

ANALYSIS OF ONLINE LEARNING SERVICES' STUDENT SATISFACTION USING THE IMPORTANCE-PERFORMANCE ANALYSIS APPROACH

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ABSTRACT

Background: The education sector is adapting in order to suppress the spread of the Corona Virus-19 through distance learning policies. Universities are required to continue to carry out teaching and learning activities using online learning method, including medical education. Medical education has the characteristics of problem-based learning, which consists of theoretical lectures, tutorials, laboratory sessions, and skills labs for clinical skills. The implementation of online lectures needs to be evaluated with measurable instruments to identify obstacles and determine the direction of improvement. The study aims to determine the gap in the quality of online lecture services and the direction of service improvement using the importance-performance analysis method.

Methods: This study was conducted by the survey method using a quantitative approach. Questionnaires were distributed to 250 students from 684 populations in the Sebelas Maret University medical study program. The results of the study were analyzed using Importance-Performance Analysis.

Results: Out of the 24 attributes, the IPA analysis showed five aspects need to be improved. Attributes in quadrant I as main priorities are responsiveness of lecturers, responsiveness of education staff, technical assistance in online learning constraints, suitability of materials, access to contact lecturers, and communication between lecturers and students.

Conclusion: According to the results of the importance-performance analysis method approach, student satisfaction will be achieved by improving services that are in quadrant I, which is the implementation of online learning.

Keywords: medical education, students satisfaction, online learning, importance performance analysis

ABSTRAK

Latar belakang: Sektor pendidikan beradaptasi dalam rangka menekan penyebaran Corona Virus-19 melalui kebijakan jarak jauh. Perguruan tinggi dituntut agar tetap melaksanakan kegiatan belajar mengajar dengan sistem dalam jaringan (daring) termasuk pendidikan kedokteran. Pendidikan kedokteran memiliki karakteristik problem based-learning yang terdiri dari kuliah teori, tutorial, praktikum laboratorium dan skills lab untuk ketrampilan klinis. Penyelenggaraan kuliah daring perlu dievaluasi dengan instrumen yang terukur untuk mengetahui hambatan dan menentukan arah perbaikan. Penelitian ini bertujuan untuk mengetahui gap kualitas pelayanan penyelenggaraan kuliah online dan menentukan arah perbaikan pelayanan dengan metode Importance Performance Analysis.

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Metode: Penelitian ini dilakukan dengan metode Survey menggunakan pendekatan kuantitatif. Kuesioner dibagikan kepada 250 mahasiswa dari 684 populasi di program studi kedokteran Universitas Sebelas Maret. Hasil penelitian dianalisis menggunakan Importance-Performance Analysis.

Hasil: Dari 24 atribut analisis IPA menunjukkan 5 atribut yang harus dilakukan perbaikan. Atribut yang berada pada kuadran I (prioritas utama) adalah responsiveness dosen, responsiveness tenaga kependidikan, bantuan teknis dalam kendala online learning, kesesuaian materi, akses menghubungi dosen, dan komunikasi antara dosen dengan mahasiswa.

Kesimpulan: Dari hasil pendekatan metode Importance-Performance Analysis, kepuasan mahasiswa akan tercapai dengan meningkatkan pelayanan yang berada pada kuadran I pada penyelenggaraan kuliah daring.

Kata kunci: pendidikan kedokteran, kepuasan mahasiswa, pembelajaran daring, importance performance analysis

PRACTICE POINTS

- Student satisfaction with online learning services to ensure the effectiveness of technological continuity in medical education.
- Students' perception about online learning service quality by importance-performance analysis.

INTRODUCTION

Education in Indonesia demands innovation from education providers, but technological developments in education have been very slow, including in technology adoption. Prior to the COVID-19 pandemic, distance learning was still an aspiration and not an impossibility in Indonesia.¹ When the COVID-19 pandemic spread throughout Indonesia and technological transformation in the education sector had to occur, many of the existing systems and stakeholders in the education sector were not ready to face changes.² Unequal infrastructure development, the quality of teaching human resources who are still technologically illiterate, and the lack of motivation for public bodies to innovate were major obstacles to the development of technology in education.³ The technology transition in the field of education in Indonesia has only occurred widely due to the COVID-19 pandemic.⁴ In order to contain the spread of the virus, community activities were limited.⁵ Then, technology was used to keep the community activity

by shifting activities that were typically done in person to distance method.⁶ Even though this concept is not a new one, the practice of online learning in Indonesia is still in very early stage. Online learning in Indonesia is a program that is implemented spontaneously and with minimal preparation.⁷

The COVID-19 pandemic persisted for more than two years.⁸ During that time, people began to get used to using technology for all their needs, including getting an education.⁹ Online learning has been incorporated into higher education for students by using various applications as learning media, including Youtube, Zoom, Google Meet, and many other available programs.¹⁰ In contrast to face-to-face or classroom learning situations, online learning offers a unique learning environment.¹¹ Online learning is defined as educational activities that are delivered in an online environment through the use of the internet for teaching and learning. This includes online learning on the part of students that is independent of their physical or virtual

location.¹² Online learning can cover a wide range of learning activities, such as starting discussions in online discussion forums, doing personal assignments or group projects, or attending exams in physical or virtual classes.¹³ "Teaching content is delivered online, and instructors develop teaching modules that enhance learning and interactivity in synchronous or asynchronous environments." Online learning, which previously was a survival strategy in the field of education, has now become a demand for a new educational model that needs to be developed.¹⁴

The availability of various online learning platforms is a major factor that enables online learning to occur, but there are a number of factors that must be re-evaluated for optimum online learning. During the COVID-19 pandemic, online learning was sufficient to meet student learning needs, although it was not fully satisfactory.⁴ In several studies, online learning has been shown to have a low acceptance rate,⁷ But on the other hand, online learning is a form of innovation that must be available, both as a form of inclusive educational development and as a countermeasure for situations similar to the COVID-19 pandemic.¹⁵

Apart from the various advantages brought by technology in the field of education, there are still many things that need to be re-analyzed for a more mature technology-based education system.¹⁶ There is a need for studies on what factors influence satisfaction in online learning so that in practice, it can better meet the needs of students, teachers, and education providers.⁴ This must also take into account that Indonesia, as a densely populated developing country, has various complex problems that can become obstacles to the implementation of effective online learning.² Online learning is increasingly difficult for types of education that require practical skills, such as medical education program.¹⁷

Medical education has the characteristics of problem-based learning, in which learning is based on problem solving. The method consisted of dividing the class into small groups of a maximum of 10 people with 1 instructor (teacher). As a result, for one course in one batch, 20 small classes with 20 instructors are held. This certainly makes the

study program organizers have to go the extra mile in providing services. In one course of lectures, 20 Zoom accounts are available as the main tool for organizing online learning, which is subscribed to using the faculty budget. The implementation of online learning often experiences problems, especially during laboratory sessions. In offline learning, students can freely operate learning media in the laboratory. During online learning, for example, learning the anatomy of the human body, modifications to online learning are carried out by shooting with an additional Zoom camera and also with innovative digital learning media with 3D models. However, students often cannot see the object being studied in detail.¹⁷

This, of course, is feared to interfere with the achievement of learning objectives, despite efforts by study program managers to modify the learning process through online media. Online learning also demands a higher level of discipline from students because they are responsible for self-regulating, motivating, and directing positive learning for themselves,¹⁸ which then affects student satisfaction with online learning. In addition, it is important for students to have an internet network that supports the learning process.¹³ Learning in medical education is not only intended for students to learn theories, but also for them to cultivate their practical skills. Medical education demands high accuracy, so learning requires a high level of detail.¹⁹ This is a challenge in itself for education providers to be able to provide online learning services that can meet the needs of medical education students.

Obstacles to the implementation of online learning activities have been identified through previous study,^{8,14,16} but improvements to the implementation of online learning activities are still difficult to do due to limited resources.²⁰ Researchers apply importance performance analysis (IPA) to measure the satisfaction of each factor that exists in online practicums as well as strategic management in determining priorities for developing the quality of online learning activities. This study looks at the phenomenon of online learning in Indonesia, especially in the Faculty of Medicine, in order to find out what needs to be prioritized in a situation

of limited resources using the importance performance analysis method. This method is specifically carried out as a basis for organizational strategic decisions by determining what needs to be improved, maintained, reserved, or ignored. That way, the distribution of existing resources can be allocated for maximum benefit or the achievement of goals. This analysis can show the most effective and efficient ways to improve the quality of online practicums in the Faculty of Medicine.²¹ The expected result is that the university, as an organizer of higher education for the Faculty of Medicine, can improve the quality and facilities needed by students in supporting online learning. A well-prepared online learning activities can encourage the achievement of Indonesia's goal of affordable and inclusive education.²²

Importance-performance analysis is an analysis tool that can assist in the allocation of resources that are more efficient so that the quality of learning through online learning can be achieved optimally, especially in conditions of limited resources. The interpretation of the results of the IPA analysis's importance performance measurement is divided into four quadrants, as shown below.²²

Interest Level	Quadrant 1 Improve the performance <i>(concentrate here)</i>	Quadrant 2 Maintaining Performance
	Quadrant 3 Low Priority	Quadrant 4 tendency to exaggerate <i>(possible overkill)</i>
	Satisfaction Level	

Figure 1. IPA Quadrant 23

Importance-performance analysis (IPA) ranks importance and satisfaction ratings using central tendencies such as mean scores.²⁴ IPA is a technique for categorizing the highs and lows of the observed items.²⁵ Each of the four quadrants, which have different levels of relevance and satisfaction, can form the basis for effective strategic decision-making.²⁶ Quadrant 1 represents the average and

high level of satisfaction, or is referred to as the "major power." In Quadrant 1, the best strategy that can be implemented is to maintain and build on existing strengths (maintain performance). Whereas in Quadrant 2, it shows a high level of importance but the level of satisfaction is still low, so the strategy that needs to be implemented is to focus on improving the items that are still low (increasing performance). Quadrant 2 is also known as the "major weakness." Quadrant 3 shows "minor weaknesses," where there is a low level of satisfaction for low types of interests. This quadrant does not require additional effort because there is no urgency. Quadrant 4, namely "minor strength," which is an item with a high level of satisfaction for low importance. This shows that there is an urgency to reduce unnecessary effort due to the low level of importance that exists.²⁴

A study on Importance-Performance Analysis, especially in tertiary institutions, which was conducted in China in 2021 with foreign student subjects, was used to identify factors that play an important role in improving the quality of educational services.²⁷ The study on Importance-Performance Analysis was carried out by Branch & Estate to map improvement priorities in the framework of making policies to improve university performance by identifying key factors in implementing and improving performance.²⁸ A study of user satisfaction for library services at a university in Taiwan used the Importance-Performance Analysis method to determine customer expectations for each service provided. The results can help identify strategic focus areas for evaluating authentication systems and library statistics dashboards as alternative technologies to assist university librarians in exploring library customer behavior.²⁹

METHODS

This is a descriptive quantitative study. Authors were interested in analyzing and explaining the satisfaction of Faculty of Medicine students with online learning activities that have been carried out during the COVID-19 pandemic. Students were the users of online services that determine the effectiveness of online learning activities provided by education providers.

The analysis was carried out on students of the Sebelas Maret University Medical Study Program (UNS). The UNS Medical Study Program has committed to providing international quality medical education, therefore university technology adoption has become a requirement. An analysis of satisfaction with the technology that has been implemented in online learning activities can provide more contextualization for universities, especially in determining future technology implementation strategies. The total population of UNS Medical Study Program students is 684 people.

Researchers collected data through online questionnaires. The questionnaire used a 5-point Likert scale. The Google Form platform was used to collect questionnaire. Researchers distributed a total of 252 questionnaires. This is based on the Slovin formula with an estimated error (alpha) of 5% with result of 252 samples. A total of 250 questionnaires were completed. Because the questionnaire respondents were chosen randomly, there were no specific criterias among the students in the sample size.

This study used the RATER model as a study framework for student satisfaction. The required data was collected through a questionnaire, and the scores for the five dimensions were calculated using a weighted average. The order of student satisfaction is known by sorting the scores in five dimensions. Based on this, researchers then identified existing problems in service quality, analyzed the causes of those problems, and formulated effective service countermeasures. The importance-performance analysis (IPA) method was used to gauge student satisfaction. The first step was carried out by determining the level of suitability between the level of importance and the level of performance of the quality of the attributes studied by comparing the performance score with the importance score. The formula used to measure the level of suitability is:

$$TK_i = \frac{X_i}{Y_i} \times 100\%$$

Notes:

- TKi : Compatibility level
- Xi : Performance evaluation score (performance)
- Yi : Interest assessment score (importance)

The overall assessment criteria are:

Table 1. Overall Assessment Criteria

Score	Information
0.81 – 1.00	Very good
0.66 – 0.80	Good
0.51 – 0.65	Pretty good
0.35 – 0.50	Not good
0.00 – 0.34	Very poor

Next, the researcher conducted a quadrant analysis by calculating the average importance and performance ratings for each attribute item. This analysis is carried out using the formula:

$$\bar{X}_i = \frac{\sum_{i=1}^k X_i}{n}$$

Notes:

- \bar{X}_i : The average weight of the i-th performance attribute rating level
- n : Number of respondents

$$\bar{Y}_i = \frac{\sum_{i=1}^k Y_i}{n}$$

Notes:

- \bar{Y}_i : The average weight of the i-importance attribute rating level
- n : Number of respondents

Next, the researcher calculated the average importance and performance ratings for all attributes. The formula used is:

$$\bar{\bar{X}}_i = \frac{\sum_{i=1}^k \bar{X}_i}{n}$$

$$\bar{\bar{Y}}_i = \frac{\sum_{i=1}^k \bar{Y}_i}{n}$$

Notes:

- X : The average of all attribute performance levels' average scores
- Y : The average of the importance of all attributes' average scores
- n : Number of attributes

Where the (\bar{X}) values intersect perpendicularly is the horizontal (X) axis, which measures how well the attribute (X) or subject under consideration performed. The relevance of the characteristics (Y) or student expectations is represented by the value of \bar{Y} , which intersects the vertical axis perpendicularly onward. The SPSS 20 program was used to input performance weight values, interest characteristics, average performance values, and average importance into the Cartesian quadrant.

The reliability test was carried out to ensure that the study questionnaire is reliable, meaning that the results will be consistent regardless of who uses it and at what time. A validity test was conducted to check whether the questionnaire is valid or reliable. By comparing the item's score with the combined scores of all other items, the researcher determines whether the item is valid. While the Cronbach's alpha statistical test is used to test the reliability. Question items are considered acceptable if the p-value or significance is less than 0.05 (5%); otherwise, they are considered invalid if the p-value or significance is equal to or greater than 0.05 (5%). If r count and r count exceed r table, then the variable is considered valid. If the r count is negative and variable, it is considered invalid.³⁰

RESULTS AND DISCUSSION

Before grouping, we conducted a validity test for the study instrument. The validity test was carried out on 30 respondents with the same characteristics. These respondents were different from the study's respondents. The initial number of attributes used is 25, which were included in the dimensions of reliability, assurance, tangibles, empathy, and responsiveness. The results of the validity test showed that 24 (twenty-four) attributes had a value of r count > r table (0.36) for the number of respondents $N-2 = 30-2 = 28$, with a correlation coefficient of 5%. While one attribute was omitted because it was invalid. Based on this, there were 24 attributes analyzed by the IPA.

The results of the study based on the ServQual method showed that the highest gap value was in the responsiveness variable at 0.87, one example of this variable is education staff responding quickly to student complaints. The second-highest gap was in the tangibles variable at 0.83, for example the willingness of using online learning platforms. The third-highest gap was in the responsiveness and reliability variables at 0.82, for example, the lecturer responds to student complaints quickly and starts and finishes teaching on time.

Student satisfaction describes feelings of pleasure or disappointment that arise from the online learning activities that has been carried out. Student satisfaction is the main determinant of the effectiveness of the technology adoption that has been implemented in the Medicine Program. If students are satisfied with the performance of online learning activities, then the continuation of technology-based learning can continue. On the other hand, if students feel disappointed with online learning activities, it will be difficult to carry out in the long term. The dimensions of service quality that were measured consisted of the dimensions of reliability, assurance, tangibles, empathy, and responsiveness.²²

IPA is an analytical tool used to analyze levels of importance and performance. It aims to determine which attributes have low performance and must be improved³¹. In addition, 24 service quality performance attributes were also determined, to classify good performance attributes and should be maintained. The level of interest of students and the level of performance of online learning activities can be determined by calculating the average level of interest and performance of the questionnaire.

Based on the calculations in Table 2, the overall average value of the importance level was 4.37, while the overall average value of the performance level was 3.87. The average value of the level of importance and overall performance will be used as a benchmark to determine which 24 attributes have an average value that exceeds the average level of importance and overall performance.

Table 2. Importance-Performance Analysis/Gap Analysis

ID	Dimensions	Attribute	Importance	Performance	GAP	
P1	Tangibles	Availability of online learning platforms.	4,74	3,92	0,83	
P2		Lecturers provide appropriate learning media.	4,70	4,03	0,67	
P3		The media used supports the assignment and evaluation.	4,49	4,08	0,42	
P4		The learning platform supports the interaction of lecturers and students.	4,47	4,14	0,34	
P5	Reliability	Lecturers start and finish learning on time.	4,33	3,51	0,82	
P6		Lecturers master the use of the platform.	4,31	3,88	0,42	
P7		The lecturer explains the lecture material until all students feel clear.	4,44	3,91	0,53	
P8		Education personnels facilitate the learning platform (providing a zoom link).	4,52	4,02	0,50	
P9	Responsive-ness	Lecturers respond quickly to student complaints.	4,48	3,67	0,82	
P10		Education personnels respond quickly to student complaints.	4,54	3,67	0,87	
P11		Students have the convenience of contacting lecturers to ask about lecture readiness.	4,49	3,82	0,67	
P12		The education staff helps students if there are technical problems.	4,42	3,79	0,63	
P13	Assurance	Study program managers provide special time for public hearings for online lectures.	4,36	3,70	0,66	
P14		The lecturer gives an objective test assessment.	4,57	4,03	0,54	
P15		Lecturers use time effectively.	4,54	3,93	0,61	
P16		Establishment of clear online lecture rules	4,08	3,77	0,32	
P17		Regulations apply to all students without exception.	4,28	4,00	0,28	
P18		The learning objectives of lectures are optimally achieved.	4,26	3,92	0,34	
P19		The purpose of tutorial learning is optimally achieved.	4,28	3,88	0,40	
P20		Skills lab learning objectives are achieved optimally.	3,84	3,80	0,04	
P21		Course learning objectives are achieved optimally.	4,24	3,43	0,81	
P22		The objectives of practicum learning are optimally achieved.	3,94	3,88	0,07	
P23		Empathy	Lecturer and student communication are well established.	4,40	3,82	0,58
P24		Lecturers provide motivation to students.	4,26	4,26	0,01	
Total			104.98	92.86	12.18	
Average Value			4.37	3.87	0.51	

There were 13 of 24 attributes in which the level of importance was greater than the average overall level of importance. These attributes are: (i) Availability of online learning platforms (4.74), (ii) Lecturers provide appropriate learning media (4.70), (iii)

Media used to support assignments and evaluation (4.49), (iv) Learning platforms support interaction lecturers and students (4.47), (v) Lecturers explain lecture material until all students feel clear (4.44), (vi) Education staff facilitate learning platforms

(providing zoom links) (4.52), (vii) Lecturers respond quickly to student complaints (4.48), (viii) Education staff respond quickly to student complaints (4.54), (ix) Students have the convenience of contacting lecturers to ask about college readiness (4.49), (x) Education staff helps students when there are technical problems (4.42), (xi) Lecturers provide an objective test assessment (4.57), (xii) Lecturers use time effectively (4.54), (xiii) Communication between lecturers and students is well established (4.40).

Meanwhile, based on the level of performance, there were 10 out of a total of 24 attributes that have an average value higher than the overall average. This attribute consists of (i) The lecturer explains the lecture material until all students feel clear (3.91), (ii) Education staff facilitates the learning platform (provides a zoom link) (4.02), (iii) The lecturer gives an online exam assessment objective (4.03), (iv) Lecturers use time effectively (3.93), (v) Regulations apply to all students without exception (4.00), (vi) The objectives of lecture learning are achieved optimally (3.92), (vii) Tutorial learning objectives are optimally achieved (3.88), (viii) Course learning objectives are optimally achieved (3.43), (ix) Practicum learning

objectives are optimally achieved (3.88), (x) Lecturers provide motivation to students (4.26).

Each attribute is then plotted in a cartesian diagram with SPSS 20. This diagram consists of four quadrant sections that describe different conditions, as shown in Figure 2.

Based on figure 2, there are five out of 24 attributes in quadrant 1, eight attributes in quadrant 2, five attributes in quadrant 3, and six attributes in quadrant 4. Quadrant 1 is the quadrant that online learning service providers should prioritize online. Attributes in this quadrant are attributes that have an average level of importance that is higher than the overall average level of importance, but their performance is low. Based on this, universities need to pay attention to the attributes in quadrant 1 to meet the interests of students in order to increase student satisfaction in online learning activities.^{32,33} All attributes in this quadrant are related to communication (attributes 11 and 23) and responsiveness from lecturers and education staff (attributes 9, 10, and 12). To achieve better learning outcomes, effective online learning course designs must take students' characteristics into account.

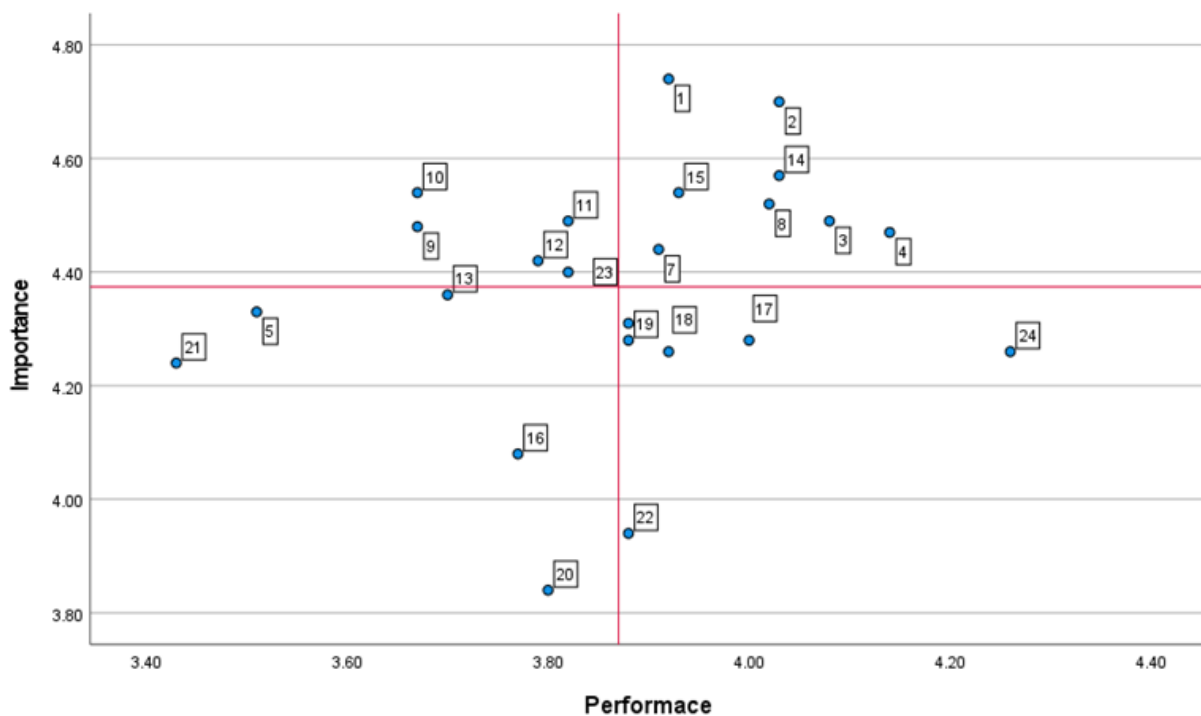


Figure 2. Cartesian Diagram

Barriers to communication between students, lecturers, and educational staff were also identified in the study.³⁴ In fact, social interaction in the online learning process has an important role in the learning process and has a significant impact on learning outcomes.³⁵ The social context in the online learning process appears in the forms of collaboration, negotiation, debate, peer-review, and mentoring. Collaboration and cooperation can provide students with opportunities to discuss, debate, negotiate, and reflect on existing beliefs and knowledge. Collaboration helps students confirm their learning experience and requires a level of articulation that encourages the development of general knowledge and a better understanding of subject matter. Students are more likely to achieve goals that they might not be able to achieve on their own with the help of classmates and teachers.³⁶

Quadrant 2 shows the service attributes that must be maintained. This is because the attributes in quadrant 2 are attributes that have a high level of importance, and the level of performance is also above the overall average. The attributes in this quadrant are on the second priority list, which means that they can be improved after all of the first attributes have been successfully fulfilled. The attributes in this quadrant are mostly related to platform readiness and online learning media (attributes 1, 2, 3, 4, and 8). The availability of information and technology (IT) helps to maintain social contact between students and lecturers, provide online lessons, and differentiate tasks. Technology also enables repeat feature so that students can repeat lessons when necessary.³⁷ This facility makes it easier for students to improve their learning outcomes. While other attributes related to lecturer performance in teaching, for example in explaining lecture material (attribute 8), objective assessment (attribute 14), and the effectiveness of teaching time (attribute 15), In other words, students are satisfied because the lecturer in this case has shown readiness to teach through an online platform. In terms of content, online learning relies heavily on books, videos, exercises, etc. than face-to-face meetings, as in discussions, presentations, etc. On the one hand, this provides the potential to include more media (video, images, audio, etc.), but teachers must produce or find quality resources and be able to use them.³⁷

Quadrant 3 is a quadrant with a low level of importance and performance. Attributes in this quadrant have no significant importance for students, and the university does not place these attributes as a service priority. However, this quadrant is not necessarily ignored because there may be a change in trend and the attributes in this quadrant can change to quadrant A if not paid attention to.²⁵

Quadrant 4 is a quadrant with high-performance attributes, but it is not particularly important for students. This characteristic consists of the lecturer's platform mastery, fair application of learning rules, optimal learning achievement, and motivation from lecturers to students. Quadrant 4 displays variables that are not student priorities so that resources can be reallocated to the top priority of the effectiveness of the online learning activities, which is more targeted and efficient.²¹

This study validates the use of IPA techniques to rank service quality criteria compared to previous studies. These qualities can then be maintained and built upon in higher education. IPA Engineering evaluates specific features to decide which upgrades should take priority. This approach provides thorough managerial insight into decision-making for the management of resources at the university.

This study still has various limitations. In terms of study scope, this study is limited to the UNS Medical Study Program, so it can only be applied within the university. Meanwhile, the online learning experience in various faculties can be very different. In addition, the study sample used is still very limited.

CONCLUSION

The results showed that online learning activities that have been applied in medical education still has a low level of satisfaction. The quality of services provided by the university still had a gap with student expectations and there was still an overkill factor. This study showed in detail what factors are important for students and that may affect their satisfaction to improve and develop the quality of educational services. By understanding more about these factors, it will be helpful for universities to create effective

and efficient strategic plannings. This study can be one of the first references to discuss the continuous development of education technology in Indonesia.

RECOMMENDATION

The continuity of technology should not be delayed and quality improvement by educational institutions needs to be carried out immediately so that the students are able to experience efficient online learning activities. Based on the findings, there are three general things that need to be considered for the sustainability of technology in medical education, they include information, technology, and human resources (lecturers). Online learning activity is a novel thing for students and such learning method had never been applied widely before the pandemic, therefore they might need a lot of technical assistance when experiencing problems and more information related to lectures. Quick response regarding learning issues is not only expected from the university, but also from the lecturers. Complete information and responses can enhance students' confidence in navigating their learning process which is important to support their learning achievement. Another important factor is the support of technology in online learning activities. The existing technology is enough for online practicum, which is still new, but learning technology can be developed further to improve the quality, such as by developing robots, artificial intelligence (AI), and other forms of technological innovations that can facilitate the learning process. The ability of lecturers to explain material in online lectures is also important. Online learning has a unique and different environment compared to traditional (face-to-face) learning, so it is important for lecturers to continue to develop themselves.

More data on factors that affect students' satisfaction in the online learning activities can be helpful for the development of further study in the field of medical education. Furthermore, this study has a very specific scope, but science analysis can be applied to other fields of education related to technology continuity for further study, especially in Indonesia, considering that online learning is still very early in the country.

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COMPETING INTEREST

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LIST OF ABBREVIATIONS

IPA : Importance-Performance Analysis

AUTHORS' CONTRIBUTION

Sutiman – developing study proposal, collecting data, conducting data analysis, and editing publication manuscript.

Eti Poncorini Pamungkasari – developing study proposal and collecting data, conducting data analysis, and editing publication manuscript.

Suprapti - reviewing the study method, collecting data, conducting data analysis, and editing publication manuscript.

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