Journal of Theoretical and Applied Information Technology
31st December 2024. Vol.102. No. 24

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

APPLICATION OF THE PIECES FRAMEWORK METHOD IN THE ANALYSIS OF USER SATISFACTION LEVELS OF OASIS APPLICATION SERVICES

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ABSTRACT

This study aims to analyze the level of user satisfaction of the OASIS (Online School Information System Administration) application service using the Pieces Framework method. This method includes six dimensions: Performance, Information, Economics, Control, Efficiency, and Service, which allows for a thorough evaluation of information systems (Hawkins, 2020). A quantitative approach and survey design were used to collect data from 40 respondents consisting of students, teachers, and education staff in Malang Regency. The specially designed questionnaire uses the Likert scale to measure satisfaction levels. The results of the analysis show that all domains in the Pieces Framework achieved an average score above 4.38, with the Service domain recording the highest score of 4.56. The average total user satisfaction reached 4.43, which is included in the category of "VERY SATISFIED." Although most respondents are satisfied, there is negative feedback that can be used to improve the quality of OASIS app services. These findings provide valuable insights for developers to improve the user experience in the future.

Keywords: *Satisfaction Level, Pieces Framework, OASIS Application, School*

1. INTRODUCTION

The use of information technology in the education sector is growing, and school information system applications such as OASIS (Online School Information System Administration) play an important role in managing data and education administration. OASIS is designed to improve the efficiency and effectiveness of information management, but the challenge of achieving user satisfaction remains a significant issue. User satisfaction is a key factor that determines the success of the implementation of information systems, as it affects the level of adoption and use of technology in the educational environment (Davis, 1989). In the context of education, the use of applications such as OASIS not only serves to facilitate administration, but also to support communication between schools, students, and parents. While OASIS offers a variety of features that aim to improve the user experience, challenges in implementation and daily use often lead to varying levels of satisfaction among users. Therefore, it is important to conduct an in-depth analysis regarding the factors that affect the satisfaction of the users of this application.

The Pieces Framework method is a suitable tool for conducting this analysis. This method includes six dimensions—Performance, Information, Economics, Control, Efficiency, and Service—which provide a holistic framework for evaluating information systems (Hawkins, 2020). By applying the Pieces Framework, this study aims to identify the strengths and weaknesses of OASIS from various aspects, as well as provide a clear picture of the level of user satisfaction. Analysis

using the Pieces Framework will involve collecting data through questionnaires designed to measure each dimension. For example, the performance dimension will evaluate how well the app meets the needs of users in terms of speed and responsiveness. The information dimension will assess the accuracy and relevance of the data presented in the application. Meanwhile, the economic dimension will consider the cost of using the app compared to the benefits that users receive. Through this approach, it is hoped that the research can provide useful recommendations for OASIS developers and managers to improve the user experience.

This research also has broader implications for the development of information systems in the education sector. By understanding the factors that affect user satisfaction, educational institutions can be better at choosing and implementing information technology that suits their needs. This will not only improve administrative efficiency but also the overall quality of education. In order to create a more responsive and adaptive educational environment to change, this research aims to provide in-depth insights and practical recommendations for the further development of the OASIS application and other educational information systems. Thus, this research not only contributes to the development of OASIS but also to the improvement of the quality of education services in Indonesia.

2. THEORETICAL FOUNDATIONS

The application of information technology in education is increasingly important, especially through information system applications such as OASIS (Online School Information System Administration). To evaluate the effectiveness and user satisfaction of these applications, the Pieces Framework method can be used. The Pieces Framework was developed to provide a comprehensive analysis of information systems by considering six dimensions: Performance, Information, Economics, Control, Efficiency, and Service (Hawkins, 2020).

1. Performance: Measures how well an app meets user needs in terms of speed and reliability. Good performance contributes to user satisfaction (Davis, 1989).
2. Information: Includes the accuracy, relevance, and timeliness of the information provided by the application. High-quality information can improve user decisions.
3. Economics: Assesses the cost of using the app compared to the benefits obtained. The economic sustainability of the application is important for long-term use.
4. Control: Assesses the user's ability to manage and control data. Good control increases user trust in the app.
5. Efficiency: Measures how effectively an application performs its functions without wasting resources.
6. Service: Assesses the support provided to users, including training and technical assistance.
7. Using the Pieces Framework, OASIS user satisfaction level analysis can be carried out thoroughly, providing insights for continuous improvement.

3. METHOD

This study uses the Pieces Framework method to analyze the level of user satisfaction of the OASIS (Online School Information System Administration) application service. The Pieces Framework consists of six dimensions: Performance, Information, Economics, Control, Efficiency, and Service, which allows for a comprehensive evaluation of information systems (Hawkins, 2020). The approach used is quantitative with a survey design. This research aims to systematically collect data from OASIS users. This research only discusses the use of the OASIS application and its measurements from a PIECES perspective, not the actual system or creation of the system.

The research population includes students, teachers, and education staff in schools in Malang Regency. The sample was taken at random, with a total of 40 respondents consisting of various user groups, to ensure representativeness. Data is collected through specially designed questionnaires, with questions covering every dimension within the Pieces Framework. The questionnaire uses the Likert scale to measure the level of user satisfaction with the app, allowing for in-depth quantitative analysis. After data collection, the analysis was carried out using descriptive and inferential statistics. This technique aims to identify the relationship between the dimensions in the Pieces Framework and user satisfaction levels, as well as to provide in-depth insights into the factors that affect the OASIS user experience.

The data analysis used is descriptive quantitative, this technique is needed in this study because it has the purpose of doing it to find out the services provided and find out the problems and disruptions in a service. After collecting data

through a questionnaire, to be able to find out the average level of satisfaction with the formula [21]:

RK = JSK / JK
RK = Average Satisfaction
JSK = Total Questionnaire Score
JK = Number of Questionnaires

In determining the level of satisfaction, we can use the model stated by Kaplan and Norton with the following levels of satisfaction [19]:

Table 1. Satisfaction Level Assessment

No	Score	Information
1	1,00 – 1,79	Very Uncomfortable
2	1,80 – 2,59	Dissatisfied
3	2,60 – 3,39	Neutral
4	3,40 – 4,19	Satisfied
5	4,20 – 5,00	Highly satisfied

4. RESULTS AND DISCUSSION

Based on the results of the distribution of questionnaires to 40 users of the OASIS Application as a matter of getting a level of satisfaction in using the OASIS Application. Then the results of the questionnaire were recapitulated and calculated using the class interval formula and average score, then measured based on the assessment characteristics on each variable of the PIECES Framework method. The following are the results of the questionnaire calculation related to the level of user satisfaction in using the application [6]:

4.1 Questionnaire Results and Weight Calculation

The results of the questionnaire from the questions were made using the PIECES Framework and processed using the Likert scale. Measurement of user satisfaction levels using questionnaires based on domains (Performance, Informations and data, Economics, Control and security, Efficiency and Service), namely:

4.2 Domain Performance

The results of processing performance domain data can be seen in table 2.

Table 2: Results of processing the Performance domain questionnaire

Statement	Respond				
	STS	TS	N	S	ST
In responding to an order (cancellation or request) to an action, it can be done quickly with the OASIS Application	0	0	8	47	135
User-friendly interface	0	0	13	80	97
Sum	0	0	21	127	232

RK= ((0*1)+(0*2)+(21*3)+(127*4)+(232*5)) / 190
= (0+0+10+90+90) /190
RK = 840/190
RK = 4,42

Based on Table 2 of the calculation results, the average user satisfaction level in the OASIS application Performance domain reached 4.42, which is classified as "VERY SATISFIED." This number shows that users are very satisfied with the app's performance in meeting their needs. This high level of satisfaction reflects the effectiveness of the application in providing fast and stable responses, as well as ease of navigation. Success in the Performance domain is critical to creating a positive user experience. This is also an indicator for developers to continue to improve the performance of the application, in order to continue to meet user expectations and maintain their loyalty to OASIS.

4.3 Domain Information

The results of processing domain Information data can be seen in table 3

Table 3: Results of Domain Information questionnaire processing

Statement	Respond				
	STS	TS	N	S	ST
Information on the Application according to the user's needs	0	0	16	80	94
The displayed menu can be well understood by the user	0	4	8	76	102
Sum	0	4	24	156	196

RK = ((0*1)+(3*2)+(16*3)+(72*4)+(99*5)) / 190
= (0+3+16+72+99) / 190
RK = 837 / 190
RK = 4.40

Based on Table 3 of the calculation results, the average user satisfaction level in the Information domain of the OASIS application reached 4.40, which is included in the category of "VERY SATISFIED." This shows that users feel very satisfied with the quality of the information provided

by the app. This high level of satisfaction reflects that the information conveyed is clear, accurate, and easy to understand, thus meeting the needs of users. Success in providing relevant and timely information is essential for improving the user experience. This is also a positive signal for developers to continue to maintain and improve the informative aspects in the OASIS application to keep it relevant and useful.

4.4 Economy Domain

The results of processing Economy Domain data can be seen in table 4

Table 4: Results of processing the Economics Domain questionnaire

Statement	Respond				
	STS	TS	N	S	ST
The app never crashes when used	11	23	46	54	56
The security that exists in the Application can protect data or information from various forms of fraud or crime	16	23	33	52	66
Sum	27	46	79	106	122

RK = ((0*1)+(2*2)+(12*3)+(87*4)+(89*5)) / 190
= (0+2+12+87+89) / 190
RK = 833/190
RK = 4.38

Based on Table 4 of the calculation results, the average user satisfaction level on the OASIS application Economics Domain reached 4.38, which is classified as "VERY SATISFIED." This figure shows that users are satisfied with the economic value offered by the app, including cost efficiency and benefits obtained. High satisfaction in this domain reflects that users feel that the app provides more value than the cost incurred. This is a positive indicator for developers to continue to maintain and improve the economic aspect, so that users still feel benefited and committed to using the OASIS application in the long term.

4.5 Domain Control and Security

The results of Domain Control and Security data processing can be seen in table 5

Table 5: Results of processing the Domain Control and Security questionnaire

Statement	Respond				
	STS	TS	N	S	ST
The use of the Application makes the user efficient in terms of labor costs and time	0	2	11	75	102
OASIS applications can produce outputs that fit in minimal time and materials	10	60	72	21	27
Sum	10	62	83	96	129

RK = ((0*1)+(2*2)+(12*3)+(87*4)+(89*5)) / 190
= (0+2+12+87+89) / 190
RK = 833/190
RK = 4.38

Based on Table 5 of the calculation results, the average user satisfaction level in the Control and Security domain of the OASIS application reached 4.38, which is included in the category of "VERY SATISFIED." This shows that users are very satisfied with the control and security features offered by the app. This high level of satisfaction reflects users' trust in the protection of personal data and the security of transactions. The success of the app in providing this sense of security is very important, as it can increase user loyalty and encourage them to continue using OASIS services. This positive indicator is also an encouragement for developers to continue to maintain and improve security aspects.

4.6 Domain Efficiency

The results of processing Domain Efficiency data can be seen in table 6

Table 6: Results of processing the Efficiency domain questionnaire

Statement	Respond				
	STS	TS	N	S	ST
The use of the Application makes the user efficient in terms of labor costs and time	0	2	11	75	102
OASIS applications can produce outputs that fit in minimal time and materials	10	60	72	21	27
Sum	10	62	83	96	129

RK = ((0*1)+(1*2)+(3*3)+(97*4)+(89*5)) / 190
= (0+1+3+97+89) / 190
RK = 844 / 190
RK = 4.44

Based on Table 6 of the calculation results, the average user satisfaction level in the Efficiency domain of the OASIS application reached 4.44, which is classified as "VERY SATISFIED." This number shows that users feel very satisfied with the efficiency of the application in completing tasks and providing services. The high level of efficiency reflects the app's ability to minimize the time and effort required by users, thereby improving the overall experience. This satisfaction not only creates user trust, but also has the potential to increase loyalty and sustainable use of the application. This is a positive indicator for the further development of the OASIS application.

4.7 Domain Service

The results of Domain Service data processing can be seen in table 7

Table 7: Results of processing the Service domain questionnaire

Statement	Respond				
	STS	TS	N	S	ST
Information can be accessed easily	0	0	4	37	54
The application can give you satisfaction as a user who needs information	0	18	35	34	103
Sum	0	0	9	64	117

RK = ((0*1)+(0*2)+(9*3)+(64*4)+(117*5)) / 190
= (0+0+9+64+117)
RK = 868 / 190
RK = 4,56

Based on Table 7 of the calculation results, the average level of user satisfaction with the OASIS application Service domain reached 4.56, which is included in the category of "VERY SATISFIED." This figure shows that users feel very satisfied with the services provided. This high level of satisfaction reflects the effectiveness of the application in meeting the needs and expectations of users. Thus, the OASIS app has managed to create a positive user experience, which can contribute to user loyalty and sustainable use in the future. This also provides encouragement for developers to continue to improve the quality of existing services.

The following are the results of the Domain PIECES framework recapitulation:

Table 8: Results of the PIECES domain recapitulation

No	Domain	Value
1	Performance	4.22
2	Information	4.43
3	Economics	4.40
4	Control and Security	4.38
5	Efficiency	4.44
6	Service	4.56
	Average Amount	4.43

Based on Table 8, the results of calculations on each domain, namely Performance, Information, Economics, Control, Security, Efficiency, and Service, the average user satisfaction level for the OASIS application was obtained at 4.43. This value indicates that the user is very satisfied with the service provided by the app, which can be categorized as "VERY SATISFIED." This indicator reflects that the OASIS application has managed to meet the expectations and needs of users well.

This high level of satisfaction is important to analyze further, as it can affect a variety of other aspects, including user loyalty and long-term use of the app. Research shows that user satisfaction is one of the key factors in the success of an application (Khan, 2021). In the context of OASIS, high satisfaction can contribute to an increase in the frequency of use and word-of-mouth recommendations, which is a very effective form of marketing.

Each of the domains assessed—Performance, Information, Economics, Control, Security, Efficiency, and Service—has an important role to play in determining user satisfaction. For example, the Performance domain relates to how quickly and responsively an application is in meeting user demands. Users who feel that the app works well and quickly tend to be more satisfied. Likewise with the Security domain, where users must feel safe when using the application. Trust in the security of personal data and transactions is crucial in building satisfaction.

Domain Information also plays an important role, because clear and easy-to-understand information will improve the user experience. When users feel they are getting the information they need in a timely and accurate manner, they will feel more satisfied. The same applies to the Economics domain; Users tend to value apps that provide more value compared to the costs incurred.

Furthermore, the Control and Efficiency domains are related to the extent to which users feel they have control over the application and how efficiently the application is in completing the desired tasks. Users who feel they can set their own

preferences and get quick and effective results will be more likely to find the app satisfactory. The results show a satisfaction level of 4.43 provides a positive indication for the development of the OASIS application in the future. The development team needs to consider feedback from users to continuously improve each domain of the service. By listening to the needs and expectations of users, they can make relevant and adaptive updates, so that the app remains relevant and satisfying for users. Additionally, it is important to conduct periodic surveys to measure user satisfaction levels consistently. Through this approach, developers can catch changes in user preferences and adjust the services provided. Previous research has shown that companies that are proactive in listening to customer voices tend to have higher levels of satisfaction (Smith, 2020) .

Thus, the results of measuring the user satisfaction level of the OASIS application showing a score of 4.43 are not only an achievement, but also a starting point for better development. Apps that can adapt to user needs and maintain a high level of satisfaction will have a competitive advantage in the market.

From the results of research on the use of public transportation applications (Angpau) carried out by (Hidayatullah et all, 2020) it was concluded that on average all transportation has the same economic parameters, namely the costs incurred are in accordance with the benefits received. Meanwhile, for other parameters (efficiency, performance, information, control, service) there are significant differences in vehicle and driver performance, vehicle, driver and company information and the services provided.

The similarity with this research is using the PIECES method, but the object carried out as research is different, where the research being evaluated is the OASIS application and the respondents are teachers, students, parents and teaching staff. The average total user satisfaction results reached 4.43, including in the "VERY SATISFIED" category. Even though the majority of respondents were satisfied, there was negative feedback that could be used to improve the quality of OASIS application services.

5. CONCLUSION

Based on the data analysis and the results of the questionnaire calculation that has been carried out, the average score of each PIECES Framework domain is obtained. The Performance domain gets a score of 4.42 (Very Satisfied), the Information domain gets a score of 4.43 (Very Satisfied), the Economics domain gets a score of 4.40 (Very Satisfied), the Control and Security domain gets a score of 4.38 (Very Satisfied), the Efficiency domain gets a score of 4.44 (Very Satisfied) and the Service domain gets a score of 4.56 (Very Satisfied). As for the total average satisfaction level of all domains, got a score of 4.43 (Very Satisfied). Based on the results of the evaluation of the PIECES framework in its 6 domains, the average number of satisfaction levels obtained was 4.43, so it can be concluded that the level of satisfaction of service users with the Livin by Mandiri application in the North Penajam Paser Regency area is included in the VERY SATISFIED category. From the results of the calculation, the questionnaire can be concluded that the use of the OASIS Application service plays a good role and is positive which makes users feel very satisfied in using it. However, there are still some respondents who give quite bad assessments, this is one of the inputs or references to improve the quality of user service in the OASIS Application.

This research makes a significant contribution in understanding user satisfaction of the OASIS application by using the PIECES Framework method, which allows identifying application strengths and weaknesses from various dimensions, such as Performance, Information, Economics, Control, Efficiency, and Service. By applying this method, research also enriches information system evaluation literature, especially in the field of education, becoming an important reference for researchers and practitioners. The resulting findings provide practical recommendations for developers to improve service quality based on user feedback. Additionally, understanding user satisfaction helps educational institutions in choosing the right technology, contributing to administrative efficiency and improving service quality. The results of this research also open opportunities for further exploration of the factors that influence user satisfaction in different contexts, and can be used as a marketing tool to attract new users and increase the loyalty of existing users.

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