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Research article

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Management information system development reporting based on radiography activities electronics in radiological services

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ABSTRACT

Background

Essentially health development is an effort carried out by all components of the nation with the aim of increasing awareness, willingness and ability to live a healthy life for everyone so that the highest degree of public health can be improved, but the reporting system for radiographers is still carried out conventional where inputting patient data is input into a logbook that requires a lot of time and effort to process data, so computer applications are needed to simplify data processing and minimize archiving space so problem-solving is needed by creating an online-based e-jaybook.com application design. .

Research Objectives

To produce e-jaybook.com website application as an information system for reporting the management of electronic-based radiographers on Radiology services.

Research Methodology

Research and Development (R&D) there are five stages of research, namely: information gathering, model design, expert validation, model revision, and trial use the non-randomized control group pretest and posttest method.

Results

e-jaybook.com is appropriate to be used as an electronic-based radiographer activity reporting system in radiology services as evidenced by the p-value = 0.001.

Conclusion

e-jaybook.com can be used as an electronic-based radiographic activity reporting system for radiology services in improving health services.

Keywords: e-jaybook.com website, Radiographers, Reporting Management Information System.

INTRODUCTION

Information technology and information systems in an organization is a unit that functions as a demand and no longer as a support to achieve

the goals of the organization, therefore in its achievement it requires strategic information systems planning that is useful for the Hospital in order to achieve its vision and mission (Vrček & Brumec, 2002). The challenge currently facing the

world today is the formation of the fourth industrial revolution (industry 4.0) starting at the beginning of this century which greatly affected the health and biotechnology sector by this transformation, but the world must be able to respond to these changes in an integrated and comprehensive manner by involving the start of the sector private sector to academics and of course civil society (Tjandrawinata, 2016) [4].

Information processing system value of the activities of radiographers activities at this time in almost every hospital is still conventional or is still done by writing on the logbook sheet list that requires a lot of time and effort to process data, and requires space in storing such data, so an application is needed in order to facilitate data processing and improve work efficiency and can assist in data storage where this will produce good reports for the Head of Installation and his staff (Holden & Karsh, 2010). To display an electronic data into statistical information required an information system based on computer programming applications where this system will be tasked with processing data so as to produce information with internet technology, where the computer programming application system consists of more than one web application that is interconnected and has certain functions. The reporting system of activities carried out at this time still has flaws wherein, performance is still felt to be slow because if the person in charge of the room wants to know the activity report takes time because they have to directly recapitalize the unit's spatial, a lot of activity report data information is made in the form of files so that there is a risk of occurring duplication of data or lost sometimes requires costs in printing activity reports and requires space to store records.

In a related study, it was explained that problems in recording activities still use the filling form and the administration of the activity filling form still requires time from the management so that to facilitate the process of evaluating and monitoring the activities an application was made to record employee activities to assist in the process of recapitulating reports and evaluations of progress of the implementation of activities in each SKPD, both in terms of speed, accuracy, security and can more easily monitor and evaluate the progress of the implementation of activities (Safitri, Hartati, & Lemantara, 2014) [3].

To overcome the above, it is necessary to develop a data input application design system by creating an e-jaybook.com website application where the application of these activities can later be integrated with the smartphone used by the radiographer so that it can be input directly through the smartphone through the web system and This data sending application will become a Web Base Application module. This research will be developed into the software in the form of a website application that will adapt to the needs and conditions in the Radiology Services environment.

METHODS

The research model to be carried out is a research and development (R&D) method with a non-randomized control group experimental design pre-test and post-test with an approach to do 2 stages namely before the experiment and after the experiment (Creswell & Creswell, 2017), this study aims in order to develop a conventional information system for radiographic activity management into a digital management information system through a website application to improve radiology services. This research and development procedure includes 5 stages, namely: 1) Design collection, 2) Application design, 3) Expert validation, 4) Stages of revision and 5) Product testing.

Measurements were taken by sampling method and brief training for radiographers and administrative staff by total sampling method with respondent pre-test and post-test. Measurement data taken is to measure aspects of the program, aspects of the content and aspects of the appearance and validation test of experts assessed by 3 informatics engineering experts for media validation and 2 radiologists for material validation assessment.

The assessment questionnaire is tested using a kappa statistical test and if the test results are not feasible it will be revised before the test application system for radiographers, with: 1). Design questionnaire design application model 2). Application model questionnaire 3). Pre and post-test questionnaire application model.

RESULTS

Information Collection

The results of information gathering were carried out by interviewing the hospital management, the head of the Radiology Installation, the head of the Radiology Installation room, the radiographer and the Radiology service administration staff at the Hospital. Based on these stages, it is obtained material that will be developed in electronic input media based on website applications, namely human interaction with reporting activities. After the developed material has been determined, the next step is to conduct a literature study to collect data on human interaction material with electronic-based reporting activities.

Design of Model

The second stage consists of making a research instrument lattice that becomes an evaluation criterion for interactive learning media. The instrument lattice that has been completed is then

developed into a research instrument. The steps taken are; 1) Creating a storyboard 2) Creating a layout reference 3) The material in this electronic-based interactive input media produces the e-jaybook.com website application which consists of radiographers, admin and super admin login menu display.

Validation Expert

The research instruments to be used are validation sheets, observation sheets, and interview guidelines. Validation sheets are used to determine the feasibility of electronic-based interactive learning media based on the assessment of material experts and media experts. The material expert is a radiologist who provides an assessment based on aspects of the material, learning, and language while the media expert is a lecturer in the field of Information Engineering who provides an assessment based on aspects of programming and appearance.

Table 1. Statistical Test Validation of Information Systems Management Expert Reporting on Electronic-Based Radiographers Activity

Validation Expert			
	N	f(%)	p-value
Relevant	14	100	0,001
Irrelevant	0	0	

*Intraclass correlation coefficient

The result of expert validity shows that the p-value = 0.001, which means that the e-jaybook.com website application is suitable for use in reporting electronic-based radiographers activities.

Revision

At this stage, the validated media product is then revised according to expert advice and input during the validation process.

Test Model

Phase for the use of media in inputting is conducted to determine the response of the radiographer to the electronic-based interactive reporting media developed. Respondents inputting were the respondents who participated in this study amounted to 17 (seventeen) people, the results of the characteristics of respondents in this study were used to find out the description of respondents presented in the following table:

Table 2. Test data normality

Variabel	p-value (n=17)
Aspects of pre-test programming	0.672
Aspects pre-test contents	0.039
Aspects pre-test display	0.147
Aspects of post-test programming	0.062
Aspects post-test contents	0.346
Aspects post-test display	0.143

*Shapiro-Wilk

The results of the normality test of Management Information System for Reporting of Electronic-Based Radiographers Activities to show that the p-

value =>0.05, so that it can conclude that the data are normally distributed so that the parametric test continued.

Table 3. Test the effectiveness of the Program Aspects

	N	Mean	SD	p-value
Pre-test	17	21.88	2.058	0.000
Post test	17	31.24	2.016	

*Paired Sample t-test

The effectiveness of the program aspects shows that the p-value is 0.001 (p<0.05), which means that the e-jaybook.com program aspect is effective

against electronic-based radiographer activity reporting systems.

Table 4. Test the effectiveness of the Contents Aspects

	N	Mean	SD	p-value
Pre-test	17	22.65	2.737	0.001
Post test	17	33.71	2.257	

*Paired Sample t-test

The effectiveness of the content aspect test results shows that the p-value is 0.001 (p<0.05), which means that the Content Aspect of e-

jaybook.com is effective against electronic-based radiographer activity reporting systems.

Table 5. Test the effectiveness of the display Aspects

	N	Mean	SD	p-value
Pre-test	17	17.65	2.499	0.001
Post test	17	30.47	1.663	

*Paired Sample t-test

The effectiveness of the display aspect test results shows that the p-value is 0.001 (p<0.05), which means that the e-jaybook.com display aspect is effective against electronic-based radiographers activity reporting systems.

carrying out the work of radiographers who work on radiology installation.

Application Interface

Contains fields for logging into the system and registers for registering accounts into the application for registers, the same username cannot be used to register an account.

DISCUSSION

Based on the research results obtained data that this application system will be used to assist in

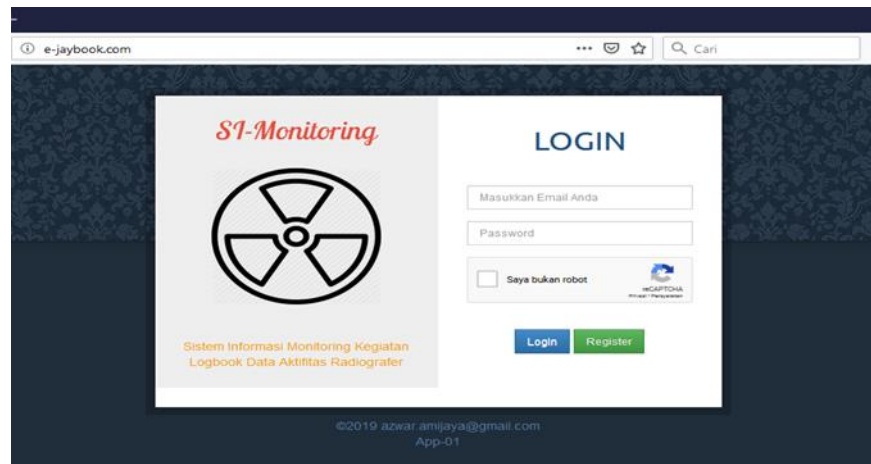


Figure 1. Initial View

Launcher

After a successful login, the user will be directed to the launcher dashboard, but only available for super admin and admin roles, because the super admin can access data from all hospitals and the admin role allows to control more than one hospital. This is the launcher appearance of the super admin role, containing a list of hospitals and their basic data.

Home Page

The initial page when entering the main application, there are several data summaries for one hospital, starting from the number of types of examinations, the number of types of activities, the number of activities, the number of radiographers, data in the form of activity charts based on the type of examination, and the latest activity report from the radiographers, along with their appearance:

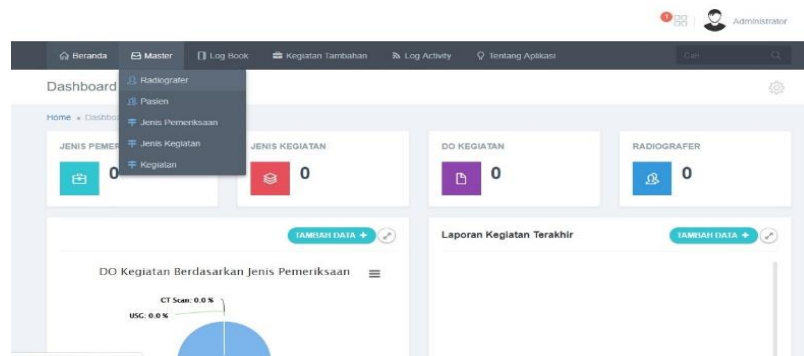


Figure 2. Administrator Home

The Master Menu

This menu is related to basic data that will be used in other menus, there are 5 sub-menu choices, namely: 1) Radiographers, 2) Patients, 3) Types of Examinations, 4) Types of Activities, 5) Activities.

Logbook Menu

The main activities of this application are contained in this menu, reporting and summarizing each radiographer's activities. There are 2 sub-menus, namely, Monitoring menu and recap menu.

Radiographer Input Menu

At this stage each radiographer must have a smartphone gadget with an Android or IOS operating system, making the username and password must be done by the Radiology Installation admin to create and get an account to access the application. After the Radiographer logs in, the homepage display is as follows;

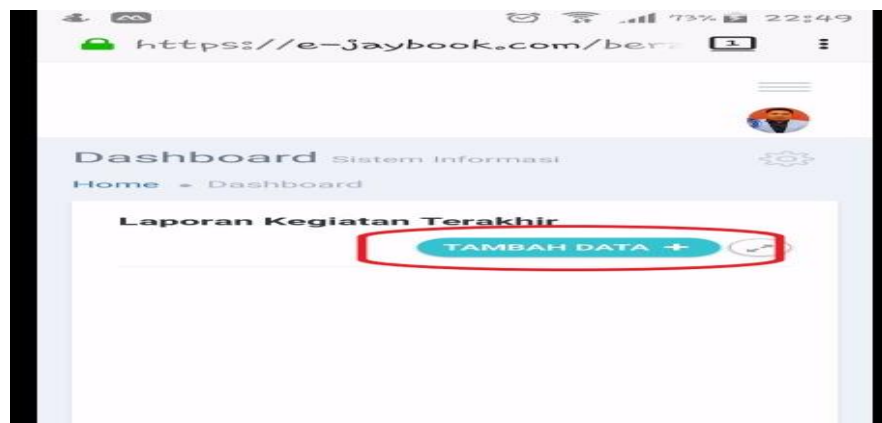


Figure 3. Radiographers Home Account

CONCLUSION

At this stage each radiographer must have a smartphone gadget Based on the results of research that has been done, it can be concluded that the information system reporting on electronic-based radiographers activities in radiology services can be used to facilitate superiors to monitor the daily

performance of radiographers who are conducting service activities to patients, so that the examination stage of the report will be easier. This application can function properly based on the results of the validation that has been carried out on the application and shows the appropriate design of the application.

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