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Critical Dimensions Of Service Satisfaction In Virtual Environments: An Importance-Performance Analysis

Meirani Harsasi [1], Moh. Muzammil [2], Faridah Iriani [3]
[1,2,3)] Universitas Terbuka
Email: [1)] rani@ecampus.ut.ac.id

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ABSTRACT

Much attention has been paid by scholars to measuring student satisfaction, especially in the online environment since it is related to the quality of the learning process and student performance. This study has the main objective of analyzing student satisfaction in online learning by considering the level of importance of elements in online learning. This research employed a simple random sampling method and succeeded in obtaining 391 data. To answer the desired research objectives, the Importance Performance Analysis (IPA) approach was chosen to find out which aspects need to be improved in online learning. The research results show that three attributes have the lowest performance values, namely the use of online learning platforms for various forms of learning resources, information about online learning, and ease of use of the LMS platform. These results have implications for policymaking and these three elements need to be prioritized for improvement. This study provides strong theoretical and practical support for improving online learning in terms of important aspects that support student satisfaction

INTRODUCTION

Online learning is a mode of learning that has reached its popularity nowadays due to its advantages in the flexibility of learning, personalization, and convenience (Wang, et al., 2023). These advantages become a major driver for students to participate in distance education due to various obstacles that cause them to be unable to attend face-to-face learning (Salimi and Kornelus, 2018). Moreover, it also can provide various online learning services anytime and anywhere (Danchikov et al., 2021; Muljana and Luo, 2019). Despite all its advantages, there are problems related to student retention in the online learning environment. The number of students who did not complete learning was reported to be higher in online learning compared to face-to-face learning (Bawa, 2016; Muljana and Luo, 2019). This problem is even experienced by the largest open and distance learning institution in the world, UK Open University, as reported by The Commonwealth of Learning (2017). Despite having a high output rate (about 55%), The UK Open University also faces problems related to student retention. The low

retention rate of students in online learning has been considered a great challenge for educators (Muljana and Luo, 2019). Online learning providers are facing pressure to retain students and continually strive to meet student demand and find ways to increase their satisfaction (Kanwar and Sanjeeva, 2022). This phenomenon is a serious problem for the implementation of online learning when the low level of student retention can damage universities' reputations, leading to decreased enrollment and market share (Garret, 2016).

Given the importance of student retention in online learning, several previous studies have attempted to investigate many aspects that will contribute to the increase in student retention. One of the most important aspects is student satisfaction since it is an important indicator in evaluating online learning which is not only related to the quality of the learning process, but also student performance (Harsasi, et al., 2022). Moreover, student satisfaction and performance are important determinants to measure learning outcomes (Kuo & Belland, 2016). Students who have a high level of satisfaction can lead to a higher retention rate and greater commitment to a program. Therefore, several researchers have conducted studies related to satisfaction which is associated with student success that will encourage them to persevere (Harsasi and Sutawijaya, 2018; Muzammil, et al., 2020; Wang, et al., 2023; Wright, et al, 2023). However, those studies focus on efforts to uncover what factors affect satisfaction and how these factors are related.

Scholars have long sought to discover factors that influence student satisfaction and have been validated as strong predictors, those are communication and interaction (Baber, 2020; Ngo & Ngadiman, 2021; Wang, et al., 2023), tutor/teacher activities (Muzammil, et al., 2020; Roque-Hernández, 2023); student activities (Gray & DiLoreto, 2016; Rajabalee & Santally, 2021), course design (Eom & Ashill, 2016; Gopal & Aggarwal, 2021), and online learning platform (Almusharraf & Khahro, 2020). These factors have been proven to have a positive influence on student satisfaction in online learning by considering various dimensions, not only from students but also from teachers and technology used. However, most studies focus on measuring students' perceptions of those factors without providing space for students to express the level of importance of the factors. Therefore, this research seeks to fill the gap in previous research by measuring students' perceptions of satisfaction regarding important attributes of online learning and the level of importance of those attributes. Thus, this study aims to analyze student satisfaction with online learning by considering the level of importance of its attributes. This research contributes to the practice of improving online learning in terms of important attributes that support student satisfaction.

LITERATURE REVIEW

In every organization providing goods or services, customer satisfaction is the main driving factor for organizational success. Every service provider or product producer always strives to ensure that the performance of the services or products produced exceeds consumer expectations. Woodside et al. (1989) have defined consumer satisfaction as the consumer's state of mind after making a purchase that reflects how much they like or dislike experiencing a product or service. Consumer satisfaction theory was chosen as the grand theory of this research which focuses on the main consumers in higher education, namely students. Competition between universities is getting stronger, making higher education institutions (HEIs) experience high pressure to be able to attract new students and retain existing students by providing quality education. Therefore, providing good educational services is compulsory for all HEIs as well as choosing it as a top priority strategy. To be able to provide the best service to students, HEIs must be able to understand student needs and identify how cognitive aspects lead to student satisfaction (Hwang & Choi, 2019). Positive perceptions of HEIs services may lead to a positive image of HEIs and overall satisfaction and positive behavioral intentions as well. This positive feeling and image will encourage students to continue studying, which for HEIs, serves as the main key to retaining existing students.

In an online learning environment, student satisfaction has a broader understanding than just student achievement or performance. The characteristics of online learning which require students to study independently without physically meeting the teacher is a big challenge for students. Thus, student satisfaction is not only a matter of gaining academic performance but also how students can go through online learning comfortably. Student performance is the percentage of students who pass a particular material module or qualification, while student satisfaction shows how students rate their experience at the end of a material module or qualification (Li et al., 2016). Online learning satisfaction refers to the evaluation of students' opinions and feelings toward the quality of online learning services based on their experiences (Yao et al, 2016). It is in the form of a cumulative psychological response to learning contents and learning environment after making a rational and emotional comparison between actual learning effect and expectation. In addition to showing the success of institutions in organizing online learning, online student satisfaction can reveal what happens during the learning process and is an important determinant to assess the success of programs, teachers, and technology in the learning process (Ilgaz and Gülbahar, 2015). Student satisfaction in learning indicates the fulfillment and level of student enjoyment about various aspects of the learning services they receive during online learning (Horzum, 2015). Assessments of student satisfaction are used by most universities in the United States and the United Kingdom to reflect on learning outcomes (Rienties, 2014).

The quality of online learning is still a debate among education experts. Some experts have argued that online learning can provide many positive learning experiences to students (Arbaugh, 2014; Eom et al., 2016, Li et al., 2017). The use of various media to send instructional content, teaching methods, learner support, and learning flexibility will support student satisfaction (Markova, et al., 2017). However, on the other hand, some experts still consider that learning in an online environment tends to cause confusion and feelings of isolation, it will have an impact on learning effectiveness and satisfaction (Zaborova & Markova, 2016; Ni, 2013). This difference shows that the effectiveness of online learning still requires improvement that will lead to the high quality of distance learning implementation. Therefore, improving the quality of distance learning needs to be conducted from various aspects, including tutors, students, technology, and online learning platforms. In this regard, it is very important for online learning providers to evaluate student perception of their experience in online learning as a basis for improving its quality. Having the whole understanding related to student satisfaction in online learning as explained before, this research was carried out based on the following framework.

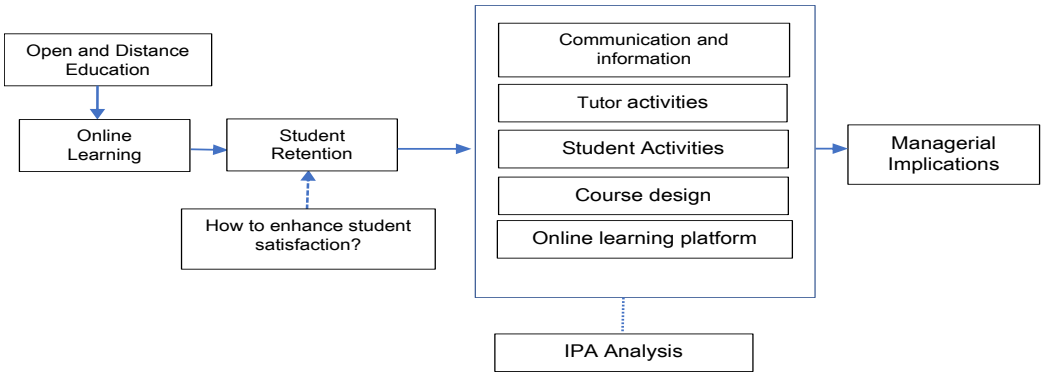


Figure 1. Research Framework

Importance-Performance Analysis (IPA Analysis) was chosen as an analytical tool to answer the research objectives. IPA Analysis is a technique to analyze consumer satisfaction with products or services provided by organizations as proposed by Martilla and James (1977). In its development, IPA is used as a tool to understand the wants and needs of consumers so that it

can be used as a basis for developing marketing strategies. The use of IPA Analysis is not only limited to organizations producing goods/products but also used in service organizations such as higher education (Silva &; Fernandes, 2012; Phadermrod, et al., 2019), in which it was determined that consumers are college students. Consumer satisfaction is the accumulation of consumers' perception of the quality of the product or service received compared to their expectations. Therefore, IPA measures consumer satisfaction which is assessed based on the performance of the product or service compared to how important the attributes of the product or service are to consumers. The final result of IPA Analysis is the IPA Matrix which consists of 4 quadrants as shown in Figure 2.

Figure 2. IPA Matrix

Quadrant A **Concentrate here**	**Quadrant B** **Keep up the good work**
Quadrant C **Low priority**	**Quadrant D** **Possible overkill**

The results of consumer assessment of the satisfaction and performance of the product or service received will be combined in the IPA matrix and plotted in 4 quadrants as follows.

- Quadrant A: Low Performance – High Importance (Concentrate here): attributes in this category indicate major weaknesses; Customers perceive high importance, but their satisfaction is low. If these attributes are left unchecked, they can threaten the organization to attract customers and compete with other organizations. Therefore, financial support can be focused on these attributes, as a foundation for improving attribute performance to increase customer satisfaction.
- Quadrant B: High Performance – High Importance (Keep up the good work): attributes in this category are those that have reached a standard level of performance. In this quadrant, customers are satisfied with the product or service received while considering these attributes as important attributes. Therefore, attributes in this quadrant should be maintained or extended through the support of organizational resources.
- Quadrant C: Low Performance – Low Importance (Low priority): attributes in this category have low performance, but do not threaten the organization because their importance is also considered low so they are grouped under sub-weaknesses. Financial support should not be focused on this attribute, if the attribute of this category does not provide reliable results, then there is no need for improvement efforts.
- Quadrant D: High Performance – Low Importance (Possible overkill): attributes in this category reflect secondary strengths and are not very significant. These attributes, even if consumers are satisfied, are considered unimportant attributes in the products or services they receive so they have the least potential impact in attracting customers. These attributes can be a source of unnecessary waste of resources, so financial support should be allocated to other, more sensitive categories of attributes.

METHODS

Having the research framework as illustrated in Figure 1, this study adapted Importance – Performance Analysis (IPA Analysis) to answer the desired questions regarding the improvement of quality in online learning. The data collected in this study is primary data gained from students' perceptions. The research instrument was developed through the identification of several important aspects of online learning as the main input for future improvements, namely

communication and information, tutor activities, student activities, course design, and online learning platform (Moodle) which is further divided into 19 research question items as in Table 1. To analyze the data, two groups of measurement must be responded to by students for each attribute: (1) the level of satisfaction with the performance of the attribute, and (2) the level of importance of the attribute for the whole online learning services. Respondents were asked to state the level of performance/satisfaction and importance of each question item. Research instruments are compiled in the form of questionnaires that are distributed online to respondents. This study uses purposive sampling by selecting students at least they are in the third semester with the consideration that they already have experience in online learning for one year. Thus, they have enough experience to assess the satisfaction and importance of attributes in online learning. The research instrument is arranged in statement sentences measured using a 5-point Likert scale with criteria: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. A total of 391 data can be collected within one month.

Table 1. Research Instruments

No. Indicators	Indicators
1	Students are actively involved in the online learning process (contributing to discussions and assignments)
2	Students can communicate seamlessly with other students and tutors
3	Students get enough information about the online learning process at the beginning of the tutorial
4	Tutors give timely feedback
5	Tutors give a timely score
6	Tutors use adequate illustrations and examples
7	Tutors encourage students to actively participate
8	Online learning courses are important to learn
9	The materials I learned can achieve the final goal of the course as contained in the course activity design
10	I find learning through online learning is fun
11	I feel online learning is easy for students to follow
12	Online learning platform (Moodle) is easy to use (user friendly)
13	Online learning platforms (Moodle) can be used for various forms of learning resources (text, chat, video, audio, graphics, etc.)
14	Engaging online learning (Moodle) platform
15	Learning objectives have been set at the beginning of the online learning period
16	The arrangement of learning materials per week is appropriate
17	Learning content is arranged according to learning objectives and programs
18	The activities and learning resources used are very helpful for students to achieve learning goals
19	The composition of the assessment has been clearly informed at the beginning of the online learning period

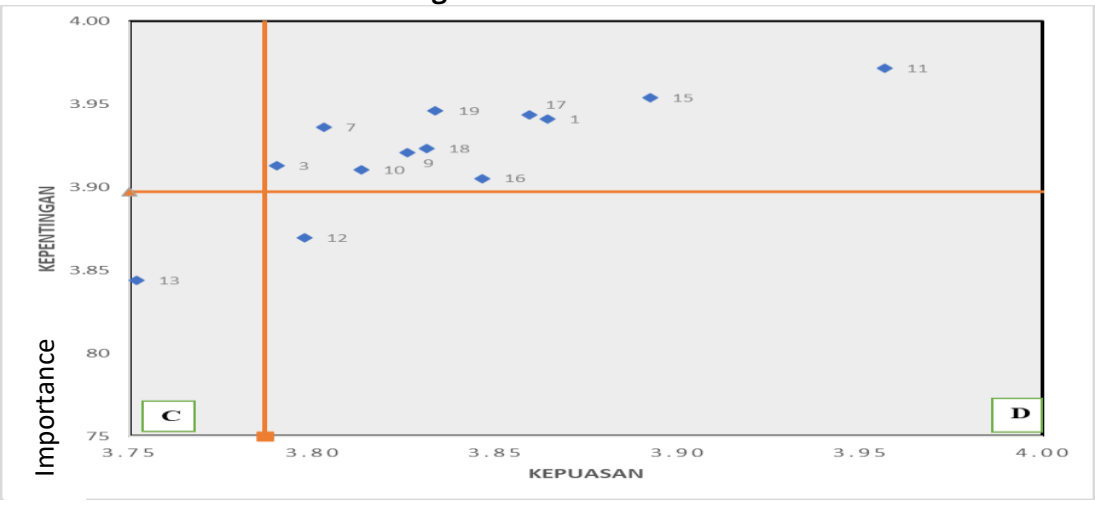
RESULTS AND DISCUSSION

Respondents in this study were students with criteria of having participated in online learning in the previous semester considering that this study asked students to determine the level of satisfaction and importance of attributes in online learning. Thus, this study used purposive sampling techniques with data collected as many as 391 data. Then, the collected data is processed using IPA Analysis. The final result is the IPA Matrix which consists of four quadrants, namely concentrate here (quadrant A), keep up the good work (quadrant B), low priority (quadrant C), and possible overkill (quadrant D). The data obtained are then averaged for each attribute, namely the average value of perception of performance/satisfaction (X) and the average value of importance (Y). The results of the IPA calculation are shown in Figure 3.

Table 1 The results of the IPA calculation are shown

No	Performance	Importance	Quadrant
1	3,86	3,94	B
2	3,62	3,80	B
3	3,79	3,91	B
4	3,57	3,81	B
5	3,61	3,83	B
6	3,63	3,80	B
7	3,80	3,94	B
8	3,94	4,02	B
9	3,83	3,92	B
10	3,81	3,91	B
11	3,96	3,97	B
12	3,80	3,87	D
13	3,75	3,84	C
14	3,72	3,81	B
15	3,89	3,95	B
16	3,85	3,91	B
17	3,86	3,94	B
18	3,83	3,92	B
19	3,83	3,95	B

Figure 3. IPA Matrix



Next, we plot the position of each attribute into the IPA matrix (Figure 3.). The X-axis indicates organizational performance/customer satisfaction, and the Y-axis indicates the importance of each attribute. From the results of the matrix, it is known that most of the attributes are in quadrant B (keep up the good work). Three attributes have the lowest performance, namely attribute 13 (quadrant C), attribute 3 (quadrant B) and attribute 12 (quadrant D). If we analyze further, attribute 13 has the lowest level of performance. The statement of attribute 13 is "The platform (Moodle) can be used for various forms of learning resources (text, chat, video, audio, graphics, etc.)". While the statement of attribute 3 is that students are well informed about the process of online learning at the beginning of the tutorial, and the statement of attribute 12 is "The platform (Moodle) is easy to use (user friendly)". Attribute 3 is related to the information received by students, while the other two attributes are related to the platform used. Attribute 13 indicates that students do not find that the Moodle platform can be used for various forms of learning resources such as video, audio, text, chat, graphics, etc. In this case, the university has set a policy that material in online learning must be equipped with various learning resources in various forms, such as video, audio, images, or articles. However, it turns out that students do not understand how to use learning resources in these various media. On the other hand, an attribute that is also considered to have low performance is a user-friendly platform. Even though the respondents were students who already had online learning experience, it turned out that they still underrated the performance of user-friendly platforms. Both attributes can be linked to attribute 3 which indicates that students are less informed about online learning. Students who are not used to online learning, when entering the university world will have difficulty adapting to the online environment. Therefore, universities need to conduct continuous socialization and education about various aspects of online learning, not only in terms of course content but also in strengthening students' skills to be actively involved in online learning.

Answering research findings on attributes 12 and 13 related to the LMS platform, it has a very fundamental managerial decision impact. We start by strengthening our understanding of the LMS platform. Moodle is an online learning platform used in the Learning Management System (LMS) at Universitas Terbuka as a research context. Moodle is widely used in the field of education, especially in universities for various purposes: online learning, and blended learning, which provide users with a series of communication facilities, such as forums, chat and messaging systems, wiki rooms, etc. Through the forum facility, all learning participants can communicate in an asynchronous way, which allows them to communicate with each other or to communicate with the teacher/tutor at any time, as long as there is an internet connection. Oproiu (2015) identified the advantages of using this platform in learning activities, including the ease of teachers communicating with students through virtual classes, ease of student data administration, online self-testing, and communication and socialization between students and teachers.

Learning in an online environment does have its own challenges. However, the presence of technology is expected to minimize these challenges of online learning compared to face-to-face learning. Challenges do not only come from the student side, but also the teacher side; which means the success of online learning shows the readiness of both the teachers and students. Therefore, the role of teachers is very necessary to increase student engagement by providing and educating students to use various learning resources that can be facilitated in LMS, such as multimedia, chats, simulators, audio, video, animation, etc. However, it should be noted that the technology used to build connections, communication, and opportunities to achieve learning goals must be functional and user-friendly.

In general, several managerial actions can be proposed as a follow-up to the results of this study. First, new students need to be well-informed about the online learning process (registration, activation, discussion, assignment, etc.). This information can be disseminated through social media, university websites, faculty websites, and other sources of dissemination.

Second, universities need to conduct training on distance learning systems for new students, including the technical use of the LMS platform. The use of a user-friendly Moodle platform is also emphasized for successful online learning. The use of various learning resources in various forms and media must be continuously introduced to students. Students get various alternative materials in various media to study, for example limited internet network will also limit students from downloading videos, so learning materials must be provided in written form (articles, reports, etc.). Vice versa, if students do not like reading articles, then they can watch videos, of course, if the internet network is adequate.

The results of this research enrich input for good practices in developing online learning programs which are in line with a study by Yu (2022). Online learning satisfaction should be viewed from various dimensions, those are students, teacher/instructor/tutor, platform, and instructional design. The effectiveness of online learning depends on learning design/planning and teaching to improve the quality of learning and student outcomes (Liu et al., 2020). In the context of this research, with Moodle's capabilities and existing features, it is necessary to build close communication among students and between students and teachers. Not only communication regarding content, but the teacher's role is very necessary to provide technical information. The importance of information and communication in the online environment is also found in the research by Rakic et al. (2020). However, the correct use of online learning platforms is very important for the success of student's studies, including the use of various learning resources that can be facilitated in online learning platforms. Moreover, it must also be followed by clarity of information for students and ease of use of the platform so that they can carry out online learning more comfortably.

CONCLUSION

This study aims to analyze student satisfaction in online learning by considering the level of importance of its elements to increase student retention in the online learning environment. Therefore, the main objective of this study is to analyze student satisfaction in online learning by considering the level of importance of its attributes. By using purposive sampling, the study managed to get 391 respondents.

The results showed that there were three attributes with the lowest level of performance, namely attribute 3, attribute 12, and attribute 13. These attributes are related to the lack of information regarding online learning as well as related to the Moodle platform. This research shows that universities must provide sufficient information to students, both technically the use of online learning and the use of learning resources in various media. In general, several managerial actions can be proposed as a follow-up to the results of this study. First, new students need to be well-informed about the online learning process (registration, activation, discussion, assignment, etc.). This information can be done through social media, university websites, etc. In addition, universities need to conduct training on distance learning systems for new students, including the technical use of the LMS platform.

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