



User satisfaction analysis of the final project feature using IPA (importance performance analysis) and EUCS (end user computing satisfaction) case study: academic portal system of Ahmad Dahlan University

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ARTICLE INFO

Article history:

Received Nov 18, 2024

Revised Nov 23, 2024

Accepted Nov 30, 2024

Keywords:

EUCS;
IPA;
performance analysis;
student portal;
system evaluation;
user satisfaction.

ABSTRACT

This study evaluates the final project feature on the Academic Portal System of Ahmad Dahlan University (UAD) which is divided into 5 sub-features; final project topic registration, final project guidance, logbook, proposal seminar registration, and final project exam registration using Importance-Performance Analysis (IPA) and End-User Computing Satisfaction (EUCS) methods. Data were collected from student users through questionnaires using the IPA method which measures aspects of importance and performance, and the EUCS method which measures user satisfaction with a 1-5 Likert scale. The findings using the IPA method show that although the final project guidance sub-feature has a high level of importance (4.42), its performance is still poor (2.43) and falls into quadrant 1, making it a priority for improvement. In more detail using EUCS method, weaknesses were identified in completeness (2.75) in the Content dimension and accuracy of information (2.69) in the Accuracy dimension, as well as IT service support (2.75) across all dimensions. It is concluded from the results of this study that the IPA and EUCS methods are very relevant and worthy of being used to evaluate the final project features on the UAD Academic Portal System by providing accurate and comprehensive results, so that they can provide a complete picture and technical recommendations on user satisfaction and help identify areas that need to be improved.

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1. INTRODUCTION

Web-based applications allow users to access services and information from anywhere as long as they have an internet connection. This technology has been applied in various sectors, including the banking sector, e-commerce, health, and the education sector (Aditya Ahmad Fauzi et al., 2023; Wisudawati et al., 2023). Web-based applications also offer advantages in terms of maintenance and updates. In addition, web-based

applications are platform-independent, which means they can be accessed from different operating systems without much customization. Overall, the growth of web-based applications has revolutionized the way information is accessed and used in various industries (Hendarsyah, 2019). While web-based applications offer many advantages, some challenges need to be addressed. First, and most essential, is data security. This is because web applications are often the target of cyberattacks and face risks such as hacking and data theft (Verizon, 2023). Compatibility with different browser types and versions is another issue, which requires developers to ensure functionality across multiple platforms. Finally, usability issues such as poor design and unintuitive interfaces can negatively impact the user experience, leading to frustration and dissatisfaction (Sudarmaji & Irawan, 2022).

In the field of education, this development is very visible in the implementation of a university's academic portal system. This academic portal is used by universities to manage academic information, related to students, lecturers, and education staff (Haleem et al., 2022). The UAD (Universitas Ahmad Dahlan) academic portal is designed to digitally support student academic activities. Through this portal, students can perform various important activities, such as filling out KRS (Study Plan Card) online, registering for Wi-Fi access on campus, monitoring lecture attendance, viewing academic grades, and managing final project (Universitas Ahmad Dahlan, n.d.). The use of a web portal system has a crucial role for students, especially in managing information that supports academic activities (Pinho et al., 2018). One of the important features of the UAD academic portal is the final project feature, which facilitates registering final project topics, online final project guidance, guidance logbook data and final project progress, and final exam registration.

This feature is divined to improve the efficiency and regularity of the final project process for students, as well as facilitate the final project supervisors in monitoring the final project done by their students. The development and use of this final project feature are governed by policies and Standard Operating Procedure (SOP) documents issued by the university. The document was then adapted and developed by the UAD Information Systems Bureau as a basic reference for the development of final project features so that the system runs well and according to academic needs and by the regulations that have been approved in the policy and SOP documents. However, it is possible that the final project features are not maximized in providing services to meet user needs. The impact is that students may miss information regarding final academic project, which will have an impact on their performance. In addition, user satisfaction when using the final project features is also greatly influenced by how effective the system is in providing the information needed in a timely and accessible manner.

Until now, no formal evaluation has been conducted regarding the effectiveness and efficiency of the use of the final project features by end users. The recap of complaints related to the Ahmad Dahlan University Academic Portal System of the final project menu taken from the IT Services website (<https://helpdesk.uad.ac.id/>) includes several topics of complaints including the lack of IT service support related to obstacles when accessing several of the final project sub-features. Complaints related to the upload process often involve system failure in saving documents, where users complain about not finding provisions that can be used as a reference or solution in solving problems from IT services. There are also complaints about access difficulties during maintenance as well as questions about the procedure and clarity of features in the final project menu. Evaluating the final project feature on the UAD academic portal is very important to identify system successes and failures which will impact user satisfaction in using this feature. Failure of the system to deliver maximum information can certainly reduce user satisfaction. This dissatisfaction can affect their view of the quality of services provided by the academic institution or university (Mailangkay, 2024).

The IPA (Importance-Performance Analysis) and EUCS (End-User Computing Satisfaction) methods can be used as appropriate and comprehensive approaches to evaluate this feature (Faqih et al., 2020; Haerani et al., 2024). The IPA method can help identify dimensions in the final project feature that need to be improved based on their level of importance and performance (Wisudawati et al., 2023), then specifically can be continued using the EUCS method to measure the level of user satisfaction in more detail with the final project features based on the dimensions of measurement (Widodo, 2024; Yusroaini et al., 2024). The combination of these two methods can provide a technical overview of the aspects that need to be improved for the success of the final project features on the UAD academic portal system in supporting student final project completion. Combining these two approaches results in a comprehensive evaluation and ensures that the UAD academic portal, especially the final project feature, operates optimally in meeting student expectations and providing an excellent user experience.

2. RESEARCH METHODOLOGY

2.1 Research Stages

The research was conducted using quantitative methods, namely by collecting data from all respondents who used the final project feature of the UAD Academic Portal. This research will analyze several aspects that will affect the success of using the final project feature of the web-based UAD Academic Portal. To evaluate the UAD Academic Portal using the IPA and EUCS methods, several stages of research must be carried out in Figure 1.



Figure 1. Research Stages

3. RESULTS AND DISCUSSION

3.1 Problem Identification

This study was conducted related to student complaints regarding difficulties and problems when using the final project feature that can affect student satisfaction in using the system, as well as the absence of a formal evaluation related to the effectiveness and efficiency of using the final project feature. Considering the importance of the final project process as one of the stages in the academic process, the evaluation of the final project feature on the UAD academic portal is very important to determine the success and failure of the system.

3.2 Preparation of Research Instruments

The research instruments described in this text include two questionnaires: IPA and EUCS. The IPA questionnaire measures two aspects, namely the level of importance students give to the final project menu in the portal and how well the final project menu functions. The EUCS questionnaire focuses on five dimensions, including content, accuracy, format, ease of use, and timeliness (Ramadhani et al., 2023). Each dimension includes specific questions about the features of the final project menu in the UAD Student Portal, such as registration of final project topics, online guidance for the final project, guidance logbook and progress, registration for proposal seminar, and registration for the final exam. On the other hand, both questionnaires used a Likert scale to measure respondent's assessment of each feature of the tested menu.

In research using the IPA method, importance and performance are two important aspects that are assessed for each detail of the final project feature in the portal (Zuhaira

Meiliana Sumagita, User satisfaction analysis of the final project feature using IPA (importance performance analysis) and EUCS (end user computing satisfaction) case study: academic portal system of Ahmad Dahlan University

& Pujiani, 2024). Importance assesses the level of student need or interest in the feature, while performance measures how well students feel the actual performance of this feature. In addition, in the EUCS method, there are five main dimensions used to measure user satisfaction with the portal (Widodo, 2024; Yusroaini et al., 2024). These dimensions include content, accuracy, format, ease of use, and timeliness. Content refers to the quality and completeness of the information provided by the portal. Accuracy assesses the level of reliability and accuracy of the data or information presented. Format evaluates the appearance and structure of the information and ensures its usability for users. Ease of use measures how easily users can access and utilize the available features. Meanwhile, timeliness evaluates the speed of the system in responding to or updating relevant information (Dienislami & Indrati, 2023). Details of the IPA instruments used by researchers can be seen in Table 1.

Table 1. IPA Questionnaire

Feature	Grade
How important is the Final Project Topic Registration feature on the Final Project Menu in the UAD Academic Portal System for you?	
How well does the Final Project Topic Registration feature on the Final Project Menu in the UAD Academic Portal System perform?	
How important is the Final Project Guidance feature on the Final Project Menu in the UAD Academic Portal System for you?	
How well does the Final Project Guidance feature on the Final Project Menu in the UAD Academic Portal System perform?	
How important is the Guidance & Progress Logbook feature on the Final Project Menu in the UAD Academic Portal System to you?	
How well does the Guidance & Progress Logbook feature on the Final Project Menu in the UAD Academic Portal System perform?	
How important is the Proposal Seminar Registration feature on the Final Project Menu at the UAD Academic Portal System for you?	
How well does the Proposal Seminar Registration feature on the Final Project Menu on the UAD Academic Portal System perform?	
How important is the Registration for Awareness (Final Exam) feature on the Final Project Menu on the UAD Academic Portal System for you?	
How well does the Final Exam Registration feature on the Final Project Menu in the UAD Academic Portal System perform?	
- Rate the importance of the feature (1 = Not Important, 5 = Very Important).	
- Rate the performance of the feature (1 = Very Poor, 5 = Very Good).	

The EUCS questionnaire was created to evaluate the features in quadrants I and III of the IPA questionnaire results. Features in quadrant I are considered very important but unsatisfactory, so they require immediate attention and improvement (Hidayat et al., 2023). On the other hand, features in quadrant III are considered less important and also have low performance, but still need to be evaluated to ensure they meet minimum service standards. The EUCS questionnaire makes it possible to examine in detail aspects such as information completeness, data accuracy, ease of use, and timeliness of these features (Chantika, 2022). Using this questionnaire, researchers can gain a deeper understanding of the user experience and identify critical areas for improvement. This will ultimately help improve the ability of the final project feature to support students' academic needs. The details of the dimensions and sub-dimensions to produce more technical results can be seen in Table 2.

Table 2. EUCS Dimensions

Dimension	Sub-dimension
Content	Information quality, Completeness, Reliability, Output Produced, and IT Services
Accuracy	Thoroughness, Accuracy, Appropriateness, and IT Services

Format	Appearance, Colors and Fonts, Types of Data and Information, and IT Services
Ease of Use	User-friendly, Efficiency, Easy to Understand, and IT Services
Timeliness	Response time, Availability of information, Up-to-date, and IT Services

Complaints regarding IT Service support that include difficulties with the document upload process, portal disruptions during maintenance, and unclear data verification processes indicate the need for technical support services that are responsive, informative, and easily accessible. Therefore, the addition of the “IT Service” subdimension to the EUCS questionnaire is very relevant to evaluate user satisfaction and needs for this service, especially in terms of technical support, speed of response, and clarity of guidance. This subdimension is expected to provide more specific information about the effectiveness of support services in helping students solve technical problems quickly and efficiently, thus ultimately increasing user satisfaction with the final project feature. This shows that IT Service support is an important element in ensuring user convenience.

3.3 Data Gathering

a. IPA Questionnaire Data Gathering

Importance-Performance Analysis (IPA) questionnaire data was collected from a number of respondents consisting of active students who use the final project feature on the Ahmad Dahlan University (UAD) academic portal. The questionnaire was designed to measure two main aspects: the level of importance and performance of the features provided in the academic portal, especially the final project feature (Nuraieni et al., 2021). Based on the data collected, the average for each aspect in each feature was processed. Table 3 is the average data for the features assessed in the IPA questionnaire. From the Table 3, it can be seen that the Final Project Guidance feature has a high importance value, namely 4.42. However, the feature has a lower performance value, which is 2.43. This indicates a gap between users' expectations of the feature and the reality they experience when using it.

Table 3. Average results of importance and performance of each feature on the final project menu

Feature	Importance	Performance
Final Project Guidance	4.42	2.43
Topic Registration	4.04	3.89
Guidance Logbook	3.55	3.83
Final Exam Registration	4.23	3.95
Proposal Seminar Registration	4.28	3.97

b. EUCS Questionnaire Data Gathering

In this section, data collection is carried out regarding user satisfaction with the final project guidance feature on the UAD academic portal using the End-User Computing Satisfaction (EUCS) method. The EUCS questionnaire used focuses on several important sub-dimensions as shown in Table 2, as well as covering aspects of technical services or IT Services (Helpdesk) that support the smooth use of these features.

c. Instrument Development Based on the Sub-dimensions of EUCS

The questionnaire was developed to evaluate user satisfaction by assessing the five sub-dimensions of EUCS. The content sub-dimension measures the quality of information, completeness, reliability, output produced, and the role of IT services in providing support for the content in the final project guidance feature. Accuracy focuses on the accuracy, suitability of the data or information provided, as well as the accuracy of information from IT services in providing assistance. Format evaluates the appearance,

color and font, type of data and information, to the role of IT services in presenting help information in the final project guidance feature. Ease of use assesses how easy it is for students to operate the feature without assistance. Timeliness measures the speed of system response, including feedback from lecturers and IT Service support.

d. EUCS Data Gathering Results

Data collection was carried out by distributing EUCS questionnaires to 90 active students who used the final project guidance feature. Data was collected in the form of a Likert scale (1-5), where a value of 1 indicates dissatisfaction (very low) and a value of 5 indicates satisfaction (very high). Figure 3 is the result of data collection averaged based on EUCS sub-dimensions.

3.4 Data Analysis

This research uses two data analysis methods, IPA and EUCS. IPA maps the importance and performance results of the features in the final project into four quadrants. Quadrant I includes important features with low performance that require improvement. Quadrant II contains important features with high performance that must be maintained. Quadrant III has less important features with low performance that have a low priority for improvement. Quadrant IV contains features that are not important but perform well, indicating potential overuse. While EUCS uses descriptive statistics to evaluate user satisfaction (Widodo, 2024; Yusroaini et al., 2024). This analysis provides an in-depth understanding of the strengths, weaknesses, and areas of technical improvement needed on the features in the final project menu of the UAD academic portal (Haryani et al., 2022).

Averaging survey results is an accurate way to determine boundaries in IPA because it corresponds to the perceptions of the majority of users of the academic portal system. This approach reflects the dynamics of the actual data distribution and enables multidimensional analysis that matches the real experience of respondents. By using averages, the analysis can better capture user perception trends and prioritize features based on actual user views. Overall, the average-based cut-off in IPA provides a more accurate representation of user perceptions and enables more meaningful data analysis (Nam & Lee, 2019). To calculate the average importance and performance, formulas (1) and (2) can be used. According to Komalasari & Ayumida (Komalasari & Ayumida, 2024) EUCS is a method used to measure the level of end user satisfaction with information systems or applications. This method focuses on assessing several dimensions that affect user satisfaction, such as content, accuracy, presentation, ease of use, and timeliness of the system (Hafidz & Sari, 2021). Each respondent gave a score to each questionnaire question using a Likert scale of 1-5. For each EUCS dimension, the average value of all answers in that dimension will be calculated to determine the level of user satisfaction. To calculate the average importance and performance, formula (3) can be used.

$$\text{Mean Importance} = \frac{\Sigma \text{Importance Score}}{\text{Number of Respondents}} \quad (1)$$

$$\text{Mean Performance} = \frac{\Sigma \text{Performance Score}}{\text{Number of Respondents}} \quad (2)$$

$$\text{Mean sub - dimension} = \frac{\Sigma \text{Sub-dimension score}}{\text{Number of Respondents}} \quad (3)$$

a. IPA Questionnaire Data Analysis

Analysis of the IPA data obtained shows that some features are in different quadrants, with each quadrant providing a unique interpretation of the level of user satisfaction and priority for feature improvement (Amin et al., 2024). An overall mean value for importance and performance is then calculated, which serves as a cut-off point to determine the location of the quadrant on the cartesian diagram (Sahfitri, 2017).

Based on Table 3, the overall average importance level is 4.13 and the overall average performance level is 3.40, these values will be used to divide the diagram accordingly. Figure 2 is a cartesian diagram visualization of the average value of importance and performance on the final project feature. Quadrant I is an area that shows features with a high level of importance but still inadequate performance. Features in this quadrant should be a top priority for improvement in order to meet user expectations (Sutiman et al., 2023). Based on the data, the Final Project Guidance feature gets an importance score of 4.40 and a performance of 2.42, which indicates the importance of developing and improving guidance services in order to help students complete their final project on time. The development of the final project guidance system can overcome student's technical problems and affect the satisfaction and efficiency of academic portal users. Based on the results obtained from this questionnaire, it will be detailed again in the EUCS questionnaire.

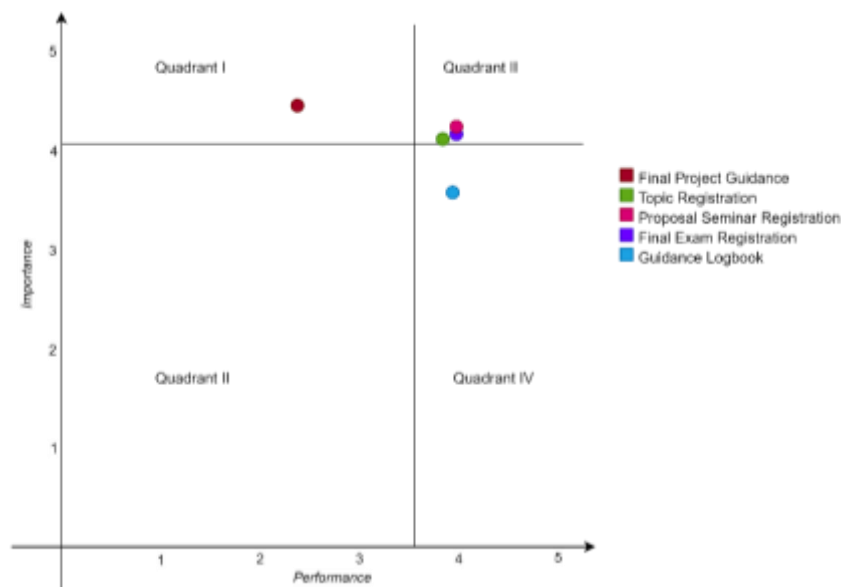


Figure 2. IPA Questionnaire Analysis Results

b. EUCS Questionnaire Data Analysis

Based on the EUCS questionnaire data collected in Figure 3, there are several dimensions assessed by students regarding the final project guidance feature. The assessment shows high information quality and reliability (Content), but the completeness of information and the resulting output is still low. IT services also received low ratings, indicating the need for better technical support. In the Accuracy dimension, Accuracy and IT Services scores were also low, indicating problems in ensuring the data matched the users' needs. In the Format dimension, the final project guidance feature meets good visual standards, but technical support in terms of visuals needs to be improved. The Ease of Use of this feature is rated well by students. However, on the Timeliness dimension, IT Services has not been satisfactory due to the lack of up-to-date service availability. Overall, the data shows that the final project guidance feature on the UAD academic portal has fulfilled several aspects such as information quality, accuracy, appearance, ease of use, and timeliness. However, there are some shortcomings, especially in the sub-dimensions of Completeness, Accuracy, and Output Produced, as well as IT services that still get low scores in almost all dimensions.

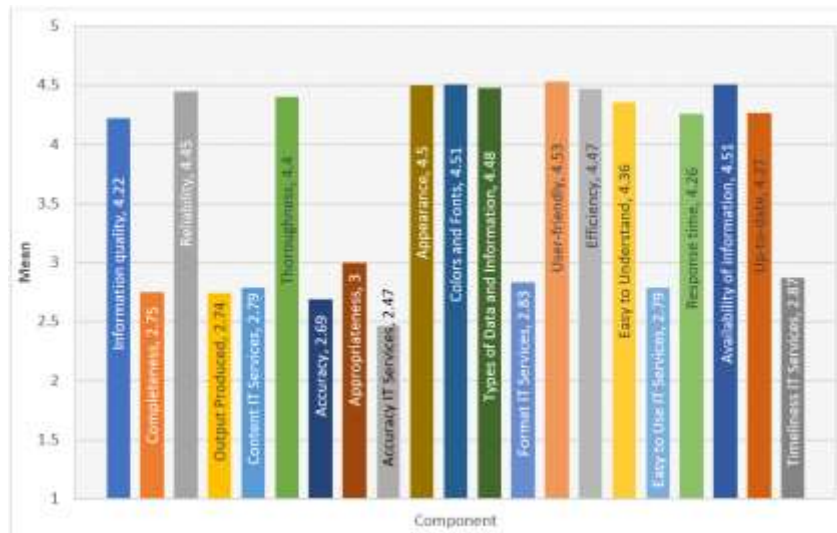


Figure 3. Visualization of EUCS Data Gathering Results

3.5 Discussion

The results of Importance-Performance Analysis (IPA) show that the features of the final project menu need to be considered based on their importance and performance according to users (Lingga & Sembiring, 2021). Features in quadrant I should be improved, quadrant II maintained, quadrants III and IV considered for efficiency. The Final Project Guidance feature on the UAD academic portal has a high level of importance (4.42) but with a fairly low performance (2.43), which places this feature in quadrant I and indicating an urgent need for improvement of this feature. This imbalance indicates that this feature requires top priority in development to more effectively meet user expectations.

Meanwhile, EUCS analysis will identify dimensions that need further improvement. This analysis will help the management of the UAD academic portal system to make decisions and make improvements if needed. Result of user satisfaction based on End-User Computing Satisfaction (EUCS) shows that shortcomings are seen in the aspects of completeness, accuracy of information, and IT service support in almost all dimensions. Improvements in comprehensiveness and technical support will help align user expectations and experience. It can also improve the efficiency of using the guidance feature in supporting students' academic process.

Many respondents suggested adding a file upload feature to the guidance form to facilitate the submission of supporting documents, which is expected to expedite the final project consultation process. In addition, improvements to helpdesk services, including improved responsiveness and the provision of a live chat system, were also considered important to assist students in overcoming technical problems quickly and effectively. On the information side, other suggestions included the provision of comprehensive PDF user guides, video tutorials, and FAQs. Some respondents also suggested direct socialization, especially for new students, and increasing the affordability of IT services, for example with mobile applications or alternative communication platforms such as WhatsApp. The suggestions given by respondents are summarized in Table 4.

Table 4. Recap of Suggestion Collection from EUCS Questionnaire

No	Topic	Percentage
1	File Upload Feature	35%
2	Helpdesk Service Improvement	20%
3	Usage Guide	15%
4	Notification System	10%

No	Topic	Percentage
5	Direct Communication Feature	8%
6	IT Service Accessibility	7%
7	Regular Meeting and Feedback	5%

4. CONCLUSION

The application of IPA and EUCS methods in the analysis of the Ahmad Dahlan University Academic Portal final project features has identified areas that perform well and areas that need to be improved. The IPA method uses a questionnaire to assess the level of importance and performance of features from the user's point of view. Features in quadrant I (high importance and low performance) were identified as top priorities for improvement. The analysis results show that the final project guidance feature requires immediate improvement. The EUCS method measures user satisfaction with the features in the priority areas identified by IPA. Visual aspects and ease of use are good, but there are deficiencies in the completeness and accuracy of information in the final project guidance feature and technical support from IT services needs to be improved. Improving performance and addressing deficiencies in these areas can improve system performance and user satisfaction.

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