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## Satisfaction on Online Learning during Covid-19 Pandemic: Perspective of Malaysian students

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### Abstract

This study investigated the determinants of students' satisfaction with their online learning experience during the COVID-19 pandemic. The data was collected among 241 undergraduates enrolled in information management from a selected universities in Malaysia. The Structural Equation Modelling (SEM) results revealed that the independent variables, namely course design and digital resources, influenced students' satisfaction with their new online learning experience. The findings have several implications for developing and maintaining practical and student-friendly online learning spaces in higher education.

Keywords: Online learning; digital resources; Malaysian students; Higher education

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### 1.0 Introduction

The COVID-19 pandemic had a significant impact on the rest of the world. The effect can be observed in the economy, lifestyle, and even the educational system. A similar problem exists in Malaysia, where teaching and learning approaches are shifting from face-to-face to online. This is because the Movement Control Order (MCO) was put in place to prevent the disease from spreading further (Izhar & Torabi, 2022). The closing of schools and universities has had a significant negative impact on students. Online education has been implemented as a result. Although the online learning technique was initially thought to be challenging to apply, students in Malaysia were able to adapt it (Karim et al., 2021), albeit not as a whole.

Furthermore, higher institutions have used online learning (Karim et al., 2021). As a result, online learning is an option and a critical platform for teaching and learning (Hettiarachchi et al., 2021). In addition, UNESCO proposes that schools and universities employ online learning programmes and open educational applications to teach their students during the closures induced by COVID-19 so that education is not disrupted. As a result, several institutes have opted for online learning (Gopal et al., 2021).

However, there was little preparation for the change in learning approaches regarding module and learning design, technology, digital reference materials, and teacher competencies (Shuhidan et al., 2021). This has some bearing on the quality of knowledge and student satisfaction. The effectiveness of online learning needs to be assessed to identify areas for development and factors such as instructor and student satisfaction. Thus, this study aimed to identify factors affecting student satisfaction with online learning during the new normal.

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## 2.0 Literature Review

### 2.1 Student Satisfaction

Various methods and assessments are used to measure student satisfaction (Gopal et al., 2021), and the majority are associated with students' quality and learning experience on different platforms. According to She et al. (2021), preliminary studies emphasise the pivotal role that student satisfaction plays in determining the success or failure of online education. Student satisfaction is an indicator of the quality of an educational program and is regarded as an essential factor in the completion of the course (Karim et al., 2021). The satisfaction of these students will form self-esteem in terms of self-confidence, a more creative way of thinking, and diversifying their skills. Additionally, research on student satisfaction with online learning is gaining significant traction and the interest of numerous stakeholders. This includes a study on the learning management system used during online learning (Annalai et al., 2021; Karim et al., 2021). However, different determinants affect student satisfaction, namely, self-efficacy, usefulness, technology, student engagement, quality of instructor, course design, student expectation and digital resources (Affum, 2022; Apuke & Iyendo, 2018; Elshami et al., 2021; Hasan et al., 2009; Jiménez-Bucarey et al., 2021; Karim et al., 2021; Lockee, 2021). Objective of this study to examine the relationship between quality of instructor, course design, student expectations, digital resources and student satisfaction.

### 2.2 Quality of Instructor

Each lesson will refer back to the instructor's quality. The instructor's quality relates to that instructor's characteristics: commitment and enthusiasm to foster student learning (Gopal et al., 2021). Instructor delivery methods and motivation play an essential role in engaging students face-to-face or online (Jiménez-Bucarey et al., 2021). Interestingly, students would be more satisfied with their education when engaged (Gopal et al., 2021). As a result, the instructor views it as a crucial competency (Abuhassna et al., 2020). According to Kumar et al. (2021), instructors' skills in handling digital technology make learning more enjoyable with various teaching tools, including presentation slides, audiovisuals, digital materials and applications. It becomes one of the added values to the students. It becomes one of the added values to the students. Therefore, this study included the hypothesis that the instructor's quality significantly affects the students' satisfaction with online learning.

*H1: The quality of the instructor positively affects the satisfaction of students.*

### 2.3 Course Design

Student acceptance in learning either face-to-face or online is different. This is due to the varied delivery method. Among the challenges during online learning is in determining students' understanding. Hettiarachchi et al. (2021) claimed that the response obtained from students as learning progresses significantly less. Therefore, the course design should be appropriate, especially for online learning (Gopal et al., 2021; Jiménez-Bucarey et al., 2021). Course design is the process and methodology of creating quality learning environments and student experiences (Hettiarachchi et al., 2021). Online courses should be dynamic, engaging, and interactive (Dhawan, 2020). This includes student assessment strategies (Elshami et al., 2021). Numerous online learning models can be used as references (Abuhassna et al., 2020). According to a study by Orcid and Orcid (2020), the COVID-19 pandemic caused students' stress levels to rise, and one of the reasons was that the required courses were excessively demanding and subsequently drop out. Therefore, this study hypothesised that the appropriate course design significantly affects the students' satisfaction with online learning.

*H2: Course design positively affects the satisfaction of students.*

### 2.4 Student's Expectations

Student expectations need to be emphasised in the implementation of learning. Expectations of students that the university cannot achieve are among the main factors that students withdraw from continuing their studies (Hasan et al., 2009). Students' expectations are firm hopes or beliefs in something they want to achieve through their learning experience (Gopal et al., 2021). In a study by Jiménez-Bucarey et al. (2021), one determinant is the degree to which online learning meets student expectations, which is attributed to teacher quality, service quality, and technical quality of services. Meanwhile, Expectation Disconfirmation Theory (EDT) was utilized to determine the level of satisfaction based on student's expectations (Gopal et al., 2021). Therefore, this study included the hypothesis that student's expectation significantly affects the satisfaction of the students with online learning.

*H3: Expectations of the students positively affects the satisfaction of students.*

### 2.5 Digital Resources

Students generally have access to various reading materials and reference sources to facilitate their study, including materials from the academic library. However, students only used online digital resources during the COVID-19 pandemic. Furthermore, some students are not competent in searching for digital resources (Musin, Dan Indrajit, 2020) which somewhat hinders their learning process. Digital resources are a collection of data, whether it be text referring to full-text databases, electronic journals, image collections, other multimedia and media-based products, numerical, graphic, or temporal values (Avinash Dukare, 2020). The university's digital resources are crucial for use as references. Student satisfaction will be impacted if the material is insufficient (Avinash Dukare, 2020; Dhawan, 2020). Additionally, using digital resources, such as databases made available by the library, will enhance the effectiveness of online learning. Therefore, this study hypothesised that digital resources significantly affect students' satisfaction with online learning.

H4: Digital resources positively affect the satisfaction of the students.

The proposed framework depicted in Figure 1 shows the quality of instructor, course design, student expectations and digital resources, hypothesised to impact students' satisfaction with online learning.

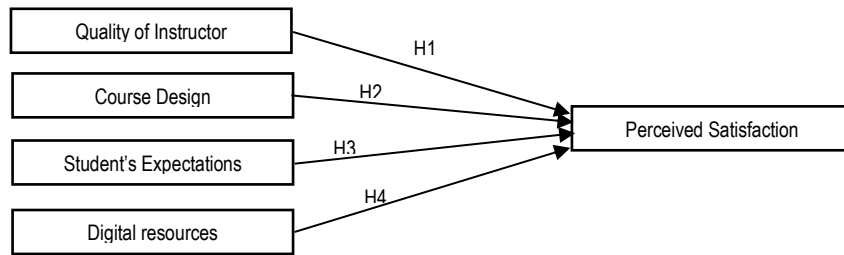


Fig. 1: Theoretical Framework

### 3.0 Research Methodology

The study population was undergraduate students enrolled in information management from a selected university in Malaysia. The study used the survey research method with a questionnaire as a data collection tool. Items used to measure variables in the framework have been adapted from Avinash Dukare (2020); Gopal et al. (2021); Hettiarachchi et al. (2021) and Karim et al. (2021). Each variable used five items with the corresponding 5-point Likert scale labelled as "1 = Strongly Disagree," "2 = Disagree," "3 = Neutral," "4 = Agree" and "5 = Strongly Agree." For each item, the respondents were asked to rate their level of agreement or disagreement. A strategy using a non-probability sampling method was used. According to Masrek et al. (2021), non-probability sampling is considered more suitable when a study's objective is to evaluate the proposed theoretical assumptions rather than population generalisation. Online distribution of the questionnaires resulted in 241 replies, a response rate of more than 90%. For the results, the study used descriptive analysis and Partial Least Square Structural Equation Modelling (PLS-SEM). To conduct the descriptive analysis, the statistical software SPSS Version 26.0 was used, while SmartPLS Version 3.0 was used for the PLS-SEM analysis. The PLS-SEM analysis comprises two stages, the first being the evaluation of the measurement model and the second being the evaluation of the structural model. The measurement model shall be evaluated by means of convergent validity and discriminant validity. The convergent validity refers to the degree of relatedness of the items in measuring the constructs while discriminant validity refers to a degree to which items are differentiated across constructs. The structural model assessment will analyse the hypothesised relationship between constructs.

## 4.0 Results and Discussion

### 4.1 Common Method Bias (CMB)

Harman's single factor score is frequently employed to assess common method bias (CMB). For this study, all items from all the constructs studied were entered for analysis and constrained to only a single factor. The results suggest that the single factor explained only 33.7% which is less than the benchmark value of 50% of the total variance, therefore indicating that CMB is not a likely contaminant of the research.

### 4.2 Demographic Profiling

Out of the 241 respondents, 182 (75.5%) were female students, while the remainder were male students (59 or 24.5%). Among the respondents, 185 students or 76.7% were aged between 21 - 23, 21 (8.7%) students were aged between 24 - 26, 13 students (5.5%) were aged between 27 - 29, while those aged above 30 were 12 students (5.0%) and under the age of 20 were 10 students (4.1%). In this study, the respondents' online learning experience was also recorded. The finding shows that most of the respondents 68 (28.2%) students experienced with online learning for 4 semesters, followed by 64 students (26.6%) for 2 semesters. The rest were 33 (13.7%) students for 3 semesters, 28 (11.6%) students for 6 semesters, 25 (10.4%) students for 5 semesters and 23 (9.5%) students for 1 semester.

### 4.3 Descriptive Analysis

Table 1 shows the present study's mean and standard deviations for each variable. Respondents were asked to indicate their opinion on the quality of instructor, course design, student expectations, digital resources and students' satisfaction as measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Student satisfaction recorded the highest mean score of 4.886 out of 5.0 points with a standard deviation of 0.897, indicating that the students strongly agreed that they were very satisfied with their online learning experience. Digital resources and student expectations recorded mean scores of 4.515 and 4.422 out of 5.0 points with standard deviations of 0.843 and 0.788, respectively, reflecting that the students are satisfied with digital resources provided and their expectations of the course taken. As far as quality of instructor and course design are concerned, the recorded mean is 4.353 and 4.245 respectively, implying that the agreed that they have satisfied with the quality of instructor in term of teaching method and approach and the course design.

Table 1. Descriptive analysis of constructs

|                        | Mean  | Standard deviation |
|------------------------|-------|--------------------|
| Quality of Instructor  | 4.353 | 0.746              |
| Course Design          | 4.245 | 0.706              |
| Student Expectations   | 4.422 | 0.788              |
| Digital Resources      | 4.515 | 0.843              |
| Students' Satisfaction | 4.886 | 0.897              |

#### 4.4 Measurement Model Assessment

Table 2 shows the results of assessment on the measurement model. Factor loading, composite reliability (CR) and average extracted variance (AVE) were used as criteria for assessing the measurement model. The indicator loading for indicator reliability was suggested at 0.708 or higher (Ramayah et al., 2018). However, loading levels that are > 0.7 (J. Hair et al., 2017), 0.6 and 0.5 (Byrne, 2016) and 0.4 (Ziyae, 2016) are adequate if the AVE and CR are complemented by other items that have high scores of loadings. The CR and AVE benchmarks are 0.7 and 0.5, respectively. The results shown in Table 2 suggest that all of these criteria are met, thus suggesting that converging validity of the measurement model can be presumed.

Table 2. Factor Loading, Composite Reliability and Average Variance Extracted

|                        | Items Code | Factor Loading | Composite Reliability (CR) | Average Variance Extracted (AVE) |
|------------------------|------------|----------------|----------------------------|----------------------------------|
| Quality of Instructor  | QI1        | 0.877          | 0.917                      | 0.733                            |
|                        | QI2        | 0.901          |                            |                                  |
|                        | QI3        | 0.783          |                            |                                  |
|                        | QI4        | 0.860          |                            |                                  |
| Course Design          | CD1        | 0.889          | 0.918                      | 0.738                            |
|                        | CD2        | 0.900          |                            |                                  |
|                        | CD3        | 0.761          |                            |                                  |
|                        | CD4        | 0.880          |                            |                                  |
| Student Expectations   | SE1        | 0.830          | 0.908                      | 0.711                            |
|                        | SE2        | 0.873          |                            |                                  |
|                        | SE3        | 0.802          |                            |                                  |
|                        | SE4        | 0.865          |                            |                                  |
| Digital Resources      | DR1        | 0.764          | 0.911                      | 0.631                            |
|                        | DR2        | 0.847          |                            |                                  |
|                        | DR3        | 0.807          |                            |                                  |
|                        | DR4        | 0.839          |                            |                                  |
|                        | DR5        | 0.776          |                            |                                  |
|                        | DR6        | 0.727          |                            |                                  |
| Students' Satisfaction | SS1        | 0.832          | 0.941                      | 0.762                            |
|                        | SS2        | 0.880          |                            |                                  |
|                        | SS3        | 0.892          |                            |                                  |
|                        | SS4        | 0.877          |                            |                                  |
|                        | SS5        | 0.883          |                            |                                  |

Subsequently, the discriminant validity of the model was assessed using the Heterotrait-Monotrait ratio of correlations (HTMT) as suggested by Hair et al. (2014). In this study, all of the HTMT values of each construct range fulfil the recommended criterion value of 0.90 (Gold et al., 2015) and 0.85 (Kline, 2015), thus indicating that discriminant validity has been ascertained. As can be seen in Table 3, each of these requirements was met, hence the discriminatory validity of the measurement model can be claimed.

Table 3. HTMT Assessment of Discriminant Validity

| Course Design | Digital Resources | Quality of Instructor | Student Expectations | Student's Satisfaction |
|---------------|-------------------|-----------------------|----------------------|------------------------|
|---------------|-------------------|-----------------------|----------------------|------------------------|

| Course Design          |       |       |       |       |
|------------------------|-------|-------|-------|-------|
| Digital Resources      | 0.792 |       |       |       |
| Quality of Instructor  | 0.843 | 0.684 |       |       |
| Student Expectations   | 0.838 | 0.795 | 0.837 |       |
| Student's Satisfaction | 0.663 | 0.693 | 0.567 | 0.612 |

#### 4.5 Structural Model Assessment

Four hypotheses were developed to answer the research questions. During the structural analysis of the model, all hypotheses were tested. Based on Tables 4, out of four, two hypotheses in this study are supported which are H2 and H4.

Table 4. Results of Path Analysis and Outcome

|  | Original Sample<br>(O) | Sample Mean<br>(M) | Standard Deviation<br>(STDEV) | T Values | P Values | Outcome       |
|--|------------------------|--------------------|-------------------------------|----------|----------|---------------|
| H1: The quality of the instructor positively affects the satisfaction of the students. | 0.078                  | 0.077              | 0.102                         | 0.760    | 0.448    | No Supported  |
| H2: Course design positively affects the satisfaction of students.                     | 0.271                  | 0.268              | 0.132                         | 2.044    | 0.000    | Supported     |
| H3: Expectations of the students positively affects the satisfaction.                  | 0.008                  | 0.012              | 0.142                         | 0.053    | 0.958    | Not Supported |
| H4: Digital resources positively affect the satisfaction of the students.              | 0.386                  | 0.393              | 0.102                         | 3.783    | 0.000    | Supported     |

## 5.0 Discussion

According to the findings, the key elements to ensuring student satisfaction when implementing online learning is course design and digital resources. These results are consistent with Gopal et al. (2021); Jiménez-Bucarey et al. (2021) and She et al. (2021), according to which course development for online learning differs little from face-to-face. The abilities of the students must be taken into consideration while developing assessment, teaching, and coursework approaches. This is done to keep students from getting stressed out and participating as little in class. Reference materials available online should be adequate and not just the instructor's notes (Apuke & Tunca, 2020). Additionally, it was shown that student satisfaction was unaffected by the quality of instructors or expectations on their part. According to Abuhassna et al. (2020), self-reliance makes students rely more on reference materials than communication with instructors. This demands for the instructor to deliver the courses with extreme efficiency. To effectively convey the course material, one must comprehend the psychology of the students. The student's performance and satisfaction are impacted by the teacher's ability to convey the course material effectively. The teachers' point of view is crucial since their excitement improves the standard of the online learning process.

## 6.0 Conclusion

This study has empirically identified the factors that influence students' satisfaction towards online learning at a selected Malaysian university. In contrast to the current research, previous studies examined at the variables that influence students' satisfaction with the conventional educational system. However, the current study was carried out to discover the key elements that contribute to students' satisfaction with online learning after Malaysia experienced the COVID-19 epidemic. The findings showed that two independent variables significantly affect student satisfaction. The study came to the conclusion that digital resources and course design are significant factors in raising students' satisfaction with online learning. However, it is determined that students use digital resources effectively for their coursework and other academic pursuits that are appropriate for online learning.

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