Design and Build e-Complaints in Hospitals Based on SMS Gateway

by Sustin Farlinda

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ABSTRACT

In supporting the quality of service to visitors and patients, the hospital always provides a suggestion box that serves to receive criticism and suggestions or complaints from hospital visitors, likewise, with what is done by RSUD Balung. However, the suggestion box provided has not been maximally utilised by hospital visitors, as evidenced by the lack of complaints entered in the suggestion box. This problem can be caused by slow or indirect handling by related parties after hospital service users submit their suggestions or complaints through the suggestion box facility. It also can be caused by the limitations of the suggestion box provided by the hospital so that users cannot use it to the maximum. Finally, the impact of poor complaint management causes suggestions or complaints from patients not resolved quickly, and even reports to superiors are absent. The solution to this problem is to design and build an electronic complaint (e-complaint) application based on an SMS gateway. Where the system development method used is the Waterfall method and the system testing method uses a black box. The trial results show that the system was successfully running with an accuracy rate of 100% (no error). Where this system can provide convenience to officers in searching data, setting access rights, the availability of complaint forms a unit of claim, user data forms and can generate complaints reports per unit as well as reports of all complaint units.

Keywords: *electronic complaints, e-complaints, SMS gateway, RSUD Balung*

I. INTRODUCTION

The hospital always tries to provide the best service to every visitor. One form of business in improving public services is to provide opportunities for visitors to give advice or complaints about hospital services. Claims are criticisms or objections raised by patients against the hospital regarding the performance and services produced at the hospital [1]. Complaints must be resolved quickly and according to standards so as not to expand and disrupt hospital services. Usually, claims occur because the service procedures obtained by patients in the hospital do not comply with the rules. Of course, complaints can interfere, create emotion or stress so that it affects the efficiency and productivity of employees or specialized staff and hospitals in general, so the hospital needs to make guidelines on complaint management so that complaints can be appropriately handled and appropriately [2]. Dissatisfied patients will take a stand for claims against the hospital for their applications, and the hospital will answer and explain complaints from the patient. Every complaint given by a patient to the hospital must be responded quickly and adequately so that no more severe problems occur to the patient.

In supporting the quality of services to patients, the Balung Regional General Hospital provides a suggestion box as a form of public

service to get input and criticism from Hospital users. The suggestion box is a forum for critique and suggestions from hospital users and forwards these criticisms and suggestions directly to the hospital concerned for the response. But in reality, the use of suggestion boxes by visitors to the Balung public hospital is still minimal. The data for using the suggestion box by the hospital is as follows.

Table 1. Complaints Data

Month	Number of Incoming Complaints	Complaints Received
May	6	3
June	11	5
July	9	4

Source: RSUD Balung, 2018

Table 1 above explains that in May, the number of complaints received was six letters and complaints received as many as 3, may the number of complaints received were 11 letters and received as many as 5, may the number of complaints received was nine letters and received as many as 4. The cause of the number of complaints entered in the suggestion box and complaints received by the claims is not the same is because the complaint letter is missing in the suggestion box. The slow response from the hospital in handling charges entered in the suggestion box affects the minimal use of the suggestion box by visitors, especially the suggestion box is a one-way communication media [3].

The results of the interview with the complaint officer stated that the patient also noted the complaint directly to the complaint officer but the complaint officer did not record the results of the criticism from the patient so that it often made the incoming claim not reach the party concerned, causing complaints can not be processed and reports to superiors do not exist. The impact of this problem is that it can reduce patient satisfaction with the services provided by the Balung Regional General Hospital. The solution to this problem is to design and build an electronic system based on SMS Gateway Complaints. While the system development method used is *Waterfall*.

The waterfall method describes a systematic and sequential approach to software development, starting with the specifications of user needs and then continuing through the stages of planning, modeling, construction and the delivery of the system to the customer/user (deployment)), which ends with support for the complete software produced [4].

II. METHODS

Following are the stages of research carried out in designing and building e-complaints systems :
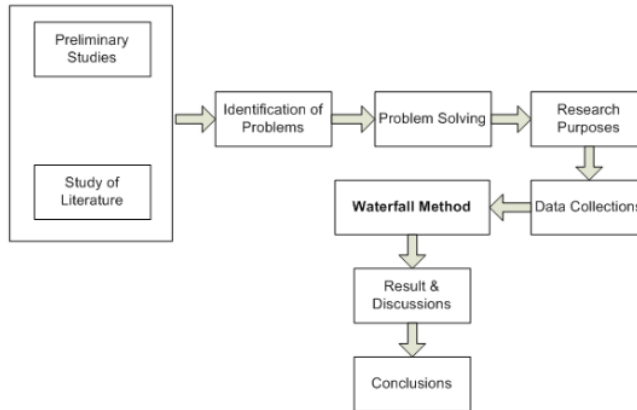
Fig. 1. Research Methodology

In the waterfall method, after analyzing the data, then design a new system and process data flow from the system in the form of a flowchart design, data flow diagram and database relations. Then proceed with the coding process and testing the order using the black-box method.

III. RESULTS AND DISCUSSION

The following are the results of the design and testing of the system will be developed :

A. System Design

This section will display the results of the model in the form of context diagrams and database relations. For data flow diagrams (DAD) generally explained by the context diagram below: [5]
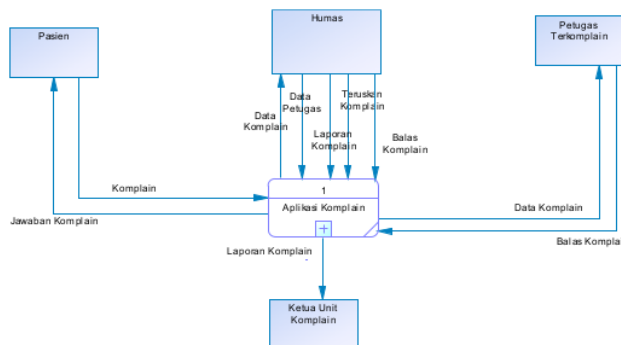

Fig. 2. *context diagram of the e-complaint system*

In Figure 2 above, the e-complaint application consists of 4 entities namely patient, public relations officer, complained officer and chief of complaint unit. In this context diagram consists of one main process which will then be further will be clarified into more detailed processes in order to be able to describe in detail the

complaints gateway based application in Balung Regional Hospital.

Meanwhile, the form of the entity-relationship diagram (ERD) design of the SMS gateway based complaint application at Balung Regional Hospital shown in the figure below:
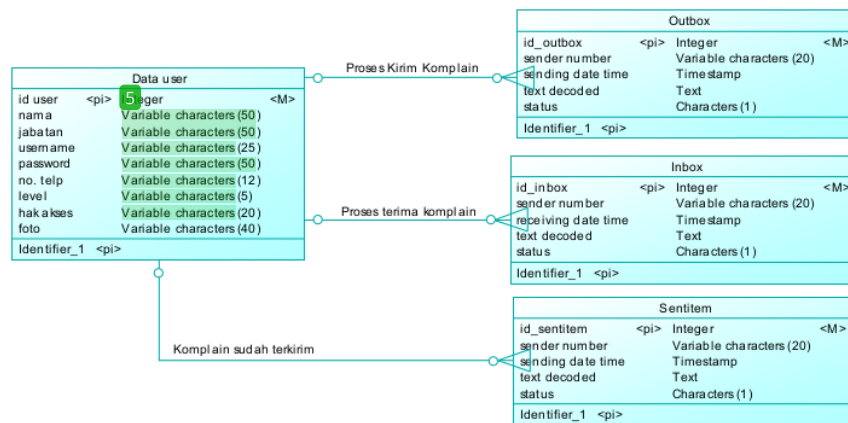
Fig. 3. ERD of the e-Complain System

Figure 3 above shows that 4 tables are interconnected with one another, including user data tables and outbox data tables, inbox tables and sent item tables.

B. Testing and Discussion

The following is the process and results of the trials of the system design that have been made and developed in the e-complaint application at Balung Regional Hospital:
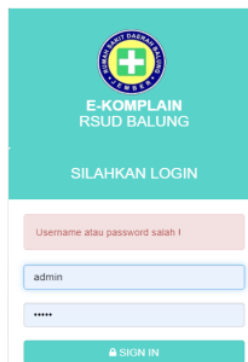
Fig. 4. Failed to log in Form

Figure 4 above shows the login form if the user incorrectly entered the username or password used to enter the information system so that officers cannot enter the information system. From the above display, it can be seen that this information system has the right level of security so that the protection and confidentiality of data can be maintained. While Figure 5 below is an example of the form added officer data, which functions to enter the officer data following the user's identity.

Fig. 5. Officer Data Form

Fig. 6. Outpatient Complaint Data Form

Figure 6 above serves to display the complaint data from patients obtained from SMS from patients, on this form, there is also a filter data filter feature based on month and year based on the date of the complaint.

Fig.7. Complaint Data Form for Integrated Administration Services

Figure 7 above serves to display the complaint data from patients obtained from SMS from patients, on this form, there is also a filter data filter feature based on month and year based on the date of the complaint.

Fig. 8. Integrated Administrative Services Complaint Report Form

Figure 8 above serves to display data on integrated administrative service complaints in Balung Hospital; integrated executive service complaint reports can be filtered by month and year, telephone number, date, and status.

Fig. 9. Report Form of All Complaints Units

Figure 9 functions to display data of all complaints based on complaint units in Balung Regional Hospital, reports that all complaint units can be filtered based on months and years according to user needs, then complaint data will appear as needed. After the required data appears, the user can print a report by clicking the print button, then reports on all complaint units will be printed out.

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Laporan Komplain Rawat Jalan

NO	No. Telp	Tanggal	Isi	Status
1	+6282132470312	2019-06-18 21:22:01	pelayanan sangat lama	belum ditindaklanjuti
2	+6282132470312	2018-11-11 21:22:01	saya mengeluhkan pelayanan di rawat jalan terlalu lama	sudah ditindaklanjuti
3	085236479971	2018-11-01 00:00:00	Komplain terhadap	sudah ditindaklanjuti

Fig. 10. Print Out patient Complaint Report

Figure 10 above is an example of the print out of the outpatient complaint report at Balung Regional Hospital, as shown on the outpatient complaint report form. This outpatient complaint report can be printed or saved in pdf format.

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Laporan Komplain

NO	Unit	Jumlah Komplain	Jumlah Komplain ditangani
1	Rawat Jalan	3	2
2	Kamar Operasi	2	0
3	Gizi	2	0
4	Case Manajer	2	0
5	Rawat Inap	1	1
6	Laboratorium	1	0
7	Farmasi	1	1
8	Radiologi	1	0
9	Pelayanan Administrasi Terpadu	1	0

Fig. 11. Print Results of Reports of All Complaints Units

Figure 11 above is an example of the printout of all complaints unit reports from the print button on the report menu of all complaint units, which will print the data of all complaint units in Balung District Hospital as displayed on the report form for all complaint units. Reports of all complaint units can be printed out or saved in pdf format.

Based on the results of testing with the black box technique, it can be concluded that the system can run optimally and each module component functions properly without any error.

IV. CONCLUSION

As for the findings from the results of the study as follows:

1. A system has built to help elicit complaints data electronically at the Balung Regional Hospital

2. The results of testing the e-complaint application with the black box technique are 100% successful, meaning that all the functions contained in the information system can run as a whole without errors.

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