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Analysis Of User Interface User Experience SIMRS At The Patient Registration Section Of The Sultan Fatah Demak Hospital, 2023

Niantiara Asya Salwa Munna [1], Evina Widianawati[2]*

[1]Diploma of Medical Record and Health Information, Faculty of Health, Dian Nuswantoro University, 422202003099@mhs.dinus.ac.id
[2] Diploma of Medical Record and Health Information, Faculty of Health, Dian Nuswantoro University , evina.widianawati@dsn.dinus.ac.id* (corresponding author)

Abstract

During the development of Hospital Health Information Management System (SIMRS), there were some errors in data item labels in the patien registration center of the Sultan Fatah Demak Hospital. The study analyzed the UI/UX of SIMRS in the patient registration section of RSUD Sultan Fatah Demak in 2023. The research was descriptive and subjects were all registration officers (13 officers). This study used the UI questionnaire to measure User Interface (UI) and UEQ to measure User Experience (UX). The results showed that the majority of officers were women, aged 21-25 years, last education was a high school, officers had been working for ≥1 year. In SIMRS the data items are arranged logically, there is a pop up if there is an item that has not been inputted, and there is a different user id and password for each officer. However, SIMRS does not yet have an icon and the layout is not neatly arranged. The highest UI aspect of was privacy and security, classified as excellent with 4.50 points and the lowest was error prevention, classified as poor with 2.92 points. The highest UX aspect was perspicuity (1.71 points), and the lowest was novelty(0.54 points). Since error prevention is the lowest aspect of the UI, an edit menu was added on the input page to prevent input errors. Then in UX, SIMRS needs to be upgraded in terms of color and layout so that system users don't feel bored while carrying out their duties.

Correspondence Address:
Diploma of Medical Record and Health Information, Dian Nuswantoro University, Indonesia
E-mail: evina.widianawati@dsn.dinus.ac.id

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Introduction

The rapid development in the world of information technology has made it an important part of the success of an institution to improve a service, including hospitals, to support more accurate, fast, and precise performance. Hospitals consider data and information as important assets that need to be managed optimally for decision making. The data is processed in the form of a Hospital Management Information System or can be referred to as SIMRS. SIMRS is expected to reduce the administrative burden, which was initially carried out using time-inefficient paper while completing tasks from the many reports and several sheets of paper with various important data that will be stored after data management.(1) In the implementation of SIMRS, several obstacles were found. These obstacles can be seen in the results of Putra

and Vadriasmi's research (2020) on "Analysis of the Implementation of the Hospital Management Information System (SIMRS) at Outpatient Registration Section (TPPRJ) Using the UTAUT Method at Tk.III Dr. Reksodiwiryo Padang Hospital" that officers need to enter patient data and patient SEP No. double.(2) Meanwhile, research by Sari, et al (2020) with the title "Overview of the Implementation of the Hospital Management Information System (SIMRS) at the Patient Administration Installation of Dr. H. Marzoeki Mahdi Bogor Hospital, West Java Province" found that SIMRS requires a notification or warning block on SIMRS so that duplication of patients does not occur.(3) Another SIMRS problem found in Dinata and Deharja's (2020) research on "Analysis of SIMRS with the PIECES method at Dr. H. Koesnadi Bondowoso Hospital" is that from a visual point of view, the appearance is sometimes boring.(4) The SIMRS of Sultan Fatah Demak Hospital called "Integrated Hospital Management" has only been used since June 2022. This SIMRS was purchased from a third party and is still under development. In its development, there are several problems in SIMRS such as naming errors in filling items.

Important factors of a SIMRS are UI (User Interface) and UX (User Experience). UI is the appearance of an application that allows users to connect and interact with a product. UI focuses on the beauty of the appearance of a system. So, users can enjoy the product. While UX is the process of designing applications through a user approach so as to create applications according to the needs and desires of users. Applications with good UX design will make it easier for users to use the application and create a comfortable experience for users.(5) The formulation of the problem in this study is how to analyze the UI UX SIMRS in the patient registration section of the Sultan Fatah Demak Hospital in 2023. The general objective is to analyze UI UX SIMRS in the patient registration section of Sultan Fatah Demak Hospital in 2023.

Methods

The research was conducted by analyzing the UI UX of patient registration officers at RSUD Sultan Fatah Demak from February to June 2023. The research was conducted from February to June 2023. The data source is using primary data with data collection methods are observation and questionnaire methods. The research was descriptive and subjects were all registration officers as 13 officers consist of outpatient registration section (TPPRJ) as 5 officers and inpatient/emergency registration section (TPPRI/GD) as 8 officers. There are 2 questionnaires used in this research, namely the UI questionnaire and UEQ (User Experience Questionnaire). Both questionnaires use a Likert scale, which measures respondents' perceptions and opinions about an event. In the Likert scale there are two forms of questions, namely positive questions to measure positive scales and negative questions to measure negative scales.(6) The data analysis used for UI is to calculate the average of the final results of the questionnaire in order to determine the final results and categorize the calculated values. There are 5 categorizations in UI, namely awful, poor, ok, good, and excellent.(7,8) In UX from 26 questions, the resulting data will be converted which results in an average of each respondent for each aspect. Furthermore, to determine the UX aspects, the benchmark data set from the Data Analysis Tool is used. There are 5 categorizations in the benchmark, namely bad, below average, above average, good, and excellent.(8,9)

Results

In the officer characteristics, there are 11 variables, including gender, domicile, age, latest education, RMIK educational background, length of work, length of computer use, length of mobile phone use, computer training, average internet usage in a week, and internet usage for users. In Table 1, the majority of officers were female, domiciled in Demak Regency, aged 21-25 years, graduated from senior high school, did not have an RMIK background, had ≥1 year of work experience, used computers for ≤5 years, used computers for ≤10 years, did not attend computer training, the average internet usage was 21-40 hours/week, and used the internet for entertainment.

Table 1.

Characteristics of Medical Record Officers at Sultan Fatah Demak Hospital

No.	Variables	Frequency	Percentage
1.	Gender		
	Male	4	31%
	Female	9	69%

2.	Domicile		
	Demak district	11	85%
	Outside Demak District	2	15%
3.	Age		
	≤20 years	2	15%
	21-25 years old	8	62%
	>25 years	3	23%
4.	Last education		
	High school graduate	8	62%
	Diploma/Vocational	3	23%
	S1	2	15%
5.	RMIK Educational Background		
	RMIK	2	15%
	Not RMIK	11	85%
6.	Length of Service		
	<1	3	23%
	≥1	10	77%
7.	Length of time using the computer		
	≤5	9	69%
	≤10	2	16%
	>10	2	15%
8.	Length of time using mobile phone		
	≤5	3	23%
	≤10	8	62%
	>10	2	15%
9.	Attended computer training		
	Yes	4	31%
	No	9	69%
10.	Average internet usage in a week		
	7 - 9 hours/week	1	8%
	10 - 20 hours/week	3	23%
	21 - 40 hours/week	7	54%
	40 hours/week	2	15%
11.	Internet usage for users		
	Education	6	11%
	Shopping/searching for product information	10	18%
	Entertainment	11	19%
	Job/business	7	12%
	Communication with others (excluding email)	6	11%
	Gathering information for personal use	6	11%
	Gather information about health	4	7%
	Occupy free time	6	11%

In table 2, UI by aspect is shown based on the officer unit. There are 10 aspects of UI, namely visibility of system status, match between system and real world, user control and freedom, consistency and standards, error prevention, flexibility and efficiency of use, help users recognize, diagnose, and recover from errors, eye cactching, privacy and security, and documents. The highest aspect obtained by TPPRI/GD officers and all officers is the privacy and security aspect with a score of 4.69 obtained by TPPRI/TPPGD officers and 4.50 obtained by all officers. For TPPRJ officers, the highest aspect is flexibility and efficiency of use with a score of 4.80. The lowest aspect obtained by TPPRJ officers and all officers is the aspect of error prevention with a score of 3.00 obtained by TPPRJ officers and 2.92 obtained by all TPP officers. In TPPRI/GD officers, there are 2 lowest aspects, namely aspects of error prevention and help users recognize, diagnose, and recover from errors with a score of 2.88.

Table 2.

UI by Aspect Based on TPP Officers

Aspects	TPP RJ	Category	TPP RI/ GD	Category	All Officers	Category
Visibility of system status	4,20	*Excellent*	3,97	*Good*	4,06	*Excellent*
Match between system and real world	4,27	*Excellent*	3,92	*Good*	4,05	*Excellent*
User control and freedom	4,15	*Excellent*	3,94	*Good*	4,02	*Excellent*
Consistency and standards	4,00	*Good*	3,88	*Good*	3,92	*Good*
Error prevention	3,00	*Poor*	2,88	*Poor*	2,92	*Poor*
Flexibility and efficiency of use	4,80	*Excellent*	4,25	*Excellent*	4,46	*Excellent*
Help users recognize, diagnose, and recover from errors	3,30	*Poor*	2,88	*Poor*	3,04	*Poor*
Eye cactching	3,93	*Good*	3,21	*Poor*	3,49	*Good*
Privacy and Security	4,20	*Excellent*	4,69	*Excellent*	4,50	*Excellent*
Document	4,20	*Excellent*	4,44	*Excellent*	4,35	*Excellent*

In Table 3, UX by aspect is shown based on the officer unit. There are 6 aspects of UX including attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. The highest score obtained by TPPRJ officers and all TPP officers is the perspicuity aspect with an excellent category and a score of 2.15 obtained by TPPRJ officers while all TPP officers get the above average category with a score of 1.71. Then the highest score of TPPRI officers is in the efficiency aspect with the Above Average category which has a score of 1.47. While the lowest value is in the novelty aspect with the Below Average category and each score of TPPRJ officers gets 0.60; TPPRI officers get 0.50; and all TPP officers get 0.54.

Table 3.

UX by Aspect Based on TPP Officer

Aspects	TPPRJ	Category	TPPRI/ GD	Category	All Officers	Category
Attractiveness	1,87	*Excellent*	1,27	*Above average*	1,5	*Above average*
Perspicuity	2,15	*Excellent*	1,44	*Above Average*	1,71	*Above Average*
Efficiency	1,85	*Good*	1,47	*Above Average*	1,62	*Good*
Dependability	1,65	*Good*	0,84	*Below Average*	1,15	*Above Average*
Stimulation	1,7	*Good*	0,97	*Below Average*	1,25	*Above Average*
Novelty	0,6	*Below Average*	0,5	*Below Average*	0,54	*Below Average*

Discussion

In previous research related to User Interface, it got the Good category, which means that the system can be accepted by users.(10) In this study, it got the good and excellent categories. The question with the highest score is in the privacy and security aspect, namely "Every user has a username and password", meaning that each officer has a username and password for user authentication. Then the question with the lowest score is in the aspect of error prevention, namely "While using the system I have experienced problems or errors" which means the need for error prevention from the start such as eliminating or editing error-prone conditions.

In previous research related to UX, the highest value is the dependability aspect. While the lowest is the novelty aspect.(10) The highest aspect of the current research is the perspicuity aspect. While the lowest is the novelty aspect. The question with the highest score is located in the perspicuity aspect, namely "not

understandable/understandable", meaning that officers can understand well the function of each element in the SIMRS. The question with the lowest score is located in the novelty aspect, namely "inventive/conventional" which means the need to improve SIMRS from the visual side so that SIMRS is more up to date and officers do not feel bored when running SIMRS.

Conclusion

The system uses Indonesian language that is easy to understand, the order of the items is logically arranged, and the data can be accessed again. However, there are some problems, namely that the medical code contains the names of poly doctors and there are items that are not filled in from the beginning and do not have functions such as visits to, guarantors and paramedic codes. The highest aspect of UI is the privacy and security aspect while the lowest is the error prevention aspect. Then the highest aspect of UX is the perspicuity aspect while the lowest is the novelty aspect. The need for SIMRS improvement on items that can cause confusion and the need for system evaluation so that it is more up to date and system users do not feel bored when carrying out their duties.

Author Contributions

Writing—original draft preparation, visualization, methodology, Niantiara A.S.M; Conceptualization, supervision, writing—review and editing, Evina W. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest:

The authors declare no conflict of interest.

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