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Effective Use of Web-Based Credential Method for Radiographers

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ABSTRACT

The radiographer credential is an evaluation process to determine the eligibility of clinical privilege granted to radiographers. This study aims to determine the effectiveness of the web-based radiographer credential method that has been developed by hospital IT. The method used was qualitative descriptive with the distribution of questionnaires to users of 25 respondents. The research variables used were system quality, information quality, service quality, user intention, user satisfaction and net benefit with a pre-experimental design of one group pre and post test Wilcoxson test. The effectiveness test results of the web-based radiogafer credential method are very effective with Asymp.Sig. (2-tailed) 0.000 (<0.05). This shows that web-based Credential Applications are very good and effective utilization

INTRODUCTION

Radiographer credentialing is one of the processes that greatly determines the quality of service carried out by a committee of other health workers in a hospital. Radiographer credential is a process of verification and evaluation to radiographer staff to determine whether the radiographer is worthy or not worthy of clinical privilege in carrying out or providing professional actions at the health facility where he works for a certain period carried out by a committee of other health workers or credential team (Ketut et al., 2020).

In general, the implementation of radiographer credentials in a hospital still uses a manual system, not well systemized. From this manual form, many problems are found including being less effective because the credential process requires a lot of paper forms so it requires storage or binders and sometimes the storage is not neat or messy, so that the appearance looks not neatly organized, can result in damaged documents, scattered and even lost because they have not been returned or because of other unwanted things such as natural disasters, Therefore, it becomes difficult to monitor and not infrequently on credential documents related to competence after the validity period (Sahidi et al., 2017).

The radiographer credential process generally takes a considerable amount of time. This is because there needs to be coordination of these stages between fellow credential users, such as the radiographer must make an appointment to meet with the committee to submit the submission file and certificate of requirements followed by the committee must determine who the peer reviewer is and when he can do the credential, plus the radiographer service there are also daily shifts and the services provided must prioritize service to patients. The process takes a long time, it can be one month of processing credentials because it has to equalize time between one credential user and another, so this problem makes the manual radiographer credential process in hospitals less effective, it needs a well-systemized method in the implementation process.

Previous research on web-based credentialing has been conducted in the nursing committee whose results stated that this web-based credentialing process is able to produce an effective nurse credentialing process, proven p-value (Setyono et al., 2021). Other research related to radiographer credentials has been conducted in evaluating the module on the use of the subcommittee on ethics, discipline and quality to improve knowledge in radiographer professionalism(Agus Setiarso, 2020). Regarding the credentials of other health workers, especially radiographers, no previous studies have been found. This study aims to evaluate the development of a good web-based credential product and its effective application as a radiographer credential system in a hospital.

METHODOLOGY

Making the web-based radiographer credential method requires product validation and system effectiveness testing. Product validation by experts using International Standardization Organization (ISO) 9126 which is one of the benchmarks of software quality, consisting of reliability, functional, usability, efficiency, maintenance and portability (Ngah, 2014) (Dwi Ananto Pamungkas, 2017) (Fahmy, 2012). As for the test of software effectiveness by all radiographer credential users using De lone and McLean effectiveness variables consisting of system quality, information quality, service quality, user intention, user satisfaction and net benefit (DeLone & McLean, 2015)(Prastiwi & Jumino, 2018)(Marlina, 2017).

This type of research is quantitative research. The research will be carried out at a private hospital radiology installation in January-June 2023. The trial in this study used a pre-experimental research design with a one group pre-post test design.

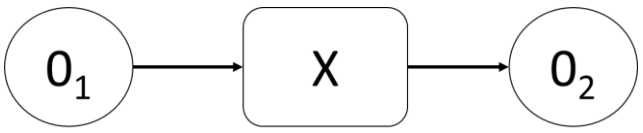

Figure 1. Conceptual Framework

01 = Pretest value before using the application

X = Web-based Credential Radiographer Credential Application

02 = Potest value after using the application

The design was used to determine the effectiveness of the web-based radiographer credential method from the previous product (manual information system). The independent variable in this study is the web-based radiographer credential method, while the dependent variables are system quality, information quality, service quality, user intentions, user satisfaction and net benefit. The way each aspect in the component is measured using the Likert scale Strongly Agree (SS) = 4, Agree (S) = 3, Disagree (TS) = 2, and Strongly Disagree (STS) = 1. The scale used is the interval scale. The population in the effectiveness test was all users of radiographer credentials, the total population in this study was 25 people. For product testing, 3 experts consisting of IT experts, radiographer credential team and other health worker committee chairmen were used. The sampling technique in this study is purposive sampling. The questionnaire was used as a product test and the effectiveness of "Development of Web-Based Radiographer Credential Method at The Hospital" using International Standardization Organization (ISO) 9126 and De Lone Mc Lean. Data analysis is carried out by means of statistical analysis using SPSS and presented in the form of tables.

RESULTS

The results of the research obtained are:

Table 1. Expert Validation Results

Aspects	Current	Ideal	% Current	Criterion
Functionality	50	60	83,33 %	Excellent
Reability	30	36	83,33 %	Excellent
Usability	44	48	91,66%	Excellent
Efficiency	22	24	91,66%	Excellent
Maintability	40	48	83,33 %	Excellent
Portability	40	48	83,33 %	Excellent
TOTAL	226	264	85,60 %	Excellent

From the table 1, according to experts based on quality tests using ISO 9126 standards the value of functionality, reability, maintability and portability is 83.88% with very good criteria. The value of usability, and efficiency of 91.66% with very good criteria. While the total system quality validation is 85.60% with very good criteria. This shows that this web-based credential method is very good to implement.

Table 2. Pre and Post Test Normality Test Results

	Shapiro-Wilk		
	Statistic	df	Say.
Pre Test System Quality	.823	25	.001
Post Test System Quality	.823	25	.001
Pre Test Information Quality	.781	25	.000
Post Test Information Quality	.837	25	.001
Pre Test Quality of Service	.833	25	.001
Post Test Quality of Service	.833	25	.001
Pre Test User Intentions	.826	25	.001
Post Test User Intentions	.826	25	.001
Pre Test User Satisfaction	.813	25	.000
Post User Satisfaction Test	.813	25	.000
Pre Test Net Benefit	.833	25	.001
Post Test Net Benefit	.833	25	.001

Table 2 obtained the results of the pre-test and post-test normality tests from the aspects of system quality, information quality, service quality, user intentions, user satisfaction and net benefit results of shapiro wilk p-value < 0.05 then continued Wilcoxson non-parametric tests.

Table 3. Wilcoxson Non Parametric Test Results

	Post Test System Quality - Pre Test System Quality	Post Test Information Quality - Pre Test Information Quality	Post Test Quality of Service - Pre Test Quality of Service	Post Test User Intention - Pre Test User Intention	Post User Satisfaction Test - Pre Test User Satisfaction	Post Test Net Benefit - Pre Test Net Benefit
With	-4.415b	-4.322b	-4.420b	-4.404b	-4.408b	-4.420b
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000	.000

Table 3 shows that the p-value before and after the provision of the new system in the aspects of system quality, information quality, service quality, user intention, user satisfaction and net benefit is 0.005. The results showed that the value of Asymp.Sig. (2-tailed) has a value of 0.000 less than 0.05. This shows a significant difference between pre-test and post-test assessments in system quality, information quality, service quality, user intention, user satisfaction, and net benefit after the intervention. This shows that the interventions provided have a positive impact in improving these aspects. Based on this, it can be stated that the hypothesis in this study is accepted "web-based radiographer credential method is effective application as a radiographer credential system of the Hospital".

DISCUSSION

The development of this web-based radiographer credential method needs to be carried out product testing based on ISO 9126 indicators using 6 aspects, namely functionality, reability, usability, effeciency, maintability and portability and evaluating software quality based on the % actual score obtained from the distribution of questionnaires. This is in line with previous research that conducted quality tests of a software product using ISO 9126 (Ngah, 2014)(Abud Figueroa, 2012)(Irsan & Husain, 2023). The results of the calculation of expert validity of 6 aspects of ISO 9126 indicators are 85.60% with very good criteria. So it can be interpreted that the web-based radiographer credential method is very well applied as a radiographer credential system at The Hospital. The radiographer credential method product test can be seen from the following aspects.

The web-based radiographer credential method for functionality aspect criteria with suitability, interoperability, security, accuracy and compliance indicators obtained an actual percentage of 83.33% with expert validation test criteria, the functionality aspect can be categorized as very good. Based on the results of this research, the web-based radiographer credential method of The Hospital has excellent functionality in completing tasks / functions / activities, can interact with other systems, is equipped with security measures, can provide precise and correct results according to user needs, and meets standards and needs according to applicable regulations.

Web-based radiographer credential method for reability aspect criteria with maturity, fault tolerance, recoverability indicators obtained an actual percentage reaching 83.33% with expert validation test criteria, the reability aspect can be categorized as very good. Based on the results of this study, the web-based radiographer credential method of The Hospital shows that it has excellent reliability to avoid failures due to errors, has the ability to maintain its performance if something goes wrong, has recovery facilities (the ability to restore performance levels when a system failure occurs).

Web-based radiographer credential method for usability aspect criteria with understandibility, learnability, operability, attractiveness indicators obtained an actual percentage of 91.6% with expert

validation test criteria, the usability aspect can be categorized as very good. Based on the results of this research, the web-based radiographer credential method of The Hospital has excellent uses so that it is easy to understand, easy to learn, easy to operate, and has appeal to users.

Web-based radiographer credential method for efficiency aspect criteria with time behavior and resource behavior indicators obtained the actual percentage reaches 91.6% with expert validation test criteria, the efficiency aspect can be categorized as very good. Based on the results of this study, the web-based radiographer credential method of The Hospital shows that it has excellent efficiency, provides a response with a fast time when performing its functions and when loading or transmitting data, and has the ability to use its features when performing predetermined functions.

Web-based radiographer credential method for maintability aspect criteria with indicators of analyzability, changeability, stability, testability obtained the actual percentage reached 83.33% with expert validation test criteria, the maintability aspect can be categorized as very good. Based on the results of this study, the web-based radiographer credential method of The Hospital shows that it has excellent maintenance, detects when there are errors made by users, is easy to modify, stable when used and tested well.

The web-based radiographer credential method for portability aspect criteria with indicators of adaptability, instability, coexistence, replaceability obtained an actual percentage of 83.33% with expert validation test criteria, the portability aspect can be categorized as very good. Based on the results of this study, the web-based radiographer credential method of The Hospital shows that it has excellent portability, can be run on all browsers, can be opened by various operating systems, can be used in conjunction with other applications, can be used to replace manual systems.

System quality with Asymp.Sig values. (2-tailed) 0.000. These results mean that there is an increase in the quality of the web-based credential method system when compared to manual methods. In the use of web-based credential methods never experience difficulties (damage or interference) when used, provides complete features, can be accessed anytime and anywhere, easy to use, can be used through a computer. This is in line with previous research that says that the ease of the system to learn describes the quality of the system The easier it is to learn, the better the quality of the system (Sanjaya & Admaja, 2015)(Bimaniar et al., 2018) .

Information Quality with Asymp.Sig value. (2-tailed) 0.000. These results mean that there is an increase in the effectiveness of information quality using web-based credential methods better when compared to manual methods. Web-based radiographer credential quality provides clear information, provides information needed by users, can provide information needed by users relevant to what is provided, provide timely information, provide complete and easy to understand information. Quality information is information that can meet the information needs for radiographer credential users of The Hospital. Quality information is information that is accurate, timely, relevant and complete. Accurate means that the information must reflect the actual situation. Timely means that information must be available at the time it is needed. Relevant means that the information provided must be in accordance with what is needed. Complete means that the information provided must be complete in its entirety (Puspitawati & Dewi, 2011).

Quality of service with Asymp.Sig value. (2-tailed) 0.000. These results mean that there is an increase in the quality of service quality of web-based credential methods when compared to manual methods. The quality of web-based radiographer credential services is fast, has guarantees in the form of a knowledge base and accuracy of radiographer credentials, has good communication in meeting the needs of radiographer credential information, is supported by hardware and internet connection. Web-based methods can be run by all platforms, applications do not depend on the operating system only requires a browser to open it, besides it has high compatibility, is lightweight and can be accessed from anywhere as long as there is an internet network in the area (Suryawinata, 2019).

User intent with the value Asymp.Sig. (2-tailed) 0.000. These results mean that there is an increase in the effectiveness of user intentions of web-based credential methods better when compared to manual methods. The web-based radiographer

credential method encourages the user's intention to continue using this system because it can help users in the radiographer credential process, users feel the fast process in using this method. The role of user intention in previous research suggested that increasing user intention will increase user behavior of a technology. The better the intention towards technology, the better a person's behavior using technology (Nuryahya et al., 2019).

User satisfaction with Asymp.Sig values. (2-tailed) 0.000. These results mean that there is an increase in the effectiveness of user satisfaction of web-based credential methods better when compared to manual methods. The web-based radiographer credential method provides satisfaction for its users because it can help the credential execution process, meet user needs, improve coordination and cooperation with other radiographer credential users. This is in line with previous research that says that the development of an information system must be more effective when compared to the old system (Suciyanti, 2020). This effectiveness will improve the performance of radiographer user credentials at The Hospital and reduce the workload of health workers who are still integrated with the main tasks of service.

Net benefit with Asymp.Sig value. (2-tailed) 0.000. These results mean that there is an increase in the effectiveness of user satisfaction of web-based credential methods better when compared to manual methods. The web-based radiographer credential method can provide net benefits for radiographer credential users at The Hospital, which can save time in the credential process, improve user performance, can be a reference for other hospitals and other health workers in creating a web-based credential system. Net benefits in the radiographer credential method can help solve solutions to problems that occurred previously and can be useful for radiographer credential users. This is in line with research conducted previously explaining the benefits of information systems to individuals and hospital organizations (Puspitasari & Istiono, 2017).

CONCLUSIONS

The development of the web-based radiographer credential method is very good and effective in its use as a radiographer credential method at Pertamina Central Hospital.

FURTHER STUDY

The suggestion for further researchers is that it can be used as a reference to be developed in further research with a wider sample.

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