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EUCS, IPA, AND CSI INTEGRATION TO DETECT UBSI ONLINE EXAM SYSTEM SATISFACTION

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Abstract: Universitas Bina Sarana Informatika (UBSI) has implemented an online exam system to evaluate student learning, but this system has some limitations. This requires research on end-user satisfaction because it is very important to run an online exam system effectively. This study aims to assess user satisfaction using the End User Computing Satisfaction (EUCS), Importance Performance Analysis (IPA), and Customer Satisfaction Index (CSI) methods. The findings show that the three dimensions of accuracy, ease of use, and timeliness significantly affect user satisfaction, while content and format have no significant impact. Analysis of satisfaction indicators showed that the majority were in quadrant II, which indicated moderate satisfaction, with 12 attributes, while 11 attributes were in quadrant III, one attribute in quadrant I, and three attributes in quadrant IV. CSI concluded that the online exam system provides satisfactory service with a score of 77.54%.

Keywords: user satisfaction; online exam system; eucs, ipa, csi

Abstrak: Universitas Bina Sarana Informatika (UBSI) telah menerapkan sistem ujian online untuk mengevaluasi pembelajaran mahasiswa, tetapi sistem ini memiliki beberapa keterbatasan. Hal ini mengharuskan adanya penelitian mengenai kepuasan pengguna akhir karena sangat penting untuk menjalankan sistem ujian online secara efektif. Penelitian ini bertujuan untuk menilai kepuasan pengguna dengan menggunakan metode End User Computing Satisfaction (EUCS), Importance Performance Analisys (IPA), dan Customer Satisfaction Index (CSI). Temuan menunjukkan, tiga dimensi yaitu akurasi, kemudahan penggunaan, dan ketepatan waktu signifikan mempengaruhi kepuasan pengguna, sementara konten dan format tidak memiliki dampak yang berarti. Analisis terhadap indikator kepuasan menunjukkan mayoritas berada di kuadran II, yang mengindikasikan kepuasan sedang, dengan 12 atribut, sementara 11 atribut berada di kuadran III, satu atribut di kuadran I, dan tiga atribut di kuadran IV. CSI menyimpulkan sistem ujian online memberikan layanan yang memuaskan dengan skor 77,54%.

Kata kunci: kepuasan pengguna; sistem ujian online; eucs, ipa, csi

INTRODUCTION

The development of information and communication technology (ICT) has brought significant transformations in various aspects of life, including in the field of education. One of the innovations that has emerged is the online exam system, which is increasingly popular, especially after the COVID-19 pandemic [1]. The online exam system not only facilitates the learning evaluation process, but also provides flexibility for users, both lecturers and students [2]. However, the successful implementation of the online

exam system is highly dependent on the level of user satisfaction [3]. Therefore, it is important to measure the level of user satisfaction with the online exam system to identify areas that need improvement.

User satisfaction is one of the important dimensions in the success model of information systems [4]. In the context of online exam systems, user satisfaction can affect the acceptance and continued use of such systems [5]. Several previous studies have revealed that user satisfaction with the online exam system is influenced by various factors, such as ease of use, quality, and technical support [6].

To measure user satisfaction comprehensively, this study proposes the use of three methods, namely End User Computing Satisfaction (EUCS), Importance Performance Analysis (IPA), and Customer Satisfaction Index (CSI). Measuring satisfaction using several methods will provide better and more complete information to improve the system. Each of these satisfaction detection methods will complement each other [7].

The topic of this research focuses on the detailed analysis of EUCS, IPA, and CSI methods to measure user satisfaction in the context of online exam systems. Each method offers a unique approach to understanding user perceptions and expectations. EUCS focuses on certain aspects of the system, such as content, accuracy, format, ease of use, and timeliness [8]. The IPA identifies the key factors that drive satisfaction by analyzing the importance and performance ratings of various aspects of the system [9]. CSI provides an overall satisfaction score based on aggregate user ratings [10].

The study aims to compare the test results of three different methods to establish a framework for selecting the most suitable method or combination of methods for online exam systems. It builds upon existing research that has utilized these methods in various contexts, focusing on their specific application to the challenges faced in online assessments. Additionally, the research seeks to investigate the potential for integrating these methods to achieve a comprehensive understanding of user satisfaction in online exam environments.

EUCS is a model specifically designed to measure end-user satisfaction with computer-based systems [11]. EUCS is a model that is able to measure the satisfaction of users of the online education system [12]. Various analyses can be used to determine the influence of exogenous variables on endogenes in the EUCS model [13].

IPA is a method to identify the attributes that are important to the user and the extent to which they are met by the system [14]. Research shows that IPA is effective in identifying gaps between user expectations and actual system performance [15]. The Science model is able to detect the most superior factors, factors that need to be maintained but must be corrected immediately, factors that are not very important, and other factors that can be ignored to increase satisfaction [16].

The Customer Satisfaction Index is a quantitative measure used to evaluate overall customer satisfaction with a product or service and consider the importance of various attributes [17]. CSI's most complete customer satisfaction model with the widest adoption worldwide [12]. CSI serves as an important tool for organizations to assess service quality and customer perception, often derived from surveys that measure satisfaction with expectations. CSI is calculated using a specific methodology that considers different dimensions of service

quality, leading to actionable insights for improvement [18].

Some studies use several methods to detect online system satisfaction. The research of Haerani, Imtihan, & Murniati used two methods, namely EUCS and IPA to determine user satisfaction of the Employee Data Collection System Application (SIDAWAI) [19]. Parallel research emerged from Maulana, Rahmawita, Syaifullah, & Jazman who concluded that with these two approaches they found a dimension that had a significant effect on satisfaction, while at the same time being able to detect the indicators that had the best effect on that satisfaction [20]. Another study used three models to measure e-campus satisfaction levels, but integrated the Webqual 4.0 model, Importance Performance Analysis, and Customer Satisfaction Index on E-Campus [9].

Other research focuses on observing the use of CSI and Science in the evaluation of the Open University education system [21]. The second study measured user satisfaction with Open University graduates with Gap Analysis, Science, and CSI. The results show that the competence of graduates in solving problems and compiling reports is an area that must be improved. With these studies, the integration of EUCS, IPA, and CSI has proven to provide a more comprehensive approach to measuring and analyzing user satisfaction. EUCS helps understand user satisfaction from the system aspect, IPA identifies attributes that need improvement, and CSI provides a numerical picture of the overall satisfaction level.

METHOD

This is a quantitative study with an analytical descriptive approach to measure user satisfaction of the online exam system using IPA, CSI, and End EUCS. This combination of methods aims to provide comprehensive results in understanding the user experience. This research method has been used in various contexts, such as the analysis of Maxim application user satisfaction [22], evaluation of the e-Library system [7], and CSI and IPA-based banking service measurement [23].

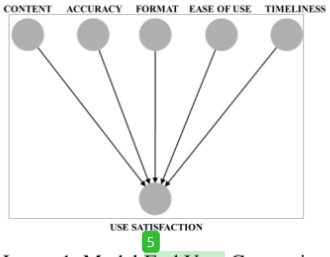

Image 1. Model End User Computing Satisfaction

The population of this study is all users of the online exam system at UBSI. Based on the UBSI academic information system page, the number of active students is 38,422 people [24]. Sampling techniques using a probability sampling model with simple random techniques sampling. Refer to previous research [25], the minimum sample recommended in satisfaction research is 100–200 respondents obtain valid results. The number of samples was determined using the Yamane formula as follows:

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size
N = population size
e = margin of error, which in this study was 5%

Using the Yamane formula through the 5% error rate approach, the number of selected samples was 396

people. Data was collected using a questionnaire based on the 5-point Likert scale, which was distributed online through Google Forms. This questionnaire refers to:

- EUCS: Measure content, accuracy, format, ease of use, and timeliness [26]. There are five hypotheses for testing EUCS, namely:
  H1: Accuracy has a significant effect on satisfaction.
  H2: Content has a significant effect on satisfaction.
  H3: Ease of use has a significant effect on satisfaction.
  H4: Format has a real effect on satisfaction.
  H5: Timeliness has a real effect on satisfaction.
- IPA:Determine Difference Between Hope and Reality Exam System Services [22].
- CSI: Calculate the user satisfaction index numerically [27].

Data analysis will refer to the results of the primary data collection. The primary data contains information from each dimension or attribute of the statement that has been disseminated to the speakers. Here's the gist of the statements:

Table 1. Indicators and Statements

No	Code	Attribute
1	C1	Complete information & easy to understand
2	C2	Materials according to learning objectives
3	C3	Easy-to-understand material
4	C4	Materials relevant to lecturers
5	C5	No double questions
6	A1	Accurate information
7	A2	No technical errors
8	A3	Consistent information
9	A4	Exam results are trustworthy
10	A5	User ID & password available
10	A6	Exam results as ordered
12	F1	Easy-to-read display
13	F2	Good color composition
14	F3	Structured & neat questions
15	F4	Consistent system format
16	F5	Information is displayed well
17	E1	Features are easy to find
18	E2	Easy navigation
19	E3	Adequate technical support
20	E4	Users quickly learn the system
21	E5	Help manual available
22	E6	Clear indication
23	T1	Quick response
24	T2	Timely information
25	T3	Exam results are available on time
26	T4	Exams on schedule
27	T5	Time alert mode

The data analysis of each method is as follows:

Measurement with EUCS: EUCS is used to assess technical aspects of the online exam system. The results of the EUCS will show dimensions that need to be improved [7]. The analysis uses the PLS-SEM approach with SmartPLS software version 4.0.

IPA Analysis: IPA compare importance an attribute with performance that are perceived by users. The results are plotted in Cartesian diagram to identify Repair priority attributes [28].

CSI Analysis: CSI is calculated by the following formula:

$$CSI = \frac{\sum(Wi \times Si)}{\sum Wi} X\ 100\%$$

- Wi = Attribute importance weight
- Si_ = Attribute performance score

CSI produces a quantitative satisfaction value, with the following interpretation:

- >80% = Very satisfied
- 60-80% = Quite satisfied
- <60% = Dissatisfied

RESULT AND DISCUSSION

In this study, 396 UBSI student respondents were netted as a sample. In Table 2, it can be seen that female respondents reached 72% (284 people) and male respondents 28% (112 people). The respondents were divided into several age groups, namely under 22 years old (64%), 22-27 years old 33%, 28-32 years old (2%), and over 32 years old (1%).

Respondents from S1 students reached 97% (386 students) and the remaining 3% were D3 (10 people). The sample from the Faculty of Economics and Business was the largest, reaching 83% (330 people). The rest are from Engineering and Informatics as well as Communication and Language 14% (56 people) and 3% (10 people), respectively.

Table 2. Respondent Profile

		Sum	Number (%)
Gender	Man	112	28%
	Woman	284	72%
Age	<22	253	64%
	22-27	131	33%
	28-32	9	2%
	>32	3	1%
Strata	S1	386	97%
	D3	10	3%
Faculty	Economics & Business (FEB)	330	83%
	Engineering & Informatics (FTI)	56	14%
	Communication & Language (FKB)	10	3%

Source: Research data processing (2025)

EUCS Model Test

A. Test Measurement Model (*Outer Model*)

Three stages are needed for the outer model test, namely the convergence validity test, the validity of discrimination, and the reliability test. In the SEM PLS test, validity and reliability tests are required to ensure that the research instruments used are valid and reliable. The results of the validity test using convergent validity (outer loading and average variance extracted / AVE), as shown in Table 3, show that all questionnaire items (indicators) have a loading factor value above 0.70 and AVE above 0.70, indicating that the items are valid. The reliability test (reliability construction) using Cronbach's Alpha also showed that all variables had values above 0.70, which indicates that this research instrument is reliable.

Table 3. Validity Indicators Data

Variable	Indicator	Outer Loading	CR	AVE	Output
Accuracy	A1	0.900	0.938	0.764	Valid
	A2	0.791			
	A3	0.904			
	A4	0.914			
	A5	0.851			
	A6	0.878			
Content	C1	0.883	0.939	0.804	Valid
	C2	0.928			
	C3	0.942			
	C4	0.876			
	C5	0.852			
Ease of Use	E1	0.908	0.956	0.82	Valid
	E2	0.928			
	E3	0.891			
	E4	0.893			
	E5	0.89			
	E6	0.923			
Format	F1	0.878	0.948	0.828	Valid
	F2	0.903			
	F3	0.930			
	F4	0.918			
	F5	0.921			
Timeliness	T1	0.902	0.953	0.842	Valid
	T2	0.938			
	T3	0.912			
	T4	0.918			
	T5	0.917			
User Satisfaction	U1	0.915	0.948	0.828	Valid
	U2	0.914			
	U3	0.917			
	U4	0.930			
	U5	0.873			

Source: Research data processing (2025), Ket: OL: outer loading, CR: Composite Reliability, AVE: Average Variance Extracted

From the results of the discrimination validity test using *Fornell Larcker* cross loading, the *value of the outer loading* indicator on the construct must be higher than its correlation with other variables (Hair, et al., 2019). In this study, the results of cross loading of all indicators showed that the *outer loading* value of the indicator in the construct was higher than the correlation with other variables (see Table 3). Thus, the validity value of discrimination of each indicator against the variable has been met.

Using the Fornell-Larcker criteria (Table 4), all variables met the data validity criteria. That is, the model has good discriminatory validity because the square root value of AVE of each construct is greater than the value of the correlation between constructs.

Table 4. Discriminant Validity - Fornell-Larcker

	Ac	Co	EU	Fo	Ti	US
Ac	0.874					
Co	0.839	0.897				
EU	0.799	0.753	0.906			
Fo	0.760	0.728	0.789	0.910		
Ti	0.745	0.713	0.809	0.713	0.917	
US	0.701	0.656	0.727	0.656	0.711	0.910

Source: Research data processing (2025), Ac: accuracy, Co: content, EU: ease of use, Fo: format, Ti: timeliness, US: user satisfaction

The Heterotrait-monotrait ratio (HTMT) discriminant validity test, as seen in Table 5, shows different variables in one model different from each other. This means that the variable represents a separate theoretical concept and is not very correlated. Higher HTMT values indicate a potential lack of validity of discrimination, while lower values indicate quite different constructions. The heterotrait-monotraite ratio (HTMT) is a statistical measure used to assess the validity of discrimination in modeling structural equations.

Table 5. Discriminant Validity - Heterotrait-monotrait ratio – Matrix

	Ac	Co	EU	Fo	Ti	US
Ac						
Co	0.894					
EU	0.844	0.795				
Fo	0.807	0.771	0.828			
Ti	0.786	0.753	0.847	0.750		
US	0.739	0.694	0.763	0.690	0.747	

Source: Research data processing (2025), Ac: accuracy, Co: content, EU: ease of use, Fo: format, Ti: timeliness, US: user satisfaction

Especially the reliability of data construction can be seen from the values of Cronbach's Alpha and Composite Reliability [29]. As shown in Table 6, all variables can be relied on for further testing because the value exceeds 0.70 both in terms of Cronbach's Alpha and Composite Reliability.

Table 6. Construction Reliability Model

	Composite reliability (rho a)	Composite reliability (rho c)
Accuracy	0.941	0.951
Content	0.941	0.954
Ease of Use	0.956	0.965
Format	0.950	0.960
Timeliness	0.954	0.964
Use Satisfaction	0.949	0.960

Source: Research data processing (2025)

B. Structural Model (Inner Model)

Some of the tests that are part of the structural model include the determination coefficient test, predictive relevance, effect size, and path coefficient

test. In full, each stage is as follows:

Coefficient of Determination (R2)

The coefficient of determination (R^2) is a number that is in the range of 0 to 1 and is useful for measuring how well statistical models are able to predict outcomes. Researchers can interpret R^2 as the proportion of variation in dependent variables predicted by statistical models. Table 7 presents the determination coefficient (R-square) data of 0.598, while the adjusted R-square shows a slightly lower figure of 0.592.

Based on the determination coefficient data, the accuracy of the coefficient of determining online exam user satisfaction at UBSI with the EUCS model shows significant results. In this EUCS model, the R^2 value of 0.598 which indicates that user satisfaction is influenced by 59.8% by the variables studied, while 40.2% is influenced by other factors outside the model.

Table 7. Determination Coefficient (R^2) of the EUCS Model

	R-square	R-square adjusted
Use Satisfaction	0.598	0.592

Source: Research data processing (2025)

Predictive Relevance (Q2)

Q-square is a measure used to evaluate the ability of a predictive model to predict actual observation values. The Q^2 value is calculated through a *blindfolding* or cross-validation process, where some data is temporarily removed to test whether the model can reconstruct the values. If $Q^2 > 0$, the model has good predictive ability. In contrast, when $Q^2 \leq 0$, the model does not have significant predictive capabilities. Based on the data presented in Table 8, it is clear that the Q^2 value reached 0.577 which means it is greater than 0.0. This means that all variables or models in the study are able to predict the results well.

Table 8. Predictive Relevance (Q2)

	Q^2predict	RMSE	MAE
Use Satisfaction	0.577	0.654	0.423

Source: Research data processing (2025)

Effect Size (f2)

Effect size (f2) helps researchers in making interpretations of the importance of research results. To determine the significance of the effect size is effect size values of 0.02, 0.15 and 0.35 which represent small, medium, and large effect sizes, respectively (Hair et al., 2022; Samartha & Kodikal, 2018). Effect size reflects the influence of exogenous variables on endogenes. Referring to Table 9, the effect size of significant variables on user satisfaction of the online exam system is accuracy, ease of use, and timeliness. Each has a value of 0.02; 0,036; and 0.055 which means the effect is small.

Table 9. Effect Size (f2) Exogenous Variables on Endogenous

	f-square
Accuracy -> Use Satisfaction	0.020
Content -> Use Satisfaction	0.002
Ease of Use -> Use Satisfaction	0.036
Format -> Use Satisfaction	0.005
Timeliness -> Use Satisfaction	0.055

Source: Research data processing results (2025)

EUCS Hypothesis Test

To ensure the estimation of the conclusions, the study tested the EUCS model with SMARTPLS 4 software through the SEM PLS process. Hypothesis testing is part of the coefficient analysis of the structural model. The study used a significant 5% rate to test the hypothesis. Significant results or not can be seen from the P-value or T-statistics value. The analysis can accept the hypothesis if the t-table value is more than 1.65 with a confidence level of 5% or the P-value is lower than 0.05.

In Table 10, it can be seen that three research variables show significant results, namely accuracy, ease of use, and timeliness. The other two variables, namely content and format, do not have a real effect on user satisfaction of the online exam system. A more detailed explanation of the results of the hypothesis test is as follows:

Hypothesis 1 (H1): Accuracy (accuracy) has a significant effect on user satisfaction of the online exam system which is indicated by a P-value lower than 0.05 which means H1 is accepted. Thus, the accuracy of the information or data provided by the system is very important in ensuring user satisfaction. Users tend to feel satisfied if the information they get is accurate, relevant, and reliable. In other words, kAccuracy of information is one of the main factors in determining user satisfaction because users expect reliable and error-free data. These results are in line with research Takke, Marini, & Baisa (2024) who found that the fact of accuracy affects the satisfaction of users of the PELNI Mobile application. Recent research shows that information accuracy is becoming increasingly important in the digital age, especially in technology-based systems such as mobile apps or online platforms. At This research is included in the accuracy indicators as 1) The information provided by the online exam system is always accurate, 2) There are no technical errors (errors) while using the online exam system, 3) The information available by the online exam system is consistent and does not contradict each other, 4) The exam results provided by the system are reliable, 5) There is a user id and password for each user on the online exam system, and 6) The online exam results on the screen are in accordance with what you instructed/input. These six factors interact with each other so that they have an effect on system user satisfaction. The results of this research are in line with the research. Vairamuthu & Anouncia (2016) It is emphasized that the accuracy of information in the online assessment system contributes significantly to user satisfaction.

Hypothesis 2 (H2): The test results show that the content (*Content*) has no significant effect on the satisfaction indicated by a P-value lower than 0.05, which means that H2 is rejected. These non-consequential results mean that the indicators consisting of 1) the information (instructions) available in the online exam system are complete and easy to understand, 2) the materials provided in the online exam system are in accordance with the learning objectives, 3) the online exam materials are easy to understand and not confusing, 4) the online exam materials are relevant to those delivered by the lecturers, and 5) the exam material does not contain questions and or double answers does not have a positive effect on the users of the system. The content does not have a positive influence allegedly because the system user has a perception that the content

provided by the online exam system is adequate. Another cause could be because accuracy, ease of use, and timeliness in using the system are more dominant in affecting their satisfaction. Study by Husain & Budiyantara discovered the fact that content is not always a major determinant in user satisfaction with end-user computing technology [32].

Table 10. Hypothesis Test Results

	P values	Result
Accuracy -> Use Satisfaction	0.020	Significant (accepted)
Content -> Use Satisfaction	0.453	Insignificant (not accepted)
Ease of Use -> Use Satisfaction	0.003	Significant (accepted)
Format -> Use Satisfaction	0.230	Insignificant (not accepted)
Timeliness -> Use Satisfaction	0.000	Significant (accepted)

Source: Research data processing results (2025)

Hypothesis 3 (H3): Ease of use (*ease of use*) showed a significant influence on user satisfaction of the online exam system which was indicated by a P-value of less than 0.05, which means that H3 was accepted. Thus, the six factors/indicators in this study are 1) Users can easily find the features needed in the online exam system, 2) Navigation in the online exam system is easy to understand, 3) The online exam system provides adequate technical support when needed, 4) Users do not take long to learn and use the online exam system, 5) There is a help menu in the online exam system, and 6) The online exam system provides clear instructions in its use to create satisfaction for users of the online exam system. The results of this research are in line with the findings of several researchers who found that the fact of ease of use has a significant effect on the satisfaction of information system users [33]–[35].

Hypothesis 4 (H4): The format after going through the testing process showed results that did not significantly affect the user satisfaction of the online exam system with an indication of a P-value above 0.05, which means that H4 was rejected. These results inform that the five indicators of this dimension, namely 1) The interface of the online exam system is easy to read, 2) The color composition in the online exam system is very good so that it does not strain the eyes and is not boring, 3) The exam questions are presented in a structured, neat, and easy-to-read format, 4) The format used in the system is consistent in all sections, and 5) The online exam system displays information very well and does not have a real effect on user satisfaction at all. Other researchers have also found that the format factor does not have a real effect on user satisfaction of online systems [36].

Hypothesis 5 (H5): Punctuality (*timeliness*) has a significant effect on the satisfaction of users of the online exam system after passing the test *path coefficient*, which means that H5 is accepted, because the P-value of this variable is lower than 0.05. This means that all the indicators are designed, namely 1) The online exam system responds quickly to user requests, 2) The online exam system provides the needed information in a timely manner, 3) The exam results are provided in a timely manner, 4) The online exam runs according to the schedule without delay, and 5) The online exam system provides alerts/reminders to users in a timely manner as a notification/warning can have a real effect on the satisfaction of system users online exams. This result is symmetrical with the

findings of previous researchers who found that punctuality is one of the main factors in determining user satisfaction of online-based systems [38].

Test IPA Model

Importance Performance Analysis (IPA) is able to detect between the expectations (interests/importance) of the users of the online exam system and the performance (factual condition) that occur in the field. Table 11 can help to understand the results of the Importance Performance Analysis.

Based on the data contained in Table 11, it can be seen that the format is the dimension or variable that has the smallest gap because the average level of conformity is the largest (97.88). The next variables followed were ease of use (96.73), accuracy (96.08), content (95.65), and punctuality (94.19). The narrower the gap between interest and performance, the higher the level of satisfaction of users of the online exam system.

Table 11. IPA Conformity Level

No	Code	Importance	Performance	Conformity	Average Conformance
1	C1	4.08	3.92	96.04	95.65
2	C2	4.12	3.91	94.98	
3	C3	4.03	3.86	95.74	
4	C4	4.11	3.9	94.96	
5	C5	3.86	3.73	96.54	
6	A1	3.96	3.85	97.26	96.08
7	A2	3.86	3.49	90.26	
8	A3	3.99	3.81	95.63	
9	A4	4.02	3.87	96.48	
10	A5	4.07	4	98.32	
11	A6	4.03	3.97	98.56	
12	F1	3.97	3.88	97.71	97.88
13	F2	3.91	3.88	99.35	
14	F3	4.04	3.93	97.25	
15	F4	4.03	3.94	97.93	
16	F5	4.07	3.95	97.14	
17	E1	4.02	3.89	96.73	96.73
18	E2	4.04	3.91	96.75	
19	E3	4.02	3.85	95.85	
20	E4	3.98	3.95	99.18	
21	E5	3.98	3.81	95.81	
22	E6	4.09	3.93	96.05	
23	T1	4.02	3.76	93.58	94.19
24	T2	4.09	3.85	94.26	
25	T3	4.18	3.95	94.68	
26	T4	4.19	3.96	94.34	
27	T5	4.14	3.89	94.08	

Source: Research data processing (2025)

In the content dimension, the highest level of conformity emerged from the C5 (no double questions) and C1 (complete & easy-to-understand information) attributes of 96.54 and 96.04, respectively. The accuracy dimension has the largest degree of conformance from the A5 (user ID & password available) and A1 (accurate information) indicators with average values of 98.32 and 97.26 respectively. From the dimensions/format variables, the level of conformity comes from the F2 indicator (good color composition) of 99.35 and F4 (consistent system format) of 97.93.

The E4 (quick user learning of the system) and E2 (easy navigation) indicators have the highest scores in the ease of use of the system dimension with an average level of conformity reaching 99.18 and 96.75. Punctuality has the largest level of suitability through the indicators T3 (exam results are available on time) and T4 (exams on schedule) of 94.68 and 94.34, respectively.

However, the approach to detecting satisfaction with the IPA method will be more perfect when looking at the Cartesian Diagram (Image 2). From the image, it appears that quadrant II is filled with more attributes than the other quadrants out of a total of 27 attributes. It was recorded that 12 attributes were included in quadrant II. In second place is quadrant III which is filled with 11 attributes.

The rest are quadrant IV (3 attributes) and quadrant I (1 attribute).

Quadrant II means maintaining achievement because in this position comes a high level of importance and high performance. This means that the attributes in quadrant II have high importance and already have good performance so they need to be maintained. Those included in this second position include the T3 attribute (exam results are provided in the right time), T4 (the online exam runs on schedule without delay), and A5 (there is a user ID and password for each user in the online exam system). The details that are included in quadrant II are C1, C2, C4, A5, F3, F4, F5, E2, E6, T3, T4, and T5. Quadrant III accommodates the attributes C4, C5, A1, A2, A3, A6, F1, E1, E3, E5, and T1. In quadrant IV there are attributes A6, F2, and E4. While there is only one attribute, namely T2 (the online exam system provides information in a timely manner.

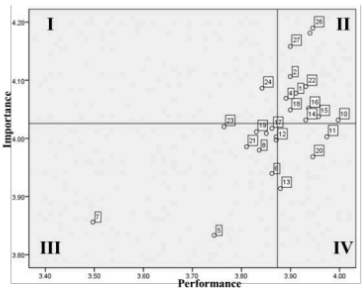

Image 2. IPA Cartesian Diagram

CSI Model Test

Based on the results of the calculation as seen in Table 12, the user satisfaction level of the online exam system reached 77.54%. Referring to previous research, the score is in the satisfied category because it is in the score range of 66.00% - 80.99%. This means that users as a whole show a good level of satisfaction with the online exam system. However, there is still room for improvement because the score has not reached the highest category of very satisfied. This score of 77.54% means that there are still 22.46% of users of the online exam system who have not felt satisfied.

Table 12. Level of Interest and Satisfaction

Dimension (variable)	Level of Importance		Performance level	
	MIS	WF	MPS	WS
Content	4.04	0.20	3.86	0.77
Accuracy	3.99	0.20	3.83	0.76
Format	4.00	0.20	3.92	0.78
Ease of Use	4.02	0.20	3.89	0.78
Timeliness	4.12	0.20	3.88	0.79
WSC	20.18	1.00	19.38	3.88
	CSI			77.54

Source: Primary data processing (2025), WSC: Total Weight Score, CSI: Customer Satisfaction Index, MIS: Mean Importance Score, WF: Weight Factors, MPS: Mean Performance Score, WS: Weight Score

This score also shows the meaning that the online exam system provider has met the expectations of customers in general but has not exceeded their expectations. This is a signal that companies need to continuously monitor and improve the quality of their products or services to achieve higher levels of satisfaction. This result is in line with the EUCS method which shows that there are only three variables that have a significant effect on user satisfaction of the online exam system, namely 1) accuracy, 2) ease of use, and 3) timeliness. The other two, namely content and format, do not have a significant effect on user satisfaction with the online exam system. This means that

the online exam system is not perfect because there are still two important factors that are not optimal. The impact, of course, is on user satisfaction which does not reach the highest number.

CONCLUSION

Referring to the results of the analysis and discussion, this study can provide several important conclusions. By using the EUCS method, the online exam system is not perfect because there are three variables (dimensions) that have a significant effect on satisfaction, namely accuracy, ease of use, and punctuality. Meanwhile, the other two, namely content and format, do not create a real effect on satisfaction. Looking at the results of the effect size test, the real influence of the three variables is in the small category. Based on the results of the IPA test, the majority of attributes or indicators that determine satisfaction are in quadrant II as many as 12, while the other 11 are in quadrant III. There is only one indicator in quadrant I and the other three are in quadrant IV. Following the results of the CSI model test, the UBSI online exam system is able to provide satisfactory service with a score of 77.54%.

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