source should be read in its entirety. There have been 20 posts read in full text. The first and second reviewers read all the documents in full text. There are two reviewers addressed the relevance of the paper to the research issue and whether they met the insertion criteria. The third investigator conducted an independent analysis when there was doubt as to whether an article met the criteria for inclusion. Seven papers were eventually included. Figure 1 demonstrates the selection process.

Table 2: Criteria for admission and omission

| Criterion                  | Inclusion                                                                 | Exclusion                                      |
|----------------------------|---------------------------------------------------------------------------|------------------------------------------------|
| Types of article           | Original research article, published in a peer review journal             | Reports which were not peer - reviewed or original studies |
| Time Period                | 2019 to 2020                                                              | Studies outside these dates                    |
| Types of respondents       | Malaysian university students, English                                    | Non Malaysian, Non-English studies             |
| Phenomenon of interest     | The effects of LMS on student learning satisfaction                       | Other than student satisfaction               |
Identification

Records found via search databases (n=5320)

Screening

Records screened after irrelevant papers and duplicated remove (n=3988)

Eligibility

Full article that were tested for suitability (n=136)

Studies included in the synthesis (n=20)

Articles with full text omitted (n=116)

Studies included in the scoping review (n=7)

Other articles excluded (n=13)

Figure 1. Summary of the selection of publications
Stage 4: Data charting and collation

[8] therefore define data charting as a technique in which both narrative and empirical methods are used to excerpt information from papers that best answer the purpose of the research. As a result, this is a technique for the synthesis and study of data on key issues and themes through sifting, mapping, and sorting materials. Two authors categorized the summaries of each article into a scoping table by authors, publication year, region, target, design/methods, respondent/sample size, and results. An overview of the included content is given in Table 3. An iterative and thematic methodology was used to address our research question as to what the effects of LMS on student learning satisfaction are. The literature was developed and arranged by thematic approach. The approach must be based on the relevant studies which is satisfaction of student learning with LMS.
### Table 3: Overview of included literature

| Authors and country | Aim | Design/methods | Participants /sample size | outcome |
|---------------------|-----|----------------|---------------------------|---------|
| Lee et al. (2020)  | To evaluate the variables that influence the satisfaction of students with their e-learning experience. | Quantitative methods. To illustrate the influence of social presence, cognitive presence, and teaching presence on student e-learning satisfaction. The research uses community of inquiry (COI) model as a framework | Business undergraduate students in a Malaysian university (n = 432) | Satisfaction was found to be influenced by cognitive presence and social presence influence. On the other hand, cognitive and social presence mediates teaching presence. |
| Azhari et al. (2020) | To explore the expectations of pharmacy undergrad for their e-learning and assess the degree to which e-learning is used. | Quantitative methodology- cross-sectional survey. The study used Social Constructivism Theory (SCT). | Malaysian government universities’ undergraduate pharmacy students (2nd and 3rd year student) University (n=336) | Students had positive, yet modest, aspirations and satisfaction with e-learning in general. Students of the 2nd year were pleased with their e-learning, but students of the 3rd year valued their e-learning lower than their expectations. |
| Lim et al. (2020)  | To investigate the role of Self-Regulated Learning (SRL) in affecting online learning satisfaction | Quantitative methodology- online self-reported questionnaire | Undergraduate students in a private university in Malaysia (n=497) | The results from the multiple regression analysis revealed that SRL explained 40.2% of the variability in online learning satisfaction (OLS). |
| Ibrahim et al. (2019) | To identify the role of anxiety, course flexibility, and perceived usefulness in explaining e-learners satisfaction | Quantitative methodology – cross sectional study with two-stage cluster sampling | Students from universities in Kota Bharu (n=263) | PU (perceived usefulness) was the most influencing factor. Perceived e-learner satisfaction influenced by computer anxiety and perceived usefulness. However, course flexibility and perceived e-learner satisfaction. Were found to have weak relationship. |
| Alamri et al. (2019) | To evaluate students’ satisfaction of e-Learning | Quantitative methodology- survey questionnaire- used theory of technology acceptance model (TAM) | Students in Universiti Teknologi Malaysia (n=226) | Results of the study show that the perceived ease of use, perceived usefulness and intention among university students to use e-learning have a positive effect and are significantly correlated with learning success and satisfaction with learning. |
| Authors          | Objective                                                                 | Methodology              | Participants                                           | Findings/Results                                                                 |
|------------------|---------------------------------------------------------------------------|--------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------|
| Zaili et al.     | To examine the factors that influence the student E-Learning satisfaction | Quantitative methodology-Independent variables are student, instructor, design, course, technical factor and student e-learning satisfaction as dependent variable | Students in Universiti Malaysia Kelantan (n=368) | Findings indicates all the factors (the Student, Instructor, Design, Course and Technical) have positive impact on Student E-Learning Satisfaction |
| Razak et al.     | To investigate determinant of e-learning adoption among Malaysian Public University students | Quantitative methodology-In order to investigate the effect on users’ intention to continue, the research integrates systems quality and content quality in the underlying theory | Undergrads from Universiti Malaysia Pahang (UMP) and Universiti Teknologi Mara (UiTM) Jengka (n=416) | Content quality and system quality altogether influenced user’s post adoption in e-learning usage |
Stage 5: Summarizing, and reporting findings
The final phase of the scoping analysis framework by [8] outlines and reports the results.

4. Findings
This scoping review yielded 7 articles. Most of the authors are from Malaysia, with the exception of two papers, Malaysia and Australia [12], and Malaysia and Saudi Arabia [13]. All the literature in this study are quantitative methods. In this segment, we focused on our research problem. Literatures examined student satisfaction with e-learning or LMS using the community of inquiry (COI) model, Social Constructivism Theory (SCT), Self-Regulated Learning (SRL), computer anxiety, course flexibility, perceived usefulness, student, instructor, design, course, technical factor, theory of technology acceptance model (TAM), and combination of systems quality and content quality. Two main themes have been established in the literature (Table 2): (1) Social support/collaboration and (2) Quality.

4.1 Social Support/Collaboration
Social support between students and as well as with their instructors is essential to student success. Studies indicate that social connections between students and their lecturers make e-learning more reasonable and effective [12; 14]. Social presence in literature is the capacity of students to project themselves as a real person in an online world, and cognitive presence of students working collaboratively in an online environment is two types of support / collaboration that affect student satisfaction with e-learning [12]. From the Social Constructivism Theory (SCT) point of view, knowledge building is both a cognitive and a social mechanism, which implies that students must actively cooperate with others by exchanging and receiving information in order to achieve satisfaction and efficiency in e-learning [14].

The second major factor affecting support was self-regulated learning. When self-regulation is well handled or regulated, e-learning contributes positively to student satisfaction [15]. This is because the essence of e-learning demands that students be self-motivated and self-disciplined. Students also need a good motivation that is compatible with the support positions of facilitators, family members and other students during the course of their studies. Computer anxiety is another aspect that affects student satisfaction with e-learning. Students are usually met with high academic expectations, so problems such as anxiety, anger, stress and isolation do occur. Using an instrument such as a computer is one of the factors that could cause this problem. Computer anxiety impacts students adversely, needing the help and cooperation of other students and instructors. According to [16], in their study found that computer anxiety had a mild impact on student e-learning.

4.2 Quality
Quality is another aspect that influences student satisfaction with e-learning. Quality refers to the ease of use or perceived utility of computers, software design, coding or programming, technical support and instructors and the quality of teaching. Literatures have shown that quality contributes positively to student satisfaction with e-learning [13; 16; 17; 18]. The literature shows that PEUO, PU and e-learning adoption among university students have an impact and are significantly linked to learning success and learning satisfaction [13; 16]. According to [18] system quality and content quality were both essential determinants of student satisfaction with e-learning. Based on these results, it has been shown that high quality can determine undergrads gratification with electronic medium.
5. Discussion
The goal of the Scoping Review was to rapidly map key concepts and study outcomes in a field that had not been extensively studied before [8]. The broad variety of the word used to describe e-learning, such as online programmes, virtual systems, and learning management systems, is an indicator of the ongoing development of this field of teaching delivery methods. When assumptions about what constitutes successful e-learning have shifted, so too is the subject of study. With Covid-19, online platforms such as Zoom, Google Classroom and Google Meet are now essential to promote diversely engaged e-learning. Instructors and students were heavily depending on strong reliable online facilities such as internet connections. The literature reviewed in this scoping review highlighted proof that most students were pleased with e-learning. Considerable amount of the research investigate student satisfaction with e-learning through specific theories and models.

Based on the literature in the reviewed studies, the parameters for describing e-learning have been summarised. The parameters that contribute to student satisfaction in e-learning were social support or collaboration and quality. The creation of any e-learning environment must also be purposeful and well planned to facilitate learning effectively and to prepare students with social support and quality of delivery methods, design, equipment and materials in an acceptable manner [13; 14; 15; 16; 17; 18]. The role of teaching presence or communication is to promote e-learning effectively [12]. Efficient communication techniques must be built to the best in an e-learning environment and cannot be presumed as in face-to-face environments. If systems are not well-designed or used correctly, there are limitations on e-learning. Conversely, when e-learning is effective, relationships between the students and the instructors are optimised and student satisfaction is increased.

The results suggest that student satisfaction with e-learning increases when students are confident in the use of computers, easy to use and have a social support environment [13; 14; 15; 16; 17]. This element of learning experience is of particular importance to the success of any e-learning, as it removes other barriers for students, especially in terms of accessibility and flexibility. With sufficient support, students are able to learn at any time and place that is convenient for them and to benefit from online collaboration with instructors and other students.

6. Conclusions
This particular study shows that when e-learning is delivered intentionally and efficiently in terms of managing and support of student learning, it has a positive impact on student satisfaction. We conclude that educators need to be mindful of these positive outcomes as well as of the difficulties that e-learning students face. It is likely that, with the creation and advancement of online learning theories, the quality and quantity of e-learning research will improve and the quality of e-learning will also increase. Clear definitions is needed as well as scholarships on e-learning to ensure that a comprehensive body of literature is available to promote successful future e-learning.
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