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User Satisfaction Analysis of the Regular Live Unpad Learning Management System Website with Webqual 4.0 and Importance Performance Analysis Methods

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KEYWORDS

Importance, Performance, Regular LiVE Unpad, User Satisfaction, Webqual 4.0.

ABSTRACT

Background: Since the onset of the COVID-19 pandemic, educational institutions, including Universitas Padjadjaran (Unpad), have increasingly utilized Learning Management Systems (LMS) like Regular LiVE Unpad to facilitate remote learning. Despite its continued post-pandemic usage, there is a notable absence of user satisfaction surveys conducted on this LMS at Unpad. Objectives: In response to this gap in evaluation, the author conducted research aimed at identifying areas for improvement on the Regular LiVE Unpad LMS website. This research specifically focused on three dimensions of Webqual 4.0: usability, information quality, and service interaction quality. Methods: The research methodology involved distributing questionnaires to users of Regular LiVE Unpad to assess their satisfaction levels and to pinpoint indicators requiring enhancement. A gap analysis was employed to compare the importance score (3.13) with the performance score (2.73), indicating areas where user expectations were not being fully met. Results: The findings revealed that the LMS, as indicated by the gap analysis results, falls short of achieving user satisfaction, with the average importance score exceeding the average performance score. This discrepancy underscores the need for improvements in various aspects of the LMS. Conclusions: Based on the Importance Performance Analysis, several recommendations were identified to enhance user satisfaction with the Regular LiVE Unpad. These recommendations include implementing real-time notifications, integrating live chat features, and incorporating comment sections directly within the course interface. These enhancements are crucial for aligning the LMS with user expectations and improving overall satisfaction levels.

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INTRODUCTION

The development of technology and information in the era of the Industrial Revolution 4.0 has encouraged the creation of various inventions that play a significant role in the progress and modernization of human civilization. Along with the development of the times and all the problems that follow it, various inventions created with the help of technology are used as solutions by the community to solve problems that arise in the midst of the daily life of the community itself. The application of this technology has gradually become commonplace and makes the relationship between the community and technology so close. Technology has found its own way to enter most aspects of life and is considered to be able to connect and facilitate people's lives. According to the technological pyramid

consisting of various levels, it can be concluded that technology can move its hierarchy according to the needs of society because basically technology exists due to problems that cause anxiety (Van Mensvoort, 2013). Based on the technological pyramid triggered by, the peak of the technological pyramid is Mensvoort (2013) the Naturalized stage where technology is considered to be able to change the world, such as the internet as one of them. The various benefits of the internet can be felt in various sectors of life, including in the education sector. The internet in the education sector plays a role in providing information systems such as digital libraries or other open-source sites. In addition, the Internet allows the use of tools that can support and facilitate the distance learning process such as teleconference applications and Learning Management Systems (Pratama, 2021).

The most significant usefulness of the internet was felt when the world was hit by the COVID-19 Pandemic where community activities were limited so that people could do their activities from their homes. In response to these restrictions, UNESCO provides recommendations for educational institutions to organize distance learning activities. According to data as of April 13, 2020, the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), stated that there were 68.73 million students recorded in distance learning. This accelerates the use of e-learning that uses the help of various devices and other electronics (Cerelia, Sitepu, & Toharudin, 2021). E-learning is an abbreviation obtained from electronic learning and can be defined as a learning activity that occurs with the use of the internet in the process to facilitate and allow the distance learning process to occur (Sit & Brudzinski, 2017). Meanwhile, e-learning is defined as all learning activities that use the help of electronic technology. Basically, e-learning optimizes the use of applications and other educational platforms to create a teaching and learning process that can be carried out online Rusman (2018).

A Learning Management System (LMS) is one of the platforms used to support learning activities. A Learning Management System (LMS) is a system that is simplified in order to carry out the learning process of a website. LMS is generally used by educational institutions to upload learning materials or modules and manage online teaching and learning activities. In addition, LMS also allows its users to collaborate and communicate between users; create, manage, and assess assignments and exams given; generate usage time reports and more for teachers and administrators; integrate LMS with other educational applications or platforms such as Google Meeting, ZOOM, and so on; and get access and services from gadgets or computers or laptops. The novelty or contribution of Learning Management Systems (LMS) in supporting e-learning activities compared to previous studies is not explicitly discussed (Kruse et al., 2023).

The Learning Management System (LMS) owned by Padjadjaran University (Unpad) is called LiVE Unpad. LiVE stands for Learning in Virtual Environment. LMS a functions as an online learning management system designed to meet various blended learning needs of the Unpad academic community. The implementation of this system is carried out with the hope that learning objectives can be achieved effectively. LiVE Unpad can be likened to a virtual campus building where lecturers and students can connect and hold online learning activities.

METHODS

This research was carried out using quantitative methods to achieve the research goal itself, which is to determine user satisfaction with the quality of the website based on the comparison of the actual condition/performance of the website to the expectations of users. User satisfaction assessment based on the expectancy disconfirmation theory (Grimmelikhuijsen & Porumbescu, 2017) model can be formulated as follows:

a) If the expectation (importance) is less than the performance (performance), then it is very satisfied.
b) If the expectation (importance) is the same as the performance (performance), then satisfied.
c) If the expectation (importance) is greater than the performance (performance), then it is not satisfied.

Measuring the quality of a website using Webqual 4.0 involves the participation of site users to assess the extent to which the quality of the website corresponds to their perception (Andriansyah, Suryani, & Putri, 2018). The WebQual Index provides an overall assessment of a website based on the customer's perception of quality weighed based on its importance/expectations. The Webqual 4.0

instrument has 22 indicators where each indicator can be rated on a Likert scale of 1 (Strongly Disagree) to 4 (Strongly Agree). Here are the indicators of the instrument: (Legowo, Ismiyati, & Ungu, 2024).

Table 1.
Webqual Instruments 4.0

Dimension	Code	Indicators
Usability (Usability)	UV1	Easy to learn for its operation
	UV2	Interaction with the site is clear and understandable
	UV3	The site is easy to navigate
	UV4	The site is easy to use
	UV5	Attractive appearance
	UV6	According to the type of site
	UV7	Creating the impression of competence
	UV8	Providing a positive experience
Information Quality (Quality of Information)	IV1	Providing accurate information
	IV2	Provide trustworthy information
	IV3	Provide timely information
	IV4	Provide relevant information
	IV5	Easy-to-understand information
	IV6	Information at the right level of detail
	IV7	Information in the appropriate format
Service Interaction (Quality of Service)	SV1	Good reputation
	SV2	Information feels safe
	SV3	Gives a sense of personalization
	SV4	Provides a sense of community
	SV5	Communicate with the organization
	SV6	Confident that the goods/services provided are in accordance with what is promised
	SV7	Overall website view

Source: (Andry, Christianto, & Wilujeng, 2019)

Validity and Reality Test

The validity test uses the corrected item total correlation technique where if a rtable > calculation is found, the tool is valid with the following formula:

$$rxy = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{\{\mathrm{N}(\Sigma \mathrm{x}^2) - (\Sigma x)^2\}\{\mathrm{N}(\Sigma \mathrm{y}^2) - (\Sigma \mathrm{y})^2\}}}$$

Information:
RXY : the correlation coefficient between the item score (X) and the item score (Y)
N : the number of respondents
Σx : the sum of the variable scores (X)
Σy : the sum of the variable scores (Y)
σx2 : sum of the squares of the variable score (X)
Σy2 : sum of the squares of the variable score (Y)
Σxy : the sum of the multiplication of the item's score by the item score (X) and the variable score (Y)

The reality test will be carried out using Cronbach's Alpha technique. The alpha coefficient (α) value range should exceed 0.7 for the answer result. The higher the alpha value of Cronbach found, the higher the level of reliability or reliability of the research carried out.

Data Collection and Data Analysis

The primary data in this study was obtained from a Google Form questionnaire distributed to a minimum of 110 respondents determined based on a formula Hair (2018), where the number of indicators can be multiplied by 5 to 10. The criteria of the respondents in this study were:

1) Unpad students and alumni who have been and/or are still actively using Learning Management System Regular LiVE Unpad in the learning process with the limit of the class of 2019 to 2022 (calculated from the year of entry)
2) Unpad lecturers who use Learning Management System Regular LiVE Unpad as one of the media in supporting the learning process.

The analysis conducted after processing the data includes a gap analysis to assess whether the quality level of a website is considered good or bad by examining the gap between the quality that is performance (actual conditions) and the expected quality (ideal conditions) (L. A. Utami, Gani, & Suparni, 2020). A good quality level will be a positive value with a Qi (gap) $\geqslant 0$.

In addition, Importance Performance Analysis (IPA) is also used to determine the level of conformity that determines setting priorities in overcoming factors that affect website user satisfaction. The science graph is divided into four analysis quadrants with the X axis representing the performance indicator and (L. A. Utami et al., 2020) the Y axis representing the importance indicator.

Hypothesis Test

The dimensions of usability, information quality, and service interaction play a big role in influencing user satisfaction according to, there is a considerable gap in the expectations (importance) and performance of the actual website which makes users feel less satisfied. Therefore, the research paradigm and hypothesis can be summarized as follows: Islamiah et al. (2022) I. S. Utami et al. (2021) Christianto et al. (2020).

Picture 1. Research Paradigm

1) H1: There is a difference between the importance and user performance from the usability dimension of the Regular Learning Management System LiVE Unpad website which affects website user satisfaction.
2) H2: There is a difference between the importance and user performance of the information quality dimension of the LiVE Unpad Regular Learning Management System website which affects website user satisfaction
3) H3: There is a difference between the importance and user performance of the service interaction dimension of the LiVE Unpad Regular Learning Management System website which affects website user satisfaction.

RESULTS and DISCUSSION

Validity and Reality Test

The validity test was carried out by distributing questionnaires to 30 respondents who met the criteria. Through data processing using SPSS, the results of the validity test of the research instrument were obtained as follows:

Table 2.
Validity Test Results

Dimension	Indicator Code	rcalculate	Description
Usability (Usability)	UV1	0,425	VALID
	UV2	0,520	VALID
	UV3	0,602	VALID
	UV4	0,505	VALID
	UV5	0,524	VALID
	UV6	0,595	VALID
	UV7	0,735	VALID
	UV8	0,750	VALID
Information Quality (Quality of Information)	IV1	0,610	VALID
	IV2	0,371	VALID
	IV3	0,595	VALID
	IV4	0,520	VALID
	IV5	0,791	VALID
	IV6	0,744	VALID
	IV7	0,710	VALID
Service Interaction (Quality of Service)	SV1	0,740	VALID
	SV2	0,547	VALID
	SV3	0,688	VALID
	SV4	0,544	VALID
	SV5	0,484	VALID
	SV6	0,751	VALID
	SV7	0,820	VALID

Through the table above, it can be seen that all indicators in the research instrument are declared valid. This can be found out after comparing the calculation with the table. The table obtained was 0.3610 (with df = 28 and obtained from the formula for calculating the table r) with a significance level of 5% for the two-way test. The condition under which the calculation > the table, states that the instrument is valid for use.

Next, through data processing through SPSS, the results of the feasibility test for each dimension are obtained as follows:

Table 3.
Reality Test Results

Dimension	Cronbarch's Alpha	Description
Usability	0,856	VALID
Information Quality	0,826	VALID
Service Interaction	0,846	VALID

From the table above, it can be concluded that the value of the alpha coefficient for each dimension is greater than 0.7 so the research instrument can be said to be reliable.

Gap Analysis

Gap Analysis is carried out to find out how the quality of the website is through user assessments regarding the perceived quality of performance or actual conditions (performance) with the gap from the expected quality or ideal condition (importance). The following are the results of the gap analysis from the LiVE Unpad Regular LMS website obtained through SPSS:

Table 4.
Results of Dimensional Gap Analysis Usability

Indicator Code	*Average Performance*	*Average Importance*	*Fold (Qi)*
UV1	2,99	3,47	-0,48
UV2	2,80	3,47	-0,67
UV3	2,75	3,53	-0,77
UV4	2,93	3,55	-0,63
UV5	2,47	2,99	-0,52
UV6	2,95	2,99	-0,05
UV7	2,79	2,99	-0,20
UV8	2,70	3,05	-0,35
Average	2,80	3,26	-0,46

Through Table 4, it is known that all gap values (Qi) have negative values. This value indicates that user expectations have not been met when compared to the actual performance of each indicator in the usability dimension. The largest Qi is found in the UV3 indicator with a value of -0.77 which indicates the high expectations of users in the indicator that have not been met. From Table 4, it can also be seen that the average value of importance is greater than performance, which indicates that users are not satisfied with all indicators in this dimension.

Table 5.
Results of Dimensional Gap Analysis Information Quality

Indicator Code	*Average Performance*	*Average Importance*	*Fold (Qi)*
IV1	2,90	2,96	-0,06
IV2	3,21	2,91	0,30
IV3	2,16	3,46	-1,30
IV4	2,55	3,04	-0,48
IV5	2,91	3,01	-0,10
IV6	2,93	2,95	-0,03
IV7	2,94	2,89	0,05
Average	2,80	3,03	-0,23

Judging from Table 5, it can be seen that there are two indicators, namely IV2 and IV7 which have positive Qi and are considered to be able to meet user expectations. The largest gap was found in the IV3 indicator with a value of -1.30 which indicates the large gap between user expectations and the performance of the indicator on the website. Through Table 5, it is known that the average value of importance is greater than the performance which indicates that the user is not satisfied with the performance of this dimension.

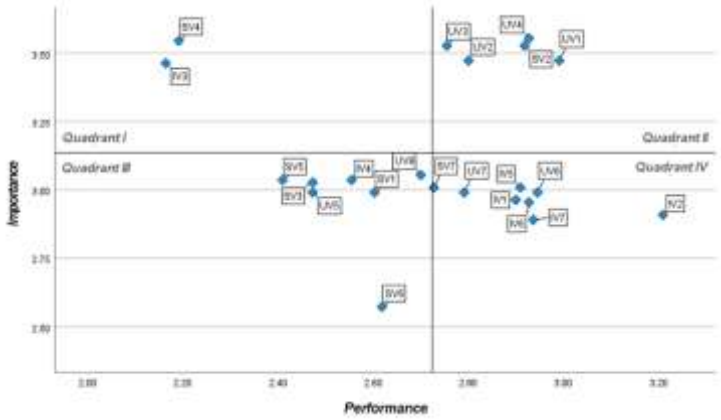
Table 6.
Results of Dimensional Gap Analysis Service Interaction Qualit

Indicator Code	*Average Performance*	*Average Importance*	*Fold (Qi)*
SV1	2,88	2,99	-0,11
SV2	2,92	3,53	-0,61
SV3	2,47	3,03	-0,55
SV4	2,19	3,55	-1,35
SV5	2,41	3,04	-0,63
SV6	2,62	2,57	0,05
SV7	2,73	3,01	-0,28
Average	2,60	3,10	-0,50

It can be seen from Table 6, that there is one indicator that has positive Qi and is considered to be able to meet user expectations, namely SV6. The performance of the SV6 indicator is considered to be able to meet user expectations. The largest Qi is found in the SV4 indicator with a value of -1.35 which indicates the high expectations of users on the indicator that have not been met. From table 6, it can be seen that the average value of importance is greater than the performance which indicates that the user is not satisfied with all indicators in this dimension.

Through tables 4, 5, and 6, the average gap value of all indicators is -0.40. A negative average score indicates that the LiVE Unpad Regular LMS site has not met user expectations. In addition, it is known that the comparison of importance values is greater than performance in all dimensions. This indicates that users are not satisfied with the dimensions of usability, information quality, and service interaction quality reviewed from the comparison of the two values.

Importance Performance Analysis (IPA)



Picture 2. Result Importance Performance Analysis

1) Quadrant I (Concentrate Here)

Quadrant I describes indicators that have high importance with low performance. In Figure 2, there are two indicators that belong to Quadrant I, namely (IV3) provides timely information, and (SV4) provides a sense of togetherness. Both indicators need to be prioritized to improve because of the high expectations of users regarding these two things

2) Quadrant II (Keep Up the Good Work)

Quadrant II has indicators of high importance and performance. In Figure 2, there are five indicators that need to maintain their performance because user expectations can be met by the indicator's performance. Some of the indicators in this quadrant include (UV3) the site is easy to

navigate, (UV2) interactions with the site are clear and understandable, (UV4) the site is easy to use, (SV2) the information feels secure, and (UV1) it is easy to learn for its operation.

3) Quadrant III (Low Quality)

Quadrant III contains indicators that need to be improved but are not a priority because they have low importance and performance. Referring to Figure 2, this quadrant has seven indicators, namely (SV5) communicating with the organization, (SV3) giving a sense of personalization, (UV5) attractive appearance, (IV4) providing relevant information, (SV1) good reputation, (SV6) confident that the goods/services provided are in accordance with what is promised, and (UV8) providing a positive experience.

4) Quadrant IV (Possible Overkill)

Quadrant IV describes indicators that have low importance with high performance. In Figure 2, there are eight indicators whose development focus can be reduced so that resources can be allocated in the development of indicators in Quadrant I. This is because the indicators in Quadrant IV are classified as having stable performance because their values are above average. Indicators included in this quadrant include (SV7) the overall appearance of the website, (UV7) giving the impression of competence, (IV5) information that is easy to understand, (IV1) providing accurate information, (IV6) information at the right level of detail, (UV6) appropriate to the type of site, (IV7) information in an appropriate format, and (IV2) providing trustworthy information.

Hypothesis Test

1) **Multiple Linear Regression Test**

The multiple linear regression test serves to measure the correlation of independent variables (x) with dependent variables (y). The following are the test results obtained:

Table 7.
Multiple Linear Regression Test Results

Model Summary			
R	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
.934a	0,873	0,869	0,17531

Based on Table 7, the Adjusted R Square value is 0.869, so it can be concluded that the quality of usability (X1), information quality (X2), and service quality (X3) have a simultaneous influence of 86.9% on website user satisfaction (Y).

2) **Partial Effect Test (t-Test)**

The partial influence test or t-test was carried out to test the significant difference between the dependent variable (X) and the independent variable (Y). The following are the results of the t-test that has been carried out:

Table 8.
Test Results t

Coefficients					
	Unstandardized Coefficients		*Standardized Coefficients*	t	Sig.
	B	Std. Error	Beta		
(Constant)	-3,021	0,104		-29,011	0,000
Usability Quality	0,430	0,044	0,451	9,762	0,000
Quality of Information	0,233	0,039	0,268	5,933	0,000
Quality of Service	0,295	0,042	0,369	7,089	0,000

The results in Table 8 show the tcal value on the Usability Quality coefficient of 9.762. The ttable value obtained from the degree of freedom (df) 106 and α = 5% is 1.982579, so if compared, then the table> calculated. In addition, it can be known that the value of sig. by 0.000. At a significance level of 5%, the value of sig. <0.05, so H01 was accepted. Thus, it can be concluded that there is a difference between the importance and user performance of the usability dimension of the Unpad Regular Learning Management System LiVE website which affects website user satisfaction.

The Information Quality Coefficient (seen from Table 8) has a local value greater than the ttable with a ratio of 5.933 > 1.982579 and a significance value (sig.) of 0.000. At a significance level of 5%, the value is less than 0.05. Through the above information, it can be concluded that the null hypothesis (H02) is accepted, so that there is a difference between the importance and user performance of the information quality dimension of the LiVE Unpad Regular Learning Management System website which affects website user satisfaction.

The local value for the Service Quality coefficient shows a result of 7.089 with a ttable of 1.982579, so if compared, the local> ttable. The significance value obtained by the coefficient is 0.000. At a significance level of 5%, the value is less than 0.05, so the null hypothesis (H03) is accepted. It can be concluded that there is a difference between the importance and user performance from the service interaction dimension of the LiVE Unpad Regular Learning Management System website which affects website user satisfaction.

CONCLUSION

The results of the gap analysis obtained on the website have a negative value with the average of all indicators being -0.40. This value indicates that the website still does not meet user expectations. The comparison of the average value of greater importance than performance also states that users still feel dissatisfied. These results are supported by further calculations in the IPA method. The study found that several indicators need to be improved so that users can feel a strong presence from other users when using the website and can communicate with more than one user at the same time, such as by creating a live chat feature or comment section. In addition, users also feel the need for an increase in information distribution such as with the addition of notification features. Through the t-test, it can also be seen that the difference between the importance and user performance of the dimensions of usability, information quality, and service interaction quality also has a significant effect on user satisfaction of the live Unpad Regular Learning Management System website.

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