

Analysis of A Pieces Framework of A Localhost Web-Based Income Statement EPOSAL Application

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Abstract—Measuring the quality of a system must be conducted. This is useful for repairing the damage that may be in the system that has been created. One thing that can be measured in a system is to measure the level of satisfaction of a system. Many methods can be used to measure the level of satisfaction, one of which is the PIECES framework method. PIECES framework is a series of activities that measure the level of happiness based on six variables: performance, information, economics, control and security, efficiency, and service. One of the systems that can be analyzed is the system contained in the EPOSAL application. EPOSAL is a localhost web-based application that can be used to create an income statement. The sample in this study was respondents who used this EPOSAL application. The instrument used was a questionnaire. Data analysis was carried out by following the PIECES calculation provisions. After analyzing the data, it is known that for the variables Performance, Economics, Control, and Security and Service, the satisfaction level is at the "Very Satisfied" level. As for the Efficiency, Information, and Efficiency variables, the level of satisfaction is at the "Satisfied" level.

Keywords—EPOSAL Application; PIECES; Level of Satisfaction

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I. INTRODUCTION

Many applications are created to facilitate community mobilization in various types and uses. Besides facilitating community mobility, applications can also be used to increase activities' effectiveness and efficiency, especially IT-based applications. For this reason, the application can be used in various fields, such as economics, health, education, society, and others. An application that can facilitate human activities is a localhost web-based application called EPOSAL. EPOSAL is a localhost web-based application. EPOSAL is an Electronic Point of Sales abbreviation for consumer sales mechanism carried out electronically [1]. It uses to create an income statement. EPOSAL is already used by several shops in Madiun, East Java [2].

An application can be considered good when it meets some characteristics. Hence, customer satisfaction is frequently a benchmark for the success or failure of a system because it is directly related to the application's performance. A large number of methods have been developed to measure this level of satisfaction. One that can be used is the PIECES framework method. This framework is used to identify problems within an existing information system [3]. It classifies issues, opportunities, and directives contained in a scope definition of system analysis and design [4].

The PIECES framework can also analyze the impact of increasing profits while using the system information so that companies can follow up or evaluate in facing challenges and global competition[5]. The PIECES framework collects data through observation and questionnaires [6]. The framework can be defined as a best learning practice and development initiative. It provides an approach to understanding and improving care for individuals with complex physical and cognitive needs and behavioral changes [7]. The PIECES method is an analytical method to obtain more specific issues [8]. The analysis of PIECES is critical to conduct before developing an information system that usually has several problems. The PIECES framework is also used to evaluate a system created to see opportunities for improvement.

This study aims to measure EPOSAL application using the PIECES framework method to see the level of user satisfaction. The PIECES framework is used to measure many information systems, such as library information system [7], [9], [10], education system [4], [11]–[13], health information system [14], tax information system [15], and also event management information system[13] [16]. It is also used to evaluate an application, such as famous e-commerce [8], [17], and commercial applications [18]–[20]. User satisfaction is also evaluated by usability. The importance of usability is due to the satisfaction of users. Poor usability of an application leads to a lack of loyalty from the users; then, it would be rejected by them [21]. There is various measurement for usability, such as SUMI (Software Usability Measurement Inventory) [22][23],

[24], or meCUE [25], [26], and WEBUSE method [26]. Usability using the Sirius framework and Moscow Technique was conducted by [27], while [28] evaluated suitability and usability based on the ISO quality standard system. The usability of the system in a university or college is evaluated by [29] [30] [31], [32] for an academic information system. Another usability is (Purnomo et al., 2020) for evaluating disaster information systems, while [34] reviewed mobile government applications for their usability, and [35] examined the usability of the hospital; information system.

II. RESEARCH METHOD

This research uses quantitative descriptive analysis to provide an overview and describe the results. This research requires a sample to obtain information concerning a research object. In this research, the piece was users of the EPOSAL application. Hence, there are five respondents required for this research. Questionnaires are also used to obtain the necessary data. It is said that the questionnaire is a data collection tool in non-test assessments or assessments in the form of a series of statements or questions given to respondents [4][10][17]. Analysis of the data that has been obtained using the PIECES framework consists of six variables used to analyze an information system, namely; (1) Performance, (2) Information, (3) Economics, (4) Control and Security, (5) Efficiency, and (6) Service[13].

Performance or reliability is an analysis carried out to determine whether a system's performance is running well or not [19]. Several indicators affect this performance or reliability, such as; throughput, response time, audibility, communication prevalence, completeness, consistency, and fault tolerance [6]. Information is an analysis used to determine how much data or information is generated and displayed on a system. Economics determines the number of costs used to develop a system that has been made if applied to a company or institution. In addition, at this stage, the researcher can evaluate how much profit you will get if a system is implemented in a company or institution [20]. Control and security are steps that must be conducted on a system. Supervision of the strategy aims to ensure the system always runs well. Then efficiency analyzes how much needed the system is made [15].

In comparison, service becomes an important thing. The services provided also influence whether or not a system is sound. Hence, at this stage, the analysis carried out is closely related to the services provided to a system [11].

After the questionnaires are distributed, the next step is to analyze the data by calculating the PIECES model. This PIECES model uses a Likert scale with five choices. For more details, it can be seen in Table 1.

Table 1. LIKERT SCALE OF SATISFACTION LEVELS

Answer Options	Abbreviations	Likert Scores
Agree	TA	5
Agree	A	4
Doubtful	D	3
Disagree	DIS	2
Disagree	TD	1

Table 1 shows the Likert scores and the levels of satisfaction. Furthermore, from the data recapitulation using the Likert scale, the data will be calculated using the PIECES calculation model. PIECES calculations are pretty easy to understand. Accordingly, to determine the average level of satisfaction with PIECES, the researcher uses (1):

$$AS = \frac{NQS}{NQ} \quad (1)$$

Information:

AS = Average Satisfaction

NQS = Number of Questionnaire Scores

NQ = Number of Questionnaires

After knowing the average level of satisfaction on each PIECES framework variable, the next step is to determine the level of satisfaction. The standard level of happiness can be seen in Table 2 [26].

Table 2. CONDITIONS OF SATISFACTION LEVEL CRITERIA

Scores	Criteria
1 - 1,79	Dissatisfied
1,8 - 2,59	Dissatisfied
2,6 - 3,39	Quite satisfied
3,4 - 4,19	Satisfied
4,2 – 5	Satisfied

In addition to Table 2, there are other viewpoints about the criteria for determining the level of satisfaction. According to [14], the determination score for the "Satisfied" criteria is 3.4 - 4.91. And for the minimum score of the "Totally Satisfied" criteria is in the range of 4.92 - 5 [25]. By determining the level of satisfaction based on Table 2, the system developer can analyze the quality measurement of the service system that has been created.

This research was conducted through several stages. The first step is for the researcher to do the system observation first. The goal is to find the fundamental reasons for researchers to

determine the problems of the EPOSAL system. Furthermore, the researchers conducted a literature study and reviewed previous similar scientific research. This is done to strengthen the basis for researchers to review and improve on the problems found in the last EPOSAL system. Suppose the difficulties and similar research reviews have been carried out. In that case, the researcher then prepares a questionnaire containing questions in accordance with the PIECES Framework method, which is then distributed to users or users of the EPOSAL system. When the questionnaire has been filled out, and the data has been collected, the researcher next analyzes the data. The last step is to draw conclusions based on the results of the data analysis that has been done. The decision is whether the EPOSAL system is improved or needs further development. To better understand, Figure 1 shows the research flow.

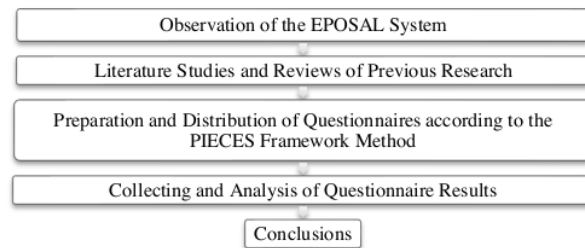


Figure 1. RESEARCH FLOW

III. RESULT AND DISCUSSION

EPOSAL is an application that has a simple interface design and is easy to use; hence the preparation of profit and loss reports can be easily made. This EPOSAL has several menu options. The menus displayed are concise and complete such as Home, Master, Tools, Transactions, Print, Reports, and Setup menus. These are the displays in the EPOSAL application:



Figure 2. DISPLAY ON THE LOGIN PAGE

The login page shown in Figure 2 only requires some data, such as a username and password. After clicking the "Login" button, the user will be directed to the Home page. Figure 3 is the display of the Home page.

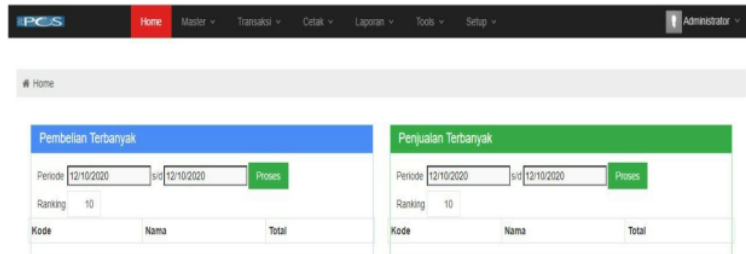


Figure 3. DISPLAY OF HOME PAGE

Two columns will be displayed on the home page. The first column is the Most Purchased column, while the second column is the Most Sales column. After visiting the Home page, the user can access the Transaction menu. The Transaction menu will display sub-menus such as Sales, Payments, Purchases, Cash, and Stock Taking, such as Figure 4.

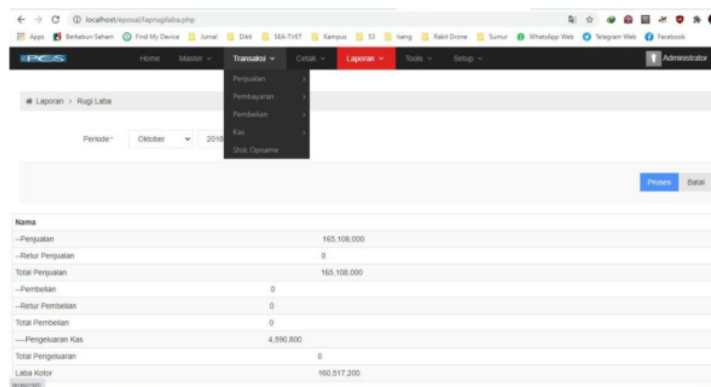


Figure 4. DISPLAY ON THE TRANSACTION PAGE

After knowing the display on the Transaction menu, the next is the display on the Reports menu, as shown in Figure 5. There are several sub menus in this menu, such as Sales, Purchases, Accounts Payable, Profit and Loss, and Stock Below Maximum.

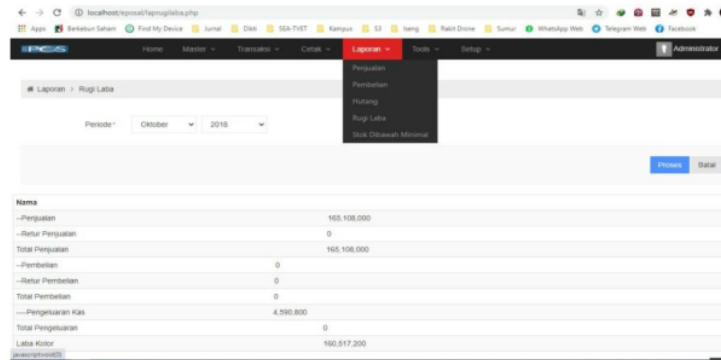


Figure 5. DISPLAY ON REPORT PAGE

Next is the display on the Tools menu. The user can select sub menus on this page, such as Close Transaction, Backup Database, and Restore Database. After seeing the interface display on the EPOSAL application, the next step is to recapitulate the calculation of the questionnaire.

1. Performance

The results of the calculation and analysis of the level of satisfaction of the performance variable can be seen in Table 3.

Table 3. THE RECAPITULATION RESULTS OF THE SATISFACTION LEVEL CALCULATION ON THE PERFORMANCE VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	3	2	1	1	0
R2	4	2	0	1	0
R3	4	1	1	1	0
R4	5	2	0	0	0
R5	3	3	1	0	0
Total	19	10	3	3	0

From Table 3, we can see the results of the recapitulation of the level calculation of users' satisfaction on the *performance* variable. Then to find out the level and average happiness on this variable, we can see the result in the calculation (2):

$$AS = \frac{(5 * 19) + (4 * 10) + (3 * 3) + (2 * 3) + (1 * 0)}{35} = \frac{150}{35} = 4,29 \quad (2)$$

Based on calculation (2), it is known that the level of system satisfaction on this *performance* variable is at the "Totally Satisfied" level.

2. Information and Data

The results of the calculation and analysis of the satisfaction level of the *Information and Data* variable are presented in Table 4.

Table 4. THE RECAPITULATION RESULTS OF USER'S SATISFACTION LEVEL CALCULATION ON THE INFORMATION AND DATA VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	4	0	0	0	0
R2	3	1	0	0	0
R3	1	1	1	1	1
R4	2	2	0	0	0
R5	0	3	1	0	0
Total	10	7	2	1	1

From Table 4, we can see the results of the recapitulation of the calculation of the level of users' satisfaction with the *Information and Data* variable. Then to find out the status and average happiness of this variable, we can see the results in the calculation (3):

$$AS = \frac{(5 * 10) + (4 * 7) + (3 * 2) + (2 * 1) + (1 * 1)}{21} = \frac{87}{21} = 4,14$$

Based on calculations (3), it is known that the level of system satisfaction on the *Information and Data* variable is at the "Satisfied" level.

3. Economics

The results of the calculation and analysis of the satisfaction level of the *Economics* variable can be seen in Table 5:

Table 5. THE RESULTS OF THE USERS' SATISFACTION LEVEL CALCULATION ON THE ECONOMICS VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	2	1	0	0	0
R2	3	0	0	0	0
R3	3	0	0	0	0
R4	2	1	0	0	0
R5	0	3	0	0	0
Total	10	5	0	0	0

From Table 5, we can see the results of the recapitulation of the calculation of the level of users' satisfaction on the *Economics* variable. Then to find out the status and average happiness of this variable, we can see the results in the calculation (4):

$$AS = \frac{(5 * 10) + (4 * 5) + (3 * 0) + (2 * 0) + (1 * 0)}{15}$$

$$= \frac{70}{15} = 4,67$$

(4)

Based on calculation (4), it is known that the level of system satisfaction on the *Economics* variable is at the "Totally Satisfied" level.

4. Control and Security

The results of the calculation and analysis of the satisfaction level of the *Control and Security* variable are shown in Table 6:

Table 6. THE RECAPITULATION OF USERS' SATISFACTION LEVEL CALCULATION ON THE CONTROL AND SECURITY VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	3	2	0	0	0
R2	3	1	0	1	0
R3	1	1	1	1	1
R4	2	2	1	0	0
R5	0	3	2	0	0
Total	9	9	4	2	1

From Table 6, we can see the results of the recapitulation of the calculation of the level of users' satisfaction on the *Control and Security* variable. Then to find out the status and average happiness of this variable, we can see the results in the calculation (5).

$$AS = \frac{(5 * 9) + (4 * 9) + (3 * 4) + (2 * 2) + (1 * 1)}{25}$$

$$= \frac{98}{25} = 3,92$$

(5)

Based on calculation (5), it is known that the level of system satisfaction on the *Control and Security* variable is at the "Satisfied" level.

5. Efficiency

The results of the calculation and analysis of the satisfaction level of the *Efficiency* variable can be seen in Table 7.

Table 7. THE RECAPITULATION RESULTS OF USERS' SATISFACTION LEVEL CALCULATION ON THE EFFICIENCY VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	5	0	0	0	0
R2	3	2	0	0	0
R3	2	1	0	1	1
R4	2	2	1	0	0
R5	0	3	2	0	0
Total	12	8	3	1	1

From Table 7, we can see the results of the recapitulation of the calculation of the level of users' satisfaction with the *Efficiency* variable. Then to find out the status and average happiness on this variable, we can see the results as calculation (6) :

$$AS = \frac{(5 * 12) + (4 * 8) + (3 * 3) + (2 * 1) + (1 * 1)}{25}$$

$$= \frac{104}{25} = 4,16 \quad (6)$$

Based on calculation (6), it is known that the level of system satisfaction on this *Efficiency* variable is at the "Satisfied" level.

6. Service

The results of the calculation and analysis of the satisfaction level of the *Service* variable can be seen in Table 8:

Table 8. THE RECAPITULATION RESULTS OF THE CALCULATION OF THE USERS' SATISFACTION LEVEL ON THE SERVICE VARIABLE

Respondents	Criteria/Scores				
	TA	A	D	DIS	TD
	5	4	3	2	1
R1	3	0	0	0	0
R2	2	1	0	0	0
R3	0	3	0	0	0
R4	2	1	0	0	0
R5	0	3	0	0	0
Total	7	8	0	0	0

From Table 8, we can see the results of the recapitulation of the calculation of the level of users' satisfaction with the *Service* variable. Then, to find out this variable's status and average happiness, we can see the results in the calculation (7).

$$AS = \frac{(5 * 7) + (4 * 8) + (3 * 0) + (2 * 0) + (1 * 0)}{15}$$
$$= \frac{42}{15} = 4,47$$

Based on calculation (7), it is known that the level of system satisfaction on this *Service* variable is at the "Totally Satisfied" level.

Please build your model after analyzing the respondent's results.

IV. CONCLUSION

Based on the results of data analysis that have been conducted, we can conclude that the level of satisfaction on the variables such as Performance, Economics, Control and Security and Service based on the calculation of the PIECES framework is known to be at the level of "Totally Satisfied." At the same time, the level of satisfaction on the variables such as Efficiency, Information, and Efficiency based on the calculation of the PIECES framework is known to be in the "Satisfied" category. Hence it can be concluded that this EPOSAL application has satisfactory satisfaction.

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