EDUCATIONAL AND TRAINING INFORMATION SYSTEM AT PT. AZURE SAMUDERA KARSA

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Article Info	ABSTRACT
	The importance of computerized systems reduces the time required to manage ongoing business processes and allows for more accurate representation of data and information in government agencies. PT Azure Samudera Karsa requires an education and training data management system, an information system that makes it easier for managers to catalog data, including recording, storing and reporting training participant data. With an information system, PT Azure Samuedara Karsa can manage reports quickly, precisely and accurately. The data collection method that supports the development of a surveillance information system is by using interviews, observation and documentation methods. The design of education and training information systems is based on the waterfall approach which consists of the following stages: planning, modeling, construction, implementation and testing. The results of this research are an educational and training information system analysis design using UML design tools, and system testing results using the EUCS method.

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1. INTRODUCTION

The rapidly advancing information technology can be leveraged to improve the efficiency and effectiveness of a company's operations [1][2]. The ease, accuracy, and speed of obtaining information are crucial both in the present and the future [3][4]. Utilizing a computerized system saves time, requires less effort, and ensures accurate data presentation [5][6].

PT Azure Samudera Karsa is an organization engaged in education and training. As a service-based company, PT Azure Samudera Karsa consistently monitors and documents data for education and training participants. Currently, data processing at PT Azure Samudera Karsa is still conducted manually, relying on paper-based supply cards for data collection and processing, making management inefficient.

PT Azure Samudera Karsa requires a data management system to handle participant data more effectively. An information system is needed to enable managers to catalog data, such as recording, storing, and reporting participant data for education and training programs. With such a system in place, PT Azure Samudera Karsa is expected to quickly, accurately, and precisely access reports and obtain data.

The school guidance information system developed using the waterfall method, as studied by Ginanjar, begins its design with the stages of system requirements analysis, system design, implementation, system testing, and maintenance [7].

Research conducted by Komalasari discusses the design and construction of an information system for distributing Raskin aid. This system serves as a primary tool to support effective data management and promote transparency in the ongoing Raskin distribution process [8][9].

In this study, we will utilize a qualitative fieldwork method combined with creative design and strategy. Additionally, we will adopt the waterfall design methodology [10][11] for system design and construction, ensuring fast, precise, and accurate information transmission [12].

2. METHOD

The method used for designing and developing the training information system involves data collection methods such as observation, interviews, and documentation. Meanwhile [13], the system development process applies the waterfall methodology [14]. The research framework is illustrated in Figure 1.
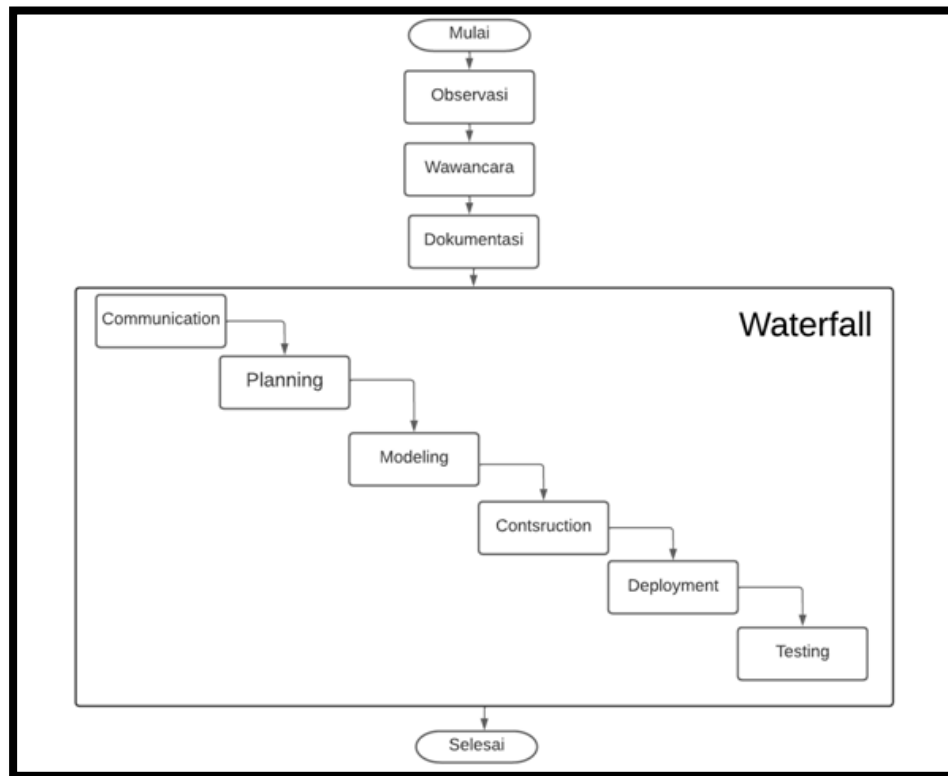
Figure 1. Research Framework [15].

The research framework illustrated in Figure 1 highlights the following:
1. Observation**:** This is the initial stage of the research process, where the researcher conducts an initial examination of the research object, which in this case is PT Azure Samudera Karsa.
2. Interviews**:** These are conducted with stakeholders within PT Azure Samudera Karsa.
3. Documentation**:** This involves collecting evidence of the research activities carried out by the researcher.
4. Triangulation**:** Validation is performed on the observation, interviews, and documentation that have been previously analyzed [16].
5. Designing the Education and Training Information System: This utilizes the waterfall methodology and includes the following stages [17][18]:
   a. Communication: This is the first stage in the waterfall method, where the researcher defines the features and functions of the training information system based on observations and interviews with stakeholders at PT Azure Samudera Karsa.
   b. Planning: The second stage in the waterfall method, resulting in project management outputs for the development of the training information system.
   c. Modeling: The third stage in the waterfall method, resulting in a design blueprint for the training information system. Tools such as UML are used to illustrate the system design.
   d. Construction: The fourth stage in the waterfall method involves coding the training information system, with the output being an untested version of the system. The programming language used in this research is PHP with the Laravel Framework.
   e. Deployment: The fifth stage in the waterfall method ensures the deployed software meets user criteria.
   f. Testing: In this stage, the system is tested using Black Box Testing and the End-User Computing Satisfaction (EUCS) method.

3. RESULTS AND DISCUSSION
3.1. Communication
   In the communication stage, an analysis of functional and non-functional requirements is conducted to develop the training information system. These requirements are derived from observations and interviews with stakeholders. The functional requirements are outlined in Table 1.

Table 1. Functional Requirements

No	Deskripsi
1	The administrator manages training participant data
2	The administrator manages training data
3	The administrator manages services

4	The administrator manages the organization
5	The administrator manages training registration
6	The administrator manages service registration
7	The administrator views reports
8	Participants register for training and services
9	The administrator can manage accounts

Non-functional requirements in this system are outlined in Table 2.

Table 2. Non-functional Requirements

No	Deskripsi
1	User friendly, dalam penggunaannya pengeloladan pesserta lebih mudah dalam penggunaan fungsionalitas sistem infromasi
2	Kemudahan dalam pengembangan sistem informasi dan pemeliharaan sistem secara berkala dan keberlanutan

3.2. Planning

In the development of the education and training information system, effective scheduling management is essential. The scheduling of the development process for the education and training information system begins with the stages of communication, planning, modeling, construction, and ends with deployment.

3.3. Modeling

In this stage, the design of the training information system is explained. The system design is illustrated using a Use Case Diagram, as shown in Figure 2, along with the interface design.
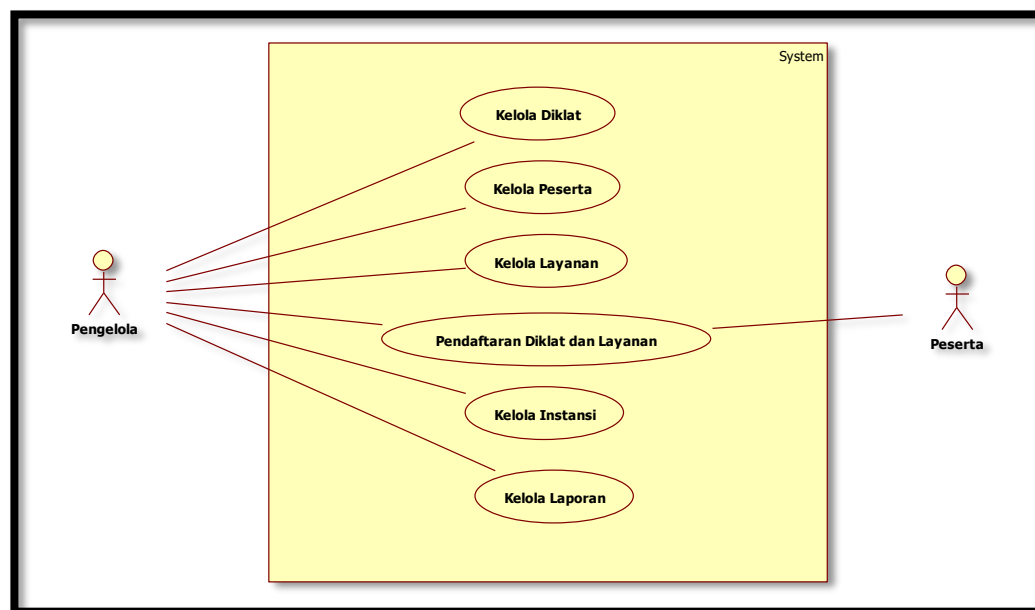
a. *Use Case Diagram*

Figure 2. Use Case Diagram of the Training Information System

Figure 2 represents the use case diagram for the developed application. The use case diagram shows two actors: the administrator and the participant of the educational program. The administrator has access to all available menus, while the participant can only access the registration and service features.

b. Interface Design

The user interface of the training information system consists of two main users: the administrator and the participant, as follows:

1) Administrator: The interface design for the administrator includes the following pages: Login Page, Dashboard, Registration Management, System Management.

Figure 4. Administrator Login

When a user is active on this application, they must first log in as shown in Figure 4. The user is required to enter a username and password to perform activities within the system.
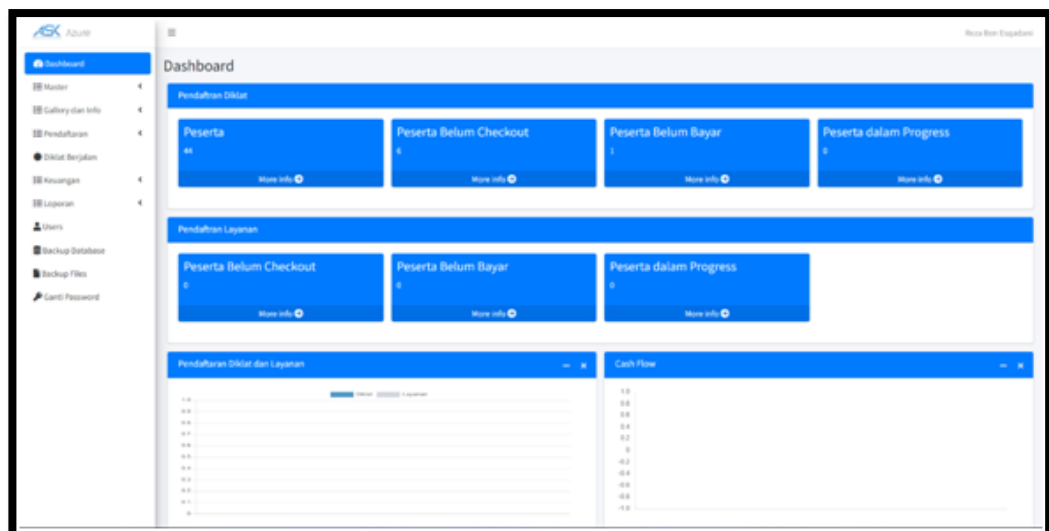

Figure 5. Administrator Dashboard Page

Figure 5 is the dashboard page for the admin. It clearly shows that the admin or manager can access all the menus available in the application.
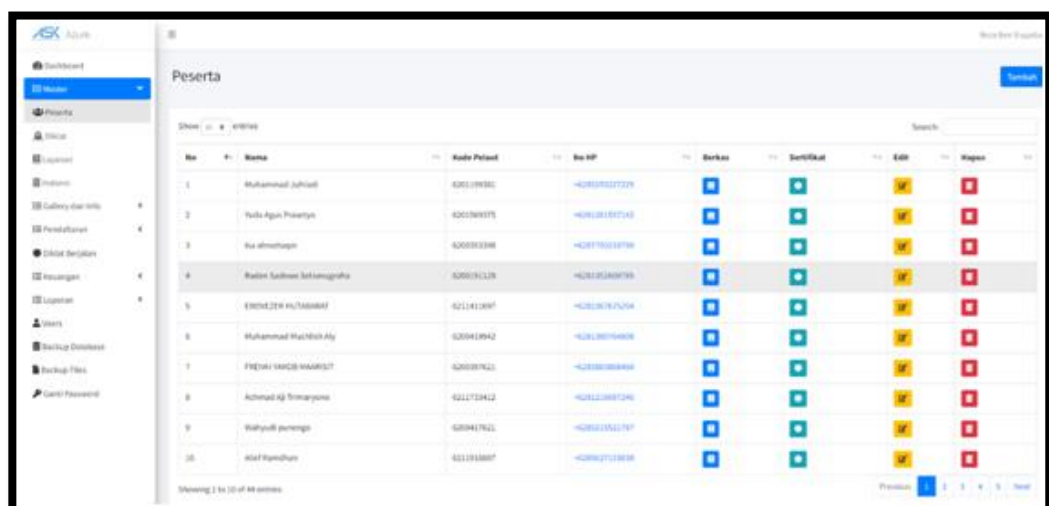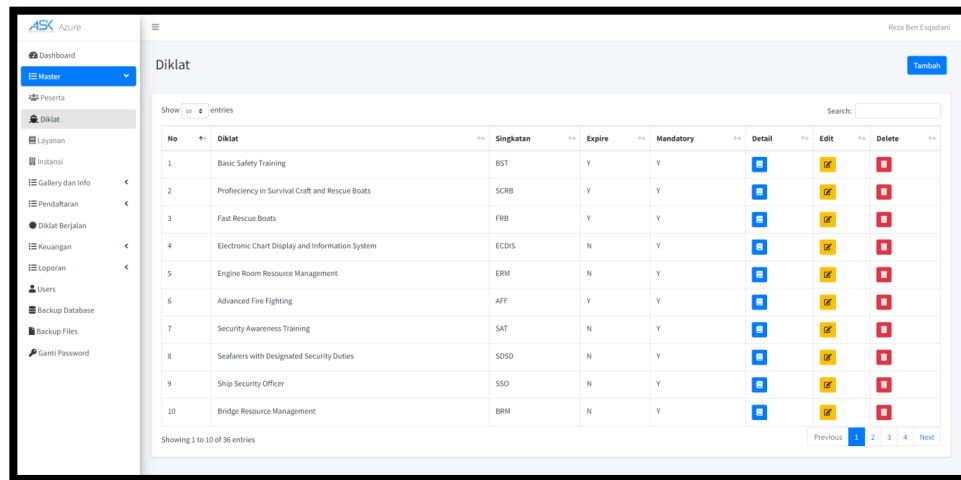

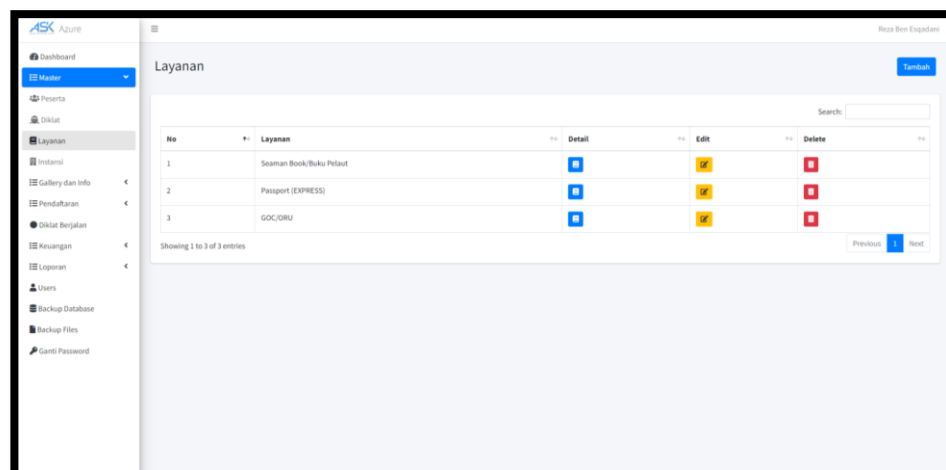Figure 6. Participant Management Page

The page above (Figure 6) represents participant management conducted by the administrator of this website.

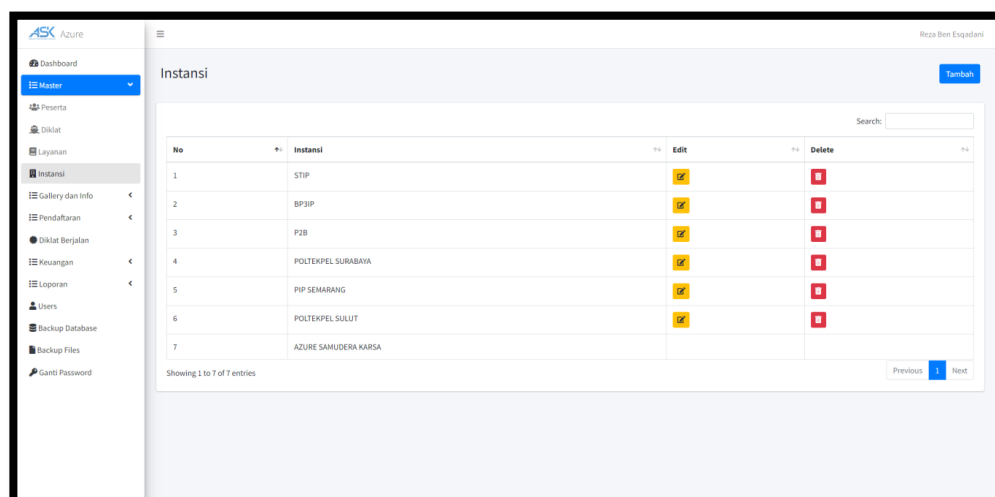Figure 7. Training Management Page

Figure 7 represents the management page during the implementation of the training. The administrator uses this page for control and administration, ensuring the training is well-organized and planned.

Figure 8. Service Management Page

Meanwhile, the service management page is described in Figure 8, where educational services for all training participants can be carried out effectively.

Figure 9. Institution Management Page

The figure above represents the institution management page, in this case, PT. Azure Samudera Karsa, allowing the institution to monitor the implementation of training activities.

Figure 10. Registration Management Page

As a well-designed application, the system's planning must be structured. Figure 10 represents the registration management page, where all training participants manage their registration.

Figure 11. Report Management Page

Effective management of a structured system requires a reporting mechanism. Figure 11 represents the report management page used by the operator to document the implementation of training activities.

2) Participant: The interface design for training participants consists of a registration page and a registration management page.
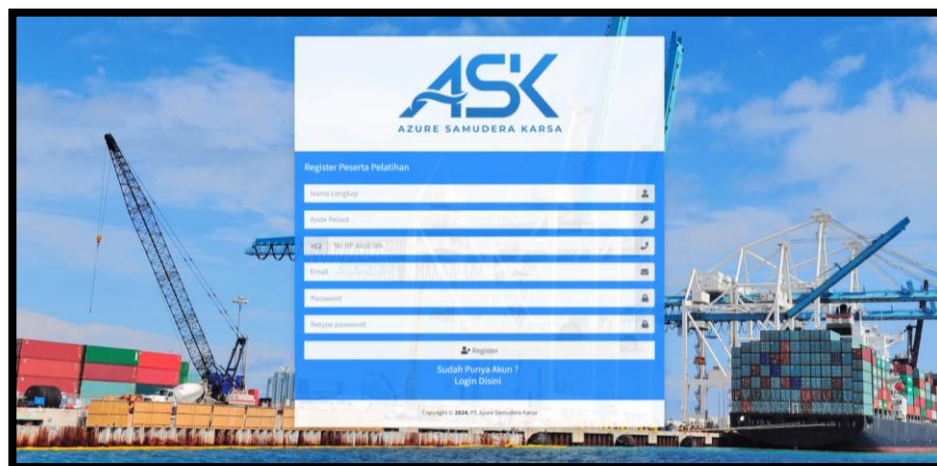
Figure 12. Participant Registration

From the participant's perspective, before the training is conducted, participants must first register in the system. This ensures that all participants are accommodated during the training, as shown on the participant registration page in Figure 12.
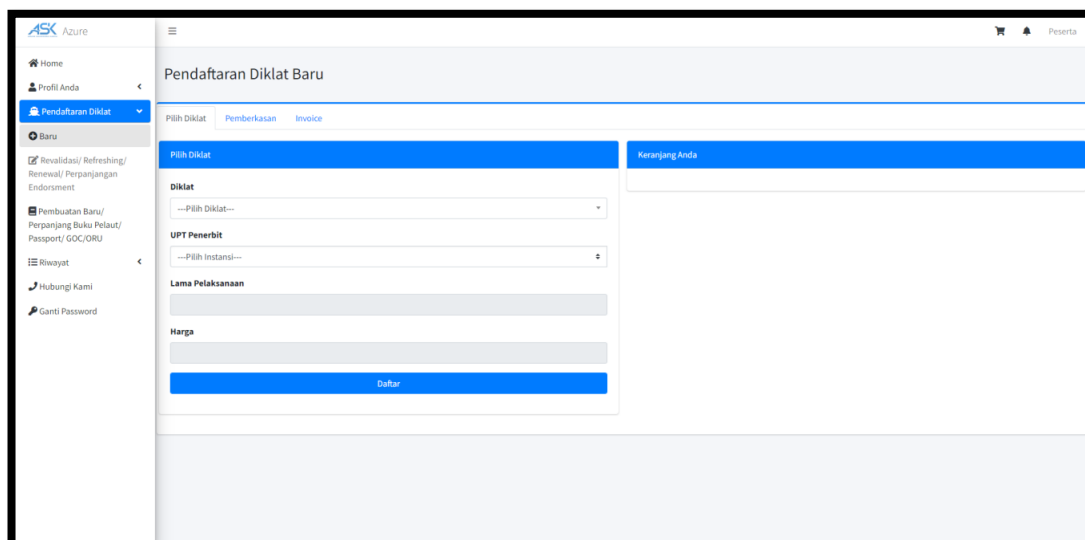
Figure 13. Registration Page

Figure 13 represents the page for new training registration for new participants, allowing the administrator to directly identify the number of training participants.

3.4. Construction

In this phase, the development of the training information system is carried out using the PHP programming language and the Laravel framework. The Visual Studio Code editor and XAMPP application are utilized for this process.

3.5. Deployment

This phase involves system implementation for users, regular system maintenance, system improvements, system evaluation, and training development based on the feedback provided. These steps ensure the system operates effectively and aligns with its intended functionality.

3.6. Testing

In order for the developed application to perform optimally during use, it must undergo testing before being implemented. This ensures that any potential issues are identified and addressed, leading to a more reliable and efficient system.

a. Alpha Version Testing

Alpha testing is the testing of the system that is directly implemented by the system developers as follows:

- Connection Status: In this test, the connection between the database and the training information system is evaluated to ensure proper integration and data flow.
- Interface Review: This testing involves reviewing the system's interface across various device screen sizes to ensure it is responsive and user-friendly on different platforms.
- Data Testing: In this test, valid data is entered into the system to verify that the system processes and stores it correctly without errors. The detailed plan for alpha testing is outlined in Table 3.

Table 3. Alpha Version Testing with Black Box

No	Testing Item	Testing Detail
1	Login Process	Login Verification and Access Control Process
2	Process of Managing Services, Institutions, and Participants	Data Management: Input, Save, Delete, and Update Operations
3	Registration Process	Adding Data
4	Password Change Process	Update Data
5	User Data Management Process	Data Management: Input, Save, Delete, and Update Operations

b. Beta Version Testing

Table 4. Beta Version Testing with End User Computing Satisfaction (EUCS) Questionnaire Form

No	Variabel	Questions
1	Content	Does the information provided by the system meet your needs as a user of the training system?
2		Does the system provide reports that meet your needs?
3	Accuracy	Does this system provide accurate reports?
4		Are you satisfied with the accuracy of the reports in the training system?
5	Format	Do you think the reports are presented in a format that is appropriate?
6		Is the information generated by the system in the presented format clear to you?
7	User	Are the menus and features of this system very easy to use?
8	Friendly	Is the system easily accessible on your smartphone?
9	Timeless	Do you receive the information you need in a timely manner?
10		Does the system provide up-to-date information?

Based on the EUCS concept, the questions directed at end users are as follows.

Table 5. Respondents' Assessment of the Training System.

No	Questions	STP	TP	N	P	SP
1	Does the content of the information generated by the system meet your needs as a user of the training system?			10	5	5
2	Does the system provide reports that meet your needs?			3	4	13
3	Does this system provide accurate reports?			4	3	13
4	Are you satisfied with the accuracy of the reports in the training system?			5	5	10
5	Do you think the reports are in the correct format?			8	8	4
6	Is the information generated by the system in the presented format clear to you?			7	3	10
7	Are the menus and features of this system very easy to use?			11	4	5
8	Is the system easily accessible on your smartphone?			2	2	16
9	Do you receive the information you need in a timely manner?			3	2	15
10	Does the system provide up-to-date information?			4	5	11

Explanation: SP: Very Satisfied (score 5), P: Satisfied (score 4), N: Neutral (score 3), TP: Dissatisfied (score 2), STP: Very Dissatisfied (score 1)

In this section, the trend of respondents' answers to each variable question presented is shown, using the Likert scale assessment. The trend of respondents' answers can be observed from the descriptive statistics of each variable. The results from 20 respondents on each variable studied are shown in Table 5. To calculate the total score for the questions/statements from the respondents, the formula is: T (Number of respondents who selected) x Pn (Likert scale score choice). This results in the total satisfaction score for each variable. From the satisfaction score, the average satisfaction is calculated using the formula: index % = total score / Y x 100, where Y is the highest Likert value x the number of respondents. Y = 5 x 20 = 100.

Table 6. Score Values and Average Satisfaction (EUCS).

No	Questions	Score Total TxPn	Average Score Total/Y x 100
1	Does the information generated by the system meet your needs as a user of the training system?	N: 10x3=30 S: 5x4=20 SP: 5x5=25 Score: 75	75/100x 100=75%
2	Does the system provide reports that meet your needs?	N: 3x3= 9 S: 4x4= 16 SP: 14x5= 65 Score: 90	90/100x 100=90%
3	Does this system provide accurate reports?	N: 4x3= 12 S: 3x4= 12 SP: 13x5= 65 Score: 89	89/100 x100=89%
4	Are you satisfied with the accuracy of the reports in the training system?	N: 5x3= 15 S: 5x4= 20 SP: 10x5= 50 Score: 85	85/100x 100= 85%
5	Do you think the reports are in the correct format?	N: 8x3=24 S: 8x4=32 SP: 4x5=20 Score: 76	76/100x 100= 76%
6	Is the information generated by the system in the presented format clear to you?	N:7x3=21 S: 3x4=12 SP: 10x5=50 Score:83	83/100x 100=83%
7	Are the menus and features of this system very easy to use?	N: 11x3=33 S: 4x4=16 SP: 5 x 5=25 Score:74	74/100x 100=74%
8	Is the system easily accessible on your smartphone?	N: 2x3=6 S: 2x4=8 SP:16x5=80 Score:94	75/100x 100=75%
9	Do you receive the information you need in a timely manner?	N: 3x3=9 S: 2x4=8 SP: 15x5=75 Score: 92	92/100x 100=92%
10	Does the system provide up-to-date information?	N: 4x3=12 S: 5x4=20 SP: 11x5=55 Score:87	87/100x 100=87%
	Overall average of all questions.		84,5%

The overall average result of the questionnaire was 84.5%. Based on the rating scale, the training information system received a "Very Satisfied" rating, with a score range of 80-100%.

4. DISCUSSION

For future researchers, the entire training process could also be used as an assessment tool for promotions and position advancements.

5. CONCLUSION

Several conclusions can be drawn from the research based on the system design stages, which are: 1. The focus of this research is on the design of an information system using the waterfall method based on user needs. 2. The questionnaire results showed a score of 84.5% from end users. Based on the rating scale, the training information system received a "Very Satisfied" result, with a score range of 80-100%. 3. The final result of the design is the training information system application. The system has made registration management more effective in terms of time management and efficient in terms of administrative management, as it no longer uses physical documents, but instead relies on electronic documents.

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