Importance-Performance Analysis for Improving Online Learning in Business and Management Programme

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Abstract

Online learning has become the new standard in higher education since the COVID-19 epidemic. In order to be effective, colleges and universities must evaluate the delivery of online classes using relevant data gathered from their students. This paper demonstrates the use of importance-performance analysis to continuously improve online learning quality. Undergraduate students, who are enrolled in Business and Management programme at a higher learning institution located in Negeri Sembilan, Malaysia are invited to participate in this survey via online survey questionnaire. A total of 239 responses are received and analysed using importance-performance analysis technique. The results show that facilitating conditions, namely technology and interaction fell into the 'Concentrate Here' quadrant; course delivery and instructor factors in the 'Keep Up the Good Work' quadrant; and learners' readiness in the 'Low Priority' quadrant. From the result, it is suggested that technology and interaction attributes should be paid special attention. Thus, importance-performance analysis can significantly contribute to the continued improvement of online learning delivery quality.

Keywords:

Online learning, importance-performance analysis, higher learning institutions

INTRODUCTION

Since the COVID-19 pandemic, traditional teaching and learning have undergone a significant transformation. Nowadays, students in institutions of higher learning have more options for studying than just being present in a classroom. As long as they have access to the internet today, students can acquire quality education whenever and wherever they desire. Although online learning does not require physical interaction between the teacher and the learner, this specific learning demands strong self-motivation and time management skills. Consequently, it can lead to a sense of social isolation (Croft et al., 2010). Studies have shown that online classes have had a higher rate of class failures and dropouts (Willging & Johnson, 2009; Levy, 2007). In addition, Simamora (2020) discovers that online study has caused anxiety and negative impact on students' economic condition. Therefore, to ensure the delivery of online learning in higher learning institutions is successful, it is crucial to examine how students perceive this new way of teaching and learning.

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The success of online learning is generally determined by student satisfaction (Yu, 2022; Mohd Satar et al., 2020). Several studies have examined student satisfaction using different methods. For instance, Jiang et al. (2021) apply Technology Satisfaction Model to investigate the factors contributing to students' satisfaction with online learning platforms at higher education institutions. They notice that computer self-efficacy, perceived ease of use and online learning platforms' usefulness directly and indirectly impacted students' satisfaction (Jiang et a., 2021). In another study, Darawong and Widayati (2021) and Pham et al. (2019) use SERVQUAL scale to examine student satisfaction in e-learning while other studies (Bickle et al., 2019; Landrum et al., 2021) identify attributes that contribute to student satisfaction.

While several studies have demonstrated determinants of student satisfaction, the area that is needed to be given priority to improve student satisfaction, which is based on student perception towards the performance of those factors, cannot be determined. Martilla and James (1977) have developed an evaluative technique known as 'Importance-Performance Analysis' as a tool to assist management in decision-making that has been able to identify areas that require remedial strategic actions (Sethna, 2015).

Thus, this research used importance-performance analysis to analyse university student satisfaction with online learning to improve the online learning quality. The following is an outline of the paper. The next section will discuss about online learning. The importance-performance analysis will then be explained. Following that, the methodology of the study will be explained and followed by the presentation of results, discussion, and practical implications. Finally, this study will be concluded with recommendations for improvement.

LITERATURE REVIEW

Online Learning

Online learning is generally defined as learning that takes place over the Internet. Online learning can be classified into two broad categories: asynchronous and synchronous. Learning that takes place via online channels without real-time interaction is called asynchronous learning. Moreover, Perveen (2016) asserts that students in asynchronous environments will be provided with readily available material in the form of audio/video lectures, handouts, articles and power point presentations, in which learners can access the learning materials at any time. Commonly, media such as e-mail, discussion boards, and blogs facilitate this type of learning. Video/screen recording (YouTube, MOOC), collaborative group work (Padlet), and gamification are examples of asynchronous learning modes. Asynchronous learning promotes flexibility as learners can access the course anytime according to their pace.

Synchronous learning, on the other hand, entails real-time engagement in which both the lecturer and the students must be available at the same time. Videoconferencing and chat-live learning sessions, such as Google Meet, Skype for Business, Zoom, and Webex, collaborative group work, game-based learning, such as Kahoot and Socrative, and discussion/forum/chats, such as Telegram and WhatsApp, are all commonly used to support this form of learning. As stated by Mabrito (2006), synchronous learning is similar to a traditional classroom, except that learners do not always have body language or other social cues benefits. In addition, synchronous learning is built on the social aspect of learning which enables students to get immediate feedback (Clouse & Evans, 2003). Although asynchronous and synchronous have their advantages and disadvantages, Amiti (2020) emphasizes that with

the right combination, both methods can help teachers and learners to have successful courses and results.

Satisfaction with Online Learning

Due to a complex and multidimensional construct, a review of extant literature on learning satisfaction suggests that several factors can cause student satisfaction with online learning (Saadé & Kira, 2006). The following sections will discuss four essential online learning satisfaction attributes: instructor (Teo & Wong, 2013; Bickle et al., 2019), learner (Arbaugh, 2002; Ji et al., 2022), course delivery (Kauffman, 2015), and facilitating condition (Teo & Wong, 2013).

Instructor

To ensure the effectiveness of online learning, the instructor or lecturer plays a significant role by creating the curriculum and utilising pedagogical practices to employ existing technologies (Teo & Wong, 2013). According to Roach and Lemasters (2006), online learners prefer the clarity of assignments, grading criteria, and professor interaction. Similarly, Bickle et al. (2019) state that the ability to reach or communicate with an instructor determines students' overall satisfaction in online learning. The promptness with which instructors respond to students' requirements has a substantial impact on their satisfaction (Thurmond et al., 2002). Learners become frustrated and discouraged, according to Teo and Wong (2013), if their requirements are delayed or ignored by the teacher.

Learner

Learners also play an important role in contributing to a positive outcome in online learning. One of the most important factors in e-learning satisfaction is learners' attitudes toward computers or information technology (Arbaugh, 2002). Thus, positive attitude learners toward information technology become more effective and content in this environment (Piccoli et al., 2001). Other studies have found personality traits (Cohen & Baruth, 2017) and student readiness and learning preferences (Smith, 2005; Wei & Chou, 2020; Kim et al., 2022) as predictors of students' satisfaction in online learning.

Course Delivery

The delivery of the course includes overall course design, specifically instructional and course materials, scheduling, as well as types and arrangements of discussions. A well-designed delivery procedure can boost learners' confidence and reduce e-learning-related frustration, resulting in more successful learning experiences (Teo & Wong, 2013). According to Kauffman (2015), students prefer online courses that have clear learning objectives and are organised into units with readings, lectures, and assignments. Similar findings are discovered by Li et al.'s (2016) where teaching materials, strategies, and workload satisfaction are considered to be vital criteria for learners to be more satisfied with the whole learning experience.

Facilitating Conditions

The main factors in the e-learning environment that can affect a person's desire to perform a task are facilitating conditions (Teo & Wong, 2013). Lee (2010) mentions that the facilitating

conditions include online support factors, such as assisting learners in online registration, course selection, online technical support, and fast instructors' feedback, though learners perceived them to be simple. Technology availability and acceptance are other examples of facilitating conditions (Huang and Hsiao, 2012; Hanafi et al., 2018). Huang and Hsiao (2012) assert that losing an internet connection in the middle of a quiz is one of the difficulties that have been experienced by frustrated students and instructors in online learning. Due to the isolation of instructors and learners, interaction with others is deemed to be another important component under facilitating conditions in distance education (Moore & Kearsley, 1996). Moore (1989) emphasizes three types of interaction, namely learner-learner interaction, learner-instructor interaction, and learner-content interaction. Fearnley et al. (2022) suggest that the strong predictors of student satisfaction are learner-content and learner-instructor interactions.

Importance-Performance Analysis

Martilla and James (1977) develop an evaluative technique as a tool to aid management in marketing decisions known as Importance-performance analysis. For its simplicity and convenience of application, this type of analysis has become popular among hospitality and tourism academicians. In importance-performance analysis, a list of product or service qualities is prepared, and subjects or respondents rate the importance of each attribute. Importance is viewed as an individual's significant assessment of various attributes. The subjects or respondents are then asked to rate the service provider's performance on the same set of qualities. After determining the mean importance and performance for all attributes, each attribute is placed into one of the four quadrants of the importance-performance grid as shown in Figure 1. Specifically, the importance of the attributes from high to low is represented by the vertical axis of the grid whereas the perceived performance from high to low is indicated by the horizontal axis.

Attribute placements into the importance-performance grid quadrants (see Figure 1) suggest the most suitable strategy for each attribute. According to Martilla and James (1977), Quadrant A is labelled 'Concentrate Here.' Attributes falling under Quadrant A are attributes that need special effort to improve the existing condition. These attributes are high in importance but poorly performed. Attributes in this particular Quadrant imply that performance needs to be improved. In Quadrant B, the attributes contain both high importance and performance. Thus, the Quadrant refers to a great job in maintaining highly important and performed attributes, which is appropriate with the 'Keep Up the Good Work' label. Quadrant C is labelled 'Low Priority'. Low importance and performance simply mean that additional effort is unnecessary due to their low priority consideration. Quadrant D is labelled as 'Possible Overkill'. In contrast with Quadrant A, Quadrant D attributes are regarded as low importance, yet they are highly performed. The interpretation is that we should channel the resources of these attributes elsewhere.

Prior studies demonstrated that the use of importance-performance analysis is pragmatic, and easy to apply and interpret (Keyt et al., 1994). More importantly, Sethna (1982) finds that importance-performance analysis is considered a valid and powerful technique in area identification that demands remedial strategic actions. Martilla and James (1977) emphasise the importance of determining important attributes to measure. They suggest that the important attributes can derive from qualitative research techniques, such as focus groups and interviews, while Keyt et al. (1994) recommend developing a list of attributes after canvassing related literature. Important attributes from previous studies have been identified as

major contributions to online learning satisfaction in this study (Teo & Wong, 2013; Arbaugh, 2000; Cohen & Baruth, 2017; Kim et al., 2022; Fearnley et al., 2022).

Importance	**Quadrant A** *"Concentrate Here"* High Importance Low Performance	**Quadrant B** *"Keep Up the Good Work"* High Importance High Performance
	Quadrant C *"Low Priority"* Low Importance Low Performance	**Quadrant D** *"Possible Overkill"* Low Importance High Performance

Performance

Source: Martilla and James (1977)

Figure 1: Importance-performance framework

METHODOLOGY

For the purpose of this study, undergraduate students enrolled in business and management programme in a public higher learning institution located in Negeri Sembilan, Malaysia, were invited to participate in an online survey at the end of the semester. Students participating in the survey have experienced online learning for one semester due to the restriction of conducting face-to-face classes during the COVID-19 pandemic. The survey questionnaire consist of two (2) parts. The first part collect data on students' profiles that include gender, year of study, and programme enrolled. In addition, the second part of the survey questionnaire is comprised of questions on important attributes in an online learning setting.

Several questions are included in the second part of the survey questionnaire. The measurement items have been taken from previous studies with some modifications as follows: four (4) items measuring instructor attributes are adopted and adapted from Paechter et al., (2010); four (4) items measuring learners' readiness attributes are adopted and adapted from Smith (2005); 13 items measuring facilitating condition (technology and interaction) attributes are adopted and adapted from Rodriguez et al. (2008), Sun et al. (2007), and Arbaugh (2000); six (6) items measuring course delivery attributes are adopted and adapted from Paechter et al., (2010), Li et al. (2016), and Teo and Wong (2013). All measurement items, which have been used in this study are referenced in Appendix 1.

In the survey questionnaire, students are asked to indicate the importance of each attribute of online learning, ranging from '1' (strongly disagree) to '5' (strongly agree), in the form of a five-point Likert scale. Similarly, a five-point Likert scale is also employed, when they are asked to evaluate the performance of online learning attributes, ranging from '1' (strongly dissatisfied) to '5' (strongly satisfied). Then, all data collected are statistically analysed and interpreted using the Statistical Package for Social Science software (SPSS 26.0). Out of 1245 students, who are invited to participate in the survey, a total of 239 usable questionnaires are returned and analysed, giving a response rate of 19 percent.

RESULTS AND DISCUSSION

Students' Profile

Students who participate in the survey are asked to provide information on their gender and year of study (first, second, third or final year). As shown in Table 1, a total of 239 complete survey questionnaires are received, of which 77% are females and 23% are males. The data on students' gender reflects the student population whereby 70% of the students are female and 30% of the students are male. The largest group that participate in the survey, is from the Islamic Banking and Finance programme (35.1%). It is followed by Accounting (23.4%), Corporate Administration (21.3%), and Marketing (Financial Services) (16.7%), respectively. From those programmes, 49.4% of the students are in their third year of study, followed by first-year students (25.9%), and second-year students (20.1%). Only 11 (4.6%) final-year students participate in the survey, while the rest are completing their industrial training when the survey is conducted.

Table 1: Profile of students

Demographic variables	Category	Sample (N=239)	
		Frequency	Percent (%)
Gender	Male	55	23.0
	Female	184	77.0
Programme	Business Administration	8	3.3
	Accounting	56	23.4
	Marketing (Financial Services)	40	16.7
	Corporate Administration	51	21.3
	Banking and Finance	84	35.1
Year of Study	Year 1	62	25.9
	Year 2	48	20.1
	Year 3	118	49.4
	Year 4	11	4.6

Table 2 shows the mean scores for the importance and performance ratings of the attributes. Students are asked a wide range of aspects of online learning, concerning the importance and performance indications. As shown in Table 2, students have the highest mean of indicated importance in facilitating condition (technology) (mean = 4.59), and are also followed by instructor (mean = 4.54), course delivery (mean = 4.51), facilitating condition (interaction) (mean = 4.42), and learner readiness (mean = 4.17), respectively. When these students are asked to evaluate their satisfaction toward those attributes, the results show that the highest mean among the attributes is instructor (mean = 3.78), and are followed by course delivery (mean = 3.67), facilitating condition (technology) (mean = 3.50), facilitating condition (interaction) (mean = 3.47) and learner readiness (mean = 3.31), respectively. The overall mean for importance is 4.45 while for performance is 3.55. After determining the mean importance and performance for all attributes, as shown in Figure 2, the facilitating condition (technology and interaction) attributes are placed into Quadrant A, instructor and course delivery attributes are placed in Quadrant B, learner readiness is placed in Quadrant C, while no attribute is placed in Quadrant D.

Table 2: Importance and performance ratings of the attributes

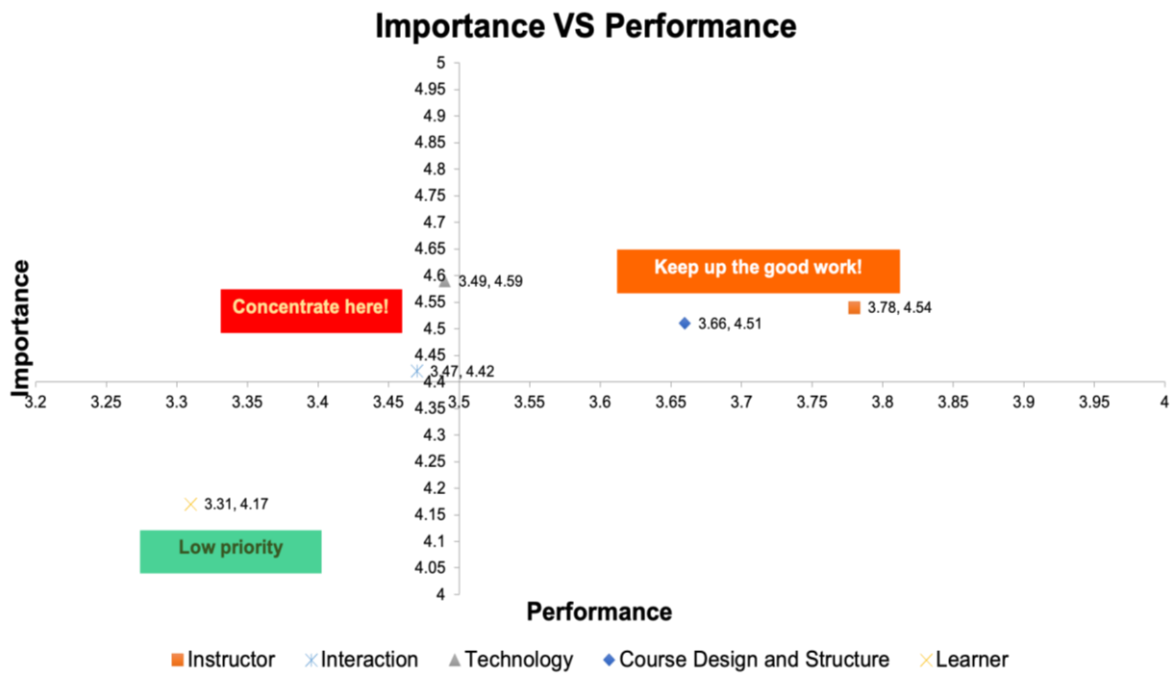| Attributes	Importance mean	Performance mean	Quadrant
Facilitating condition (technology)	4.59	3.50	A
Instructor	4.54	3.78	B
Course delivery	4.51	3.67	B
Facilitating condition (interaction)	4.42	3.47	A
Learner readiness	4.17	3.31	C
Overall mean	4.45	3.55	

Figure 2: Importance-performance analysis grid

As depicted in Figure 2, the mean importance and performance for all attributes are placed into one of the four quadrants of the importance-performance grid. The results show that instructor and course delivery attributes are identified in the 'Keep up the good work' quadrant. These attributes are considered satisfactory. It may indicate a positive message that the students are pleased with the instructor and the delivery of the course. Although the results show pleasant feedback from the students, instructors should be knowledgeable in designing course delivery that will help in promoting student success and satisfaction. In addition, institutions can help out by giving proper training to the instructors in delivering online classes and should not just assume that all lecturers or instructors can teach effectively online. Furthermore, instructors may need to give prompt feedback to the students, considering that providing timely response to learners is an important attribute in ensuring online learning satisfaction (Thurmond et al., 2002; Teo & Wong, 2013).

The results also show that 'Concentrate Here' quadrant captures two facilitating conditions attributes, namely technology and interaction. These results may suggest that these two attributes require special attention. They are consistent with similar findings in previous

studies whereby students' satisfaction towards online learning is significantly influenced by better internet access and availability of technical assistance (Mirza et al., 2011; Tarus et al., 2015; Tran & Nguyen, 2022). However, since real-time communication can be limited, online learning can cause social isolation (Croft et al., 2010). In addition, Conrad et al. (2022) suggest that students' experience with online learning can be negatively affected due to lacking social interactions Thus, it is important for instructors to create engagement and interaction, not only between instructors and learners but also among learners, while delivering online classes. For instance, instructors should also employ more collaborative activities in class to allow more interactions, rather than providing feedback to messages that their students post.

Also, whenever possible, instructors may opt for synchronous classes, instead of asynchronous learning, so that learners can participate in class. In terms of the technology attribute, instructors should understand the challenges that have been faced by their students during online learning, where make-up assignments or timeline extensions can be offered to accommodate their students. Lastly, the 'Low priority' quadrant captures the learner readiness attributes. Although the result shows that students do not perceive these attributes as important, it does not mean that higher learning institutions should reduce their efforts to improve such attributes.

CONCLUSION

This paper demonstrates the use of importance-performance analysis to continuously improve the quality in delivering online learning. Importance-performance analysis offers several advantages in gauging students' feedback towards online learning. It is an easily understood technique that allows higher learning institutions to devote more attention to areas that may need extra effort as well as areas that may consume too many resources. The importance-performance analysis in this study has illustrated that facilitating conditions, specifically technology and interaction, fell into the 'Concentrate Here' quadrant; course delivery and instructor attributes in the 'Keep Up the Good Work' quadrant; learners' readiness in the 'Low Priority' quadrant, and no attribute is identified in 'The Possible Overkill' quadrant. Based on these findings, higher learning institutions and online education providers should pay special attention in ensuring the availability of technical support and element of interaction between instructors and students as well as among students, as part of online learning.

Although this study could provide some recommendations for future research, several limitations should be considered. First, since this study involves a relatively small group of undergraduate students, the generalization of the findings of this study to other settings is not possible. Moreover, the responses received through the data collection are limited only to the current sample, thus, do not represent the opinions of the entire online learning communities. Secondly, data being collected via survey questionnaires in this study. On that note, future researchers are recommended to triangulate the findings of this study using data from multiple sources such as interviews or focus groups. Importance-performance analysis can significantly contribute to the continued improvement of the delivery of online learning quality. This improvement will lead to better and effective online learning.

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APPENDIX 1

Measurement Items Used for Attributes of Online Learning

Attributes	Items	Source
Instructor	1. Fast feedback from the lecturer 2. Possibility to contact the lecturer 3. Easy and fast access to the lecturer 4. Lecturer's skill in the implementation of e-learning	Paechter et al. (2010)
Learner readiness	1. I am able to easily access to the internet for my studies 2. I am comfortable to communicate electronically. 3. I am willing to actively communicate with my classmates and lecturer electronically. 4. I feel that online learning is of at least equal quality to traditional classroom learning	Smith (2005)
Facilitating condition (technology)	1. Technical support assistance by telephone is available 2. Technical support assistance by email is available 3. University provided required hardware for online learning 4. University provided required software for online learning 5. Speed of the internet. 6. Quality of the internet speed is good 7. Cost to connect to internet is affordable. 8. Easy access to internet.	Rodriguez, Ooms, and Montanez (2008); Sun et al. (2007)
Facilitating condition (interaction)	1. Interaction with other students is easy. 2. Easy to hold discussion with other students. 3. The lecturer frequently attempted to obtain student interaction. 4. Interacting with other students and the lecturer online became more natural as the course progressed. 5. Quality of class discussions throughout the course was good	Arbaugh (2000)
Course design and delivery	1. A clear and organized structure of the course and learning material 2. Easy to access online teaching materials and related learning activities	Paechter et al., (2010); Li et al. (2016); Teo and Wong (2013)

Attributes	Items	Source
	3. Teaching materials and learning activities were well integrated	
	4. Activities or exercises that help me to achieve the course objectives.	
	5. Useful guidance about preparing for assignments	
	6. Course assessment help students to meet learning outcomes	