



Health Management System

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HEALTH MANAGEMENT SYSTEM

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Abstract:

The Health Management System project aims to provide an efficient and comprehensive solution for managing health-related information and processes. It is designed to streamline the healthcare industry by digitizing and automating various aspects of healthcare management, including patient records, appointments, prescriptions, and billing. The system offers a user-friendly interface accessible to both healthcare providers and patients. Healthcare providers can utilize the system to manage patient information, schedule appointments, maintain medical records, generate prescriptions, and monitor treatment plans. The system also allows for easy collaboration and communication between healthcare professionals, ensuring a seamless flow of information. Patients can benefit from the Health Management System by accessing their medical records, booking appointments online, receiving appointment reminders, and securely messaging their healthcare providers. The system aims to enhance patient engagement and empowerment by providing convenient access to their health information, promoting proactive healthcare management.

Keywords

1. Patient Management: The system enables healthcare providers to create and maintain patient profiles, including personal details, medical history, and test results.
2. Appointment Scheduling: Patients can schedule appointments with healthcare providers through an online portal, reducing wait times and enhancing convenience.
3. Electronic Medical Records (EMR): The system offers a centralized repository for storing and managing electronic medical records securely. This includes diagnosis, treatments, medications, and other relevant information.
4. Prescription Management: Healthcare providers can generate electronic prescriptions, reducing errors and facilitating seamless communication with pharmacies.
5. Billing and Insurance: The system includes functionality for managing billing and insurance claims, streamlining the financial aspects of healthcare management.
6. Communication and Collaboration: Secure messaging and document sharing features enable effective

communication and collaboration between healthcare providers and patients.

Overall, the Health Management System project aims to improve the efficiency, accuracy, and accessibility of healthcare services. By leveraging technology to streamline healthcare processes, it enhances the quality of patient care, fosters effective communication, and contributes to better health outcomes..

Keywords—hospital management, information system, structured design life cycle

I. INTRODUCTION

An integrated Hospital Management Information System (HMIS) is an important subsystem to optimize hospital service quality. The existence and functionality of HMIS would provide a great benefit towards every hospital user including patients, doctors, nurses, management, hospital partner, and the other stakeholders. Through HMIS, every transaction will be recorded, processed, and further utilized to in right service areas [1]. Collected data is further processed according to scientific rules so it would help decision makers to create the best decisions for the patients and hospital management. According to Nekoel-Moghadam and Amiresmaili [2], information system is one of hospital's biggest needs to solve regular hospital problems such as unorganized patients' data, mistakes in queue system, incomplete identity information, unclear medical prescription, etc. By utilizing information system, these problems can be minimized, and will further bring positive impacts towards hospital service quality as a whole.

There has been a development on management communication technology that is marked with the emergence of InterXway system. The system provides data connection between computers and networks that can be utilized in healthcare field, by providing standardized or non-standardized various data communication link, which is vital for clinical healthcare system [3].

The world of healthcare service has become more and more dynamic with the demand for high quality and quantity of information system. However, with the situation faced, slow improvement of hospital information technology, human resource inability to benefit information technology, software crisis, and the existence of user complains, have further question the current technology being used by hospital administration officers, customer service, engineers, and medical employees can really bring satisfaction towards every user. Based on that situation, to improve information

system quality in healthcare, hospitals are building a better and more capable information system that would help hospital to produce a faster and more accurate medical service decisions [4].

Based on preliminary one-day-observation towards 15 patients that further estimated as 1-month data, there are at least 50 emergency patients and 110 outpatients don't get the required services due to incomplete administration data, and queueing problems that pushes patients to look for another hospital. This situation is not in line with Indonesian Health Ministry Law number 129, year 2008 that oblige hospital to limit emergency unit queueing time to less than 5 minutes while in practice patients need to wait for at least 10 minutes, and maximum 60 minutes queueing time for outpatients while in reality the patients have to wait around 90 minutes.

Based on observation and interview on Al-Mulk Regional Public Hospital Director and employee, outpatients, inpatients, emergency unit, pharmacy, radiology, and laboratory units' patients are still recorded with conventional ways or manually because their HMIS is not yet functional. For example, medical record book that is further recapped to create medical report. This method is proven faulty and require longer time to process, identify, and reported. However, Al-Mulk Hospital possess peculiarity that is not identified in any other hospitals, which is ID-only Program that allow free medication citizens of Sukabumi City. This program is proven to be able to improve number of patients in this hospital.

Based on interview with Al-Mulk Hospital director, HMIS will be applied as soon as possible, and according to medical record officer HMIS is only applied in patient registration but still unintegrated with any other services. To provide information about doctor schedules and services in Al-Mulk Hospital, the management provide printed media such as banner and leaflet in registration and information area. Based on this background, research is compelled to conduct a research to analyse HMIS in order to improve service quality by utilizing Structured Design Life Cycle (SDLC) method.

II. RESEARCH METHOD

The method utilized in this research is a case study, which aim to acknowledge and analyse a specific phenomenon such as social and individual, group, organizational, or societal symptoms. Case study is a research method that aims to present report to readers regarding a perspective on certain event and as a part in the event through a detailed and depth analysis on a researched object [5]. Because of that, both experts added that in case study it is important to achieve a detailed information with careful analysis to describe a situation as a picture of presented reality and social phenomenon. According to Gavin, to produce a method of decision making that involve innovation and healthcare information development, a series of information technology with risk management standard is required [6].

III. RESEARCH FRAMEWORK

In the construction of research framework, we collect basic theory on information system, HMIS, service quality, and SDLC Method. We acquire input that Al-Mulk Hospital have partially install information system, but it is yet to be integrated with other units and further bring impacts on service quality. The strategy chosen in this research is to analyse HMIS with SDLC method, to create a tidier service plot, a more complete medical record documentation, and better accessibility and information. All those concepts will be put together to help AlMulk Hospital improve their quality of service. Units

IV. PATIENT SAFETY MANAGEMENT RE-DESIGN BY USING HOSPITAL FAILURE MODE EFFECT ANALYSIS (HFMEA)

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Information system is one of hospital's biggest needs to solve regular hospital problems such as unorganized patients' data, mistakes in queue system, incomplete identity information, unclear medical prescription, etc. By utilizing information system, these problems can be minimized, and will further bring positive impacts towards hospital service quality as a whole [8].

Taiwan medical information has received international recognition. In the last few years, they possess the most advanced technological information than the ones found in any other countries. Besides that, a systematic development has been an inseparable part of their software development process. They have developed and improve their software product, and enhance their productivity and efficiency to avoid unnecessary risks during system development process [9].

SDLC or Life Cycle System as system engineering and software engineering, is a process to create and alter the system along with the utilized model and methodology to improve those systems. This concept is generally referring to computerized system or information [10].

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We have to conducted survey to assess information system development appropriateness in Al-Mulk Hospital. During this process, the scope of the project is measured to

determine its availability towards every user, and also to determine problems and possibility of various obstacles and to create appropriate solutions. The result reveals that information system application is yet to be optimally utilized. The main obstacles to optimize information technology are the lack of facilities and infrastructures in every HMIS network due to limited development budget.

V. CONCLUSION

HMIS in Al-Mulk Hospital is a Khanza HMIS, which is an application with client-server mode operational model to store outpatients' and inpatients' medical records. This software is a freeware. Khanza HMIS is integrated with VClaim application and INACBGS for patients with BPJS. However, this server still faces various limitation including number of available devices.

The result and methods of the SDLC can improve the quality of services Al-Mulk Hospital. Customer satisfaction is an important key to improve the quality of service in each unit. Patients feel satisfied with the comfort in the hospital during treatment and recommend to others.

After applying SDLC method in Al-Mulk Hospital, the integration is getting better but still unable to integrate to every existing unit because of several obstacles such as limited internet connection, limited budget to improve facilities and infrastructures.

By utilizing SDLC method, the result of the analysis shows that HMIS application to improve service quality in Al-Mulk Hospital is highly potential. It also has the potential to facilitate outpatients. SDLC system can result a high-quality system that can fulfil patients' expectation by decreasing treatment time and provide cost estimation, especially for inpatients and outpatients.

REFERENCES

- [1] M. Mena, Selection of System Integrator for Design, Development, Implementation and Maintenance of Hospital Management Information System on Mobile and Desktop Platform for KDMC Hospital, 2016]
- [2] M. Nekoel-Moghadam and M. Amiresmaili, "Hospital Services Quality Assessment," *Journal of Health Care Quality Assurance*, vol. 24, no. 1, pp.57-66, 2011.K.
- [3] S. Sarasota, *Health Management Technology*, vol. 15, no. 6, 1994..
- [4]] J. Chen, W. Su, P. Wang, H. Yen and Heidelberg, vol. 2, no. 1, 2019.M.
- [5] H. Sadler, "Enterprise Release Risk-Centric System Development and Maintenance Life Cycle," *Journal of Software Quality*, 2021.
- [6] G. Stern, *Biomedical Instrumentation & Technology*, vol. 52, no. 6, 2022.