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The Development and Transformation of Web-Based Information Systems at Special Skills Training (DKK) of Politeknik Bumi Akpelni Semarang

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Abstract

The development and transformation of a web-based information system at the Special Skills Training (DKK) of Politeknik Bumi Akpelni Semarang must be done to provide time efficiency and increase professionalism in maritime certification services. The system used in this training unit to manage its operational activities is still manual and considered inefficient. Therefore, the author has the idea to change the old system into a new system, namely a web-based information system. This new system will make it easier to manage participant registration, schedule participants and instructors, disseminate information, and create reports to save time, energy, and costs in managing training activities later. The research method used in this research is the Research and Development (R&D) method to develop new knowledge and apply it to make new products, services, or technology. The results of the research show that: 1) A new special skills training information system, created with web-based programming that is integrated with a database server, 2) Helps in wider promotional media and can make the registration process more effective and efficient both in entering participant data that has been completed. It can be carried out by the participants themselves, processing the list of training participants, conveying information on the list of participants and the training implementation period to training participants, and making it easier to make training reports. 3) A new special skills training information system was created to make the training implementation process more time efficient and support the training process. From this study, it is hoped that the Special Skills Training unit (DKK) of Politeknik Bumi Akpelni can provide better and faster service so that training participants can feel satisfaction in carrying out training and taking or extending the validity period of maritime certification in order to comply with existing regulations. Keywords: transformation, information system, and DKK

1. Introduction

Along with technological developments, every company or institution is starting to be required to use more advanced technology as a tool or medium for informing, promoting, and marketing its products or services. One of the media used is the Web. According to YM Kusuma Ardhana (2012:3), The World Wide Web, better known as the Web, is an information presentation service that uses the concept of hyperlinks (links), which makes it easier for surfers (the term for computer users who browse or search for information via the internet). This feature has made the Web the fastest-growing service. On the other hand, the absence of an online website for the AKPELNI training institution reduces the dissemination of information and

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promotions to outside parties or the public. So, in supporting current competition, it feels less competitive if the training institution does not have online information media or a website.

With the problems faced by the AKPELNI Education and Training institution, a website is needed that can be a medium for conveying training information to prospective participants. The privilege of a website that can be accessed anywhere and anytime will be an advantage for the AKPELNI Semarang Training Institution. The website lets prospective participants know the registration fees, when the training will be held, and which skills certificates have been issued. Not only that, the presence of the website will also expand the reach of information about seafarer skills training and bring communication closer to potential participants. To support effectiveness and efficiency in work, the registration system can be included in the website system so that it is easy for prospective participants to upload registration data, and for admins, it will be easier to monitor the personal identity of prospective participants.

Based on the description above, the aim of this research is to find out how to effectively and efficiently build a special skills training (DKK) information system for prospective training participants at Politeknik of Bumi Akpelni Semarang.

An information system is a collection of several components that interact with each other and work together to achieve goals. This goal includes processing data to provide helpful information for users. The following are various definitions of information systems according to experts quoted by Deni Dermawan and Kunkun Nur Fauzi in the book Management Information Systems (2015) as follows:1) Turban, McLean, and Wetherbe (1999). An information system is one that collects, processes, stores, analyzes, and disseminates information for specific purposes, 2) Bodnar and HopWood (1993). An information system is not just a concept but a tangible collection of hardware and software meticulously designed to transform raw data into useful, actionable information, 3) Alter (1992). An information system is a combination of work procedures, information, people, and information technology organized to achieve company goals.

Information systems are built through several stages. In this stage, there are five main components forming an information system (Darmawan Deni&Kunkun Nur Fauzi, 2015: 27)

- a. Hardware Components (Hardware)
- b. Software Components (Software)
- c. Human Resources Components (Brainware)
- d. Computer Network Components (Netware)
- e. Data Resource Components (Dataware)

2. Method

The research method used in writing this scientific paper is Research and Development (R&D). Software Development involves creating new applications or operating system updates to improve user experience. Prototyping involves creating initial models to validate ideas before full development. The system's testing model is a black box. Black box testing is carried out for software interfaces. The aim of this tester is to look for errors in incorrect or missing functions, interfaces, structure, and performance. Furthermore, R&D in computer systems development is



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a structured and systematic process that you, as researchers, developers, and professionals, play a crucial role in. It's about creating, improving, or adapting computer software and hardware, and it involves applying scientific methods and engineering techniques to solve problems, meet user needs, and produce innovative solutions.

R&D Steps for Computer Programming System Development: Identifying Problems and Needs, Understanding the problem that needs to be solved and user needs, Studying previous research and relevant technology to gain insight, Concept and Design Development, Designing an initial solution based on the analysis performed, Developing an initial prototype to test ideas and concepts, Prototype Testing and Collecting Feedback, System Development, Testing and Validation, Implementation and Launching, Monitoring and Evaluation. A. L. McGarry (1988); J. et al. Kosslyn (1986) R. J. Kauffman (1993); J. Nielsen (1994); K. Schwaber and M. Beedle (2002); I. Sommerville (2011); T. A. P. van der Meer (2005). Therefore, the object of this research is the AKPELNI education and training unit, abbreviated as DKK. DKK has five (5) training courses: ECDIS, RADAR/ARPA, BRM, GMDSS, and ERM. Each of the five training courses offers a different type of training and has a computerized simulator to support today's competition.

3. Result and Discussion

3.1 Result

To support the running of the Special Skills Training Information System at DKK, several pieces of Hardware are needed with the following minimum specifications:

- a. Main Intel Core i3 Processor
- b. LCD/LED monitors
- c. Standard Keyboard
- d. 500 GB hard disk
- e. Standard Optical Mouse
- f. Standard Printer
- g. Network Devices

Therefore, the Software Implementation used in operating the web-based system is as follows: Windows 10 operating system, Browser application (Chrome or Microsoft Edge), PHP programming language using PHP Designer, Mysql database uses Xampp.

3.2 Discussion

The study's and analysis's results showed that the researchers needed to compare the old system with the new one to understand the program's development.

3.2.1 Overview of the old system:

- a. In disseminating information to prospective training participants. AKPELNI DKK training still uses brochures.
- b. In the registration system, prospective participants must come to fill out the registration form and attach the registration requirements files in hardcopy or softcopy form.



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- c. The Admin verifies the files received from participants. Each file is copied from the soft copy of the requirements file provided by prospective training participants and input manually into Microsoft Excel.
- d. Admin makes a schedule based on the number of participants who have entered.
- e. The Admin makes a report based on the number of participants who register and on the number of participants who took part in the training at a certain time (training group per generation), which is then given to the head of training for signature.
- f. The Admin archives the training report that the head of training has signed.

3.2.2 Overview of the new system:

To further optimize the performance and effectiveness of AKPELNI training, a special AKPELNI skills training information system was created. The web-based information system and data storage in databases will make administrative work easier in processing participant data. They can become a medium for promoting AKPELNI training with a broader scope. For prospective participants themselves, it is hoped that the AKPELNI special skills training information system can make it easier to obtain information regarding how to register, the address of the Akpelni training location, registration fee information, and all forms of information supporting the implementation of special skills training at AKPELNI.

An overview of the new work system in this special skills training (DKK) information system can be described as follows:

- 1. Training participants obtain information about AKPELNI training through the AKPELNI training website.
- 2. Participants begin to register via the website by filling in their identity on the registration form. Their data will be saved to the database. Participants receive a user account to log in to the user page.
- 3. Participants log in to the user page to register for the training they will attend.
- 4. Participants register for the training, upload the requirements file, and send a hard copy of the requirements to the AKPELNI training address.
- 5. The admin will check the required files, both softcopy and hardcopy. If appropriate, the website will inform participants that they can take part in the selected training.
- 6. From the registration database, a comprehensive report on the number of registrants (Registration Report) is meticulously created. This report is then printed and presented to the head of training for signature. Once signed, the registration report is archived by the admin, marking an important step in the training process.
- 7. The admin plays a pivotal role in processing data from the database to create activity schedules. This processed data forms the basis for the training implementation report, which is then presented to the head of training for signature. Once signed, the training implementation report is displayed on the website as information on training activities for participants, and the printed reports are archived by the admin.

3.2.3 Manual Program

This special skills training information system, built on a foundation of simplicity, is based on web-based programming. The following is the program manual for the application that the author created to make it easier for users to operate it:

1. Display for Participants.

The displays for participants are the home menu, news menu, training menu, cost menu, portfolio menu, participant schedule menu, and contact menu.





Picture 1. The example of display for participants

2. Display for the training committee (Administrator)

The display for the training committee (administrator) is composed of several key elements: The administrator login display, the Administrator account menu display, the Participant account menu display, the Participant data menu display, the Training menu display, the Fee menu display, the Practical data menu display, the Instructor data menu display, the News input menu display and news table, the display menu set participant schedule, the display practicum schedule menu, the display certificate input menu, the display graduate list menu, the display registration report menu, and the display training implementation report menu.



Picture 2. The example of administrator account menu display 3.2.4 System Test Results on Website Pages

Form Login Participants, Login Administrator, and List of Participants.

The following is an example of the system development results before the data is included in metadata. The assessment criteria for each menu system studied in this study are input data, expected things, observation results, and conclusion drawing.

Table 1. Testing of the login form



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Input Data	expected	Observastion result	Conclusion
Enter your username and	Displays the partici-	Can enter the participant	Finished
password (if the data	pant page	page view	
matches)			
Enter your username and	Failed to enter the	Failed to enter the partici-	Finished
password (if the data	participant page	pant page and remains on	
does not match)		the login form	
Incomplete data input	Displays a warning	An observation appears	Finished
	to fill in all input	when one of the input	
	fields (username and	fields is not filled in	
	password)		

Table 2. Testing of Administrator Account

Input Data	expected	Observastion result	Conclusion
Enter Administration of	The date in the ed	The date is the adminia	Finished
Enter Administrator ac-	I ne data in the ad-	The data in the adminis-	Finished
count data (if successful)	ministrator account	trator account table in-	
	table increases	creases	
Enter Administrator ac-	Displays a message	A message appears to fill	Finished
count data (if the data is	to fill in the empty	in the empty input form	
incomplete)	input form		
Click the delete button	Displays a data dele-	A data deletion confirma-	Finished
	tion confirmation	tion message appears	
	message		
Click the edit button	Displays the Admin-	The Administrator ac-	Finished
	istrator account edit	count edit form display	
	form	appears	
Change the data in the	Data in the Adminis-	The display of data in the	Finished
Administrator account	trator account table	Administrator account ta-	
edit form and click up-	changed	ble changes	
date			

Table 3.	Testing of	of Participant	account	menu	form
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Input Data	expected	Observastion result	Conclusion
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Click the edit button	Displays the partici- pant account edit form	The participant account edit form will appear	Finished
Change the data in the participant account edit form and click update	The data in the par- ticipant account ta- ble changes	The display of data in the participant account table changes	Finished

Table 4. Testing of Participant Data

Input Data	expected	Observastion result	Conclusion
Click the update	Displays the participant	The participant identity	Finished
button	identity form for data	form will appear	
	changes		
	5		
Change the data	The data in the participant	The display of data in	Finished
on the participant	account table changes	the participant account	
identity form and		table changes	
click update			
Click the delete	Displays a data deletion	A message confirming	Finished
button	confirmation message	data deletion appears	
	_		

Table 5. Testing of Training Data Form

Input Data	expected	Observastion result	Conclusion
Enter training	The data in the	The data in the training ta-	Finished
data (if success-	training table in-	ble increases	
ful)	creases		
Enter training	Displays a message	A message appears to fill	Finished
data (If data is in-	to fill in the empty	in the empty input form	
complete)	input form		
Click the delete	Displays a data de-	A data deletion confirma-	Finished
button	letion confirmation	tion message appears	
	message		



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Click the edit button	Displays the train- ing edit form	The training edit form will appear	Finished
Change the data in the training edit form and click update	The data in the training table has changed	The data display in the training table has changed	Finished

Table 6. Testing of Cost Data Form

			Conclusion
Input Data	expected	Observastion result	Conclusion
Enter cost data (if	The data in the cost ta-	The data in the cost ta-	Finished
successful)	ble increases	ble increases	
Enter cost data	Displays a message to	A message appears to	Finished
(If data is incom-	fill in the empty input	fill in the empty input	
plete)	form	form	
Click the delete	Displays a data deletion	A data deletion confir-	Finished
button	confirmation message	mation message ap-	
		pears	
Click the edit	Displays the cost edit	The cost edit form dis-	Finished
button	form	play appears	
Change the data	The data in the cost ta-	The display of data in	Finished
in the cost edit	ble changes	the cost table changes	
form and click			
update			

Based on input data to the system, expected results, observations, and conclusions, all areas of system development, such as the items below, show good results and are declared complete as well as done in these other tests like the practical data form, instructor data form, News input form and news table, Participant schedule set form, payment form, participant schedule form, participant schedule menu, Certificate input menu form, Graduate list menu, Registration report menu, Training implementation report menu, log out menu.

From the results of the tests that have been carried out, it is concluded that functionally the system can produce the expected output. Moreover, system maintenance is carried out to keep the system stable and working as it should.

Maintenance of *Hardware*

Hardware maintenance generally involves repairing, replacing, or adding components to keep them working properly. It can also be performed.

- 1. Place the computer in a clean place where the temperature and humidity are maintained.
- 2. Use a UPS (Uninterruptible Power Supply), which is useful when the power goes out. The computer will remain on for some time, and then it can be turned off according to procedure.



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- 3. It's crucial to take the responsibility of periodically cleaning every component of the computer equipment used. This proactive approach will ensure the smooth functioning of your system.
- 4. Use the computer according to your abilities.

Maintenance of Software

Software maintenance is necessary for it to run properly. The following are things that need to be considered when maintaining the software.

- 1. Install an antivirus to monitor the cleaning of the computer from viruses that can damage applications or software.
- 2. Back up the data entered through the program. The purpose of backing up a database is to prevent the database from being damaged. So that back-ups do not experience data loss, back-ups are carried out periodically, and the back-ups are stored elsewhere

Conclusion

After comprehensive research conducted by the author at the Indonesian Commercial Shipping Academy (AKPELNI) Semarang, especially at its Training Unit, the author arrived at several robust conclusions from the data that the author gathered. Conclusions from this research include:

- 1. The new special skills training information system was created using web-based programming integrated with a database server.
- 2. The new system opens up wider promotional avenues and significantly streamlines the registration process, making it more effective and efficient. It simplifies participant data entry, processing, and communication and facilitates the creation of comprehensive training reports, providing a detailed overview of the training process.

The new special skills training information system was created to make the training implementation process more time-efficient and effective in supporting it.

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