The Role of Management Information Systems in the Healthcare Industry in E-Health and E-Hospital Programs

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Abstract. This study aims to determine the role of management information systems in the health industry in e-health and e-hospital programs. In the era of globalization, technological developments have had an impact on business progress, including the health industry. E-health and e-hospital as one of the internet-based technology applications require strategies to improve business efficiency and productivity. This study uses a qualitative method with a descriptive approach and a literature study method. The results of the study indicate that E-Health and E-Hospital services can make it easier for people to access health services easily and efficiently. It is hoped that in the future it can provide more complete services, such as adding several Hospitals and Health Centers to its website, giving customers access to the various Hospitals they need.

Keywords: E-Health, E-Hospital, Healthcare, Management Information System.

BACKGROUND

There is an increasing demand for healthy lifestyles among people due to increasing health awareness and access to health-related information. Computerization is now essential to meet the demands of such healthcare services. Therefore, to facilitate human activities, developers have created a web-based hospital management information system (Sudarmadji, 2023).

Social media, health, and mobile health (m-Health) applications are some examples of software systems that use a lot of information today. For the past few years, most people have been using old computers to access social media networks (Faeni, 2024). However, the increasing use of smartphones and applications to access networks has enabled Pandora's Box to store various information, such as location, movement information, health information, and activity information.

Initially, only basic information such as IP address, software, and browser version were collected, and no additional activity information was collected. In contrast, applications on today's smartphones continuously monitor users by collecting information about their location and movement. This allows them to identify the physical and psychological conditions of users,

for example, to find signs of depression and predict the next depressive episode. may be the place.

Among the service industries in the world, healthcare ranks top in terms of priority and is a magnet for large investments that are experiencing rapid growth in most countries (Faeni et al., 2023). To overcome these obstacles, innovations such as E-Health and E-Hospital were created (Yuanita & Asmar, 2022).

The emergence of internet technology and modern health technology opens up new opportunities to unite various health information systems, public health services, and the business world. This connection allows for closer cooperation and synergy between various parties in advancing public health (Setianto, 2016).

E-Health, or electronic health, is present as a transformative force capable of revolutionizing the health industry globally. Supported by the use of information and communication technology, e-Health opens up opportunities to improve infrastructure, reduce costs, and optimize the quality of health services throughout the world (Sanna et al., 2011).

According to Law No. 36 of 2009 concerning health, the use of information technology in the health sector in Indonesia must be carried out through sector systems and information systems to carry out effective and efficient health efforts. In Indonesia, hospitals, governments, universities, private companies, and telecommunications service providers have worked together to implement E-Health (Juwita, 2021).

Government hospitals in Indonesia have entered the digital era by starting to adopt SIMRS. The implementation of SIMRS marks a step forward in improving the quality and efficiency of health care for the community (Faeni, 2024). Although currently still used for the needs of E-KTP (electronic identity cards), this technology can help E-Health by storing brief health data of E-KTP holders (Rahmawatia et al., 2023). The formulation of the problem, based on the current situation, is as follows:

1. How are E-Health and E-Hospital implemented?
2. What are the benefits of E-Health and E-Hospital?
3. What are the components of E-Health and E-Hospital?
4. What are the forms of applications of E-Health and E-Hospital?

THEORETICAL STUDY

Management Information System

Various aspects (MIS) include the collection, storage, processing, and dissemination of information relevant to management. Management Information Systems (MIS) act as a vital bridge connecting information with decision making. Its function is to help managers make the right, effective, and efficient decisions to achieve organizational goals. Many areas of management use MIS, such as HR, finance, production, marketing, and others. MIS can also be combined with other systems to facilitate information management, such as Enterprise Resource Planning (ERP) and Customer Relationship Management (CRM) (Wijoyo et al., 2023).

The implementation of MIS increases productivity and efficiency, optimizes the use of resources, facilitates communication and coordination between departments, and increases the competitiveness of companies or organizations in the market.

Some important parts of MIS, which are interconnected and help organizations or businesses collect, process, store, and share the information they need, namely, input, process, output, database, hardware, software, and personnel. All of these are Management Information Systems (MIS) which consist of several key elements that work together to achieve the goals and functions of the system optimally (Saprida & Nasution, 2023).

A robust management information system (MIS) is essential for healthcare facilities, like other businesses and industries, to organize workers, communicate with doctors, and assign responsibilities and tasks between employees. Hospital staff manage patient information, and a highly sophisticated hospital MIS is needed to keep patient data secure (Mokoagow et al., 2024).

This is because data is sensitive and even a small error can lead to major losses. A MIS, a web-based or cloud-hosted software, streamlines hospital operations by centralizing data from all departments, automating transactions, and facilitating routine management tasks. It also collects and stores information critical to hospital management, including patient data, contractor/supplier details, and employee records. This comprehensive system empowers hospital staff with digital tools to improve efficiency and manage the complexities of hospital operations. The speed of service at a healthcare facility is greatly influenced by computerized technology.

Healthcare Industry

Healthcare can be defined as a form of maintaining or improving health conditions through prevention, diagnosis, therapy, recovery, or healing of diseases, injuries, and other

physical and mental problems. Medical personnel and support personnel provide medical services, such as doctors, dentists, nurses, midwives, pharmacists, and their assistants in primary, secondary, and tertiary health facilities, as well as public health (Suyanto et al., 2015).

Basic health services are known as primary, outpatient, and emergency care. Emergency, preventive, rehabilitative, long-term, hospital, diagnostic, primary, palliative, and home care options are available. The goal of health services is to make health services easily accessible, high-quality, and patient-centered. Mental health care, dental care, laboratory and diagnostic care, substance abuse treatment, preventive care, physical and occupational health, nutritional support, and pharmaceutical care are other types of health services (Linda Sari Siregar & Oktavinola Kaban, 2017).

Many things need to be considered to improve public health. Organizing health services is a very important role for one of them. Health services are defined as all actions taken by organizations, either individually or collectively, to maintain and improve health, prevent and treat disease, and restore the health of individuals, families, groups, and communities (Sutrisna, 2015).

RESEARCH METHODS

This study uses a qualitative method with a descriptive approach and a literature study method. Qualitative methods are used to understand and analyze the role of management information systems in the health industry in e-health and e-hospital programs. Data were collected from various sources, including journals, books, articles, and documents related to management information systems and e-health and e-hospital. Data collection techniques used include literature studies and analysis of relevant documents.

RESULTS AND DISCUSSION

Utilization of SIM in Healthcare Industry on the E-Health and E-Hospital

The World Health Organization (WHO) defines e-Health as the use of low-cost and safe ICT to support various aspects of health.

E-Health, also known as electronic medicine, describes how information and communication technologies are used to handle diverse medical data for administration, education, and clinical services such as diagnosis or therapy. Through data connections, people can conduct transactions in E-Health directly. Although not all tasks can be done systematically, many things make people's lives easier, such as booking a doctor online, joining an online forum to ask a doctor about health problems, and so on.

E-Health is closely related to improving the health and well-being of individuals, families, and communities through the use of communication and information management.

E-Health is a term that Harnesses the power of data and communication to advance health services and its related fields, which include health services, surveillance, literature, education, knowledge dissemination, and research initiatives. E-Health is a Digital Platform for Health Services and Information.

E-Hospital, a hospital management system, implements ICT-based workflow solutions. This application uses information and communication technology to provide information related to hospitalization. E-Hospital is integrated with medical electronics, hospital computer network, job system for professionals, forming a comprehensive information system.

Features available in E-Health and E-Hospital

1. At E-Hospital in Government and State-Owned Enterprise Hospitals (Dharmais Cancer Hospital), Patients can register quickly and easily, so they can receive examinations as soon as possible. because they can directly enter their identities online during the registration process.

2. E-Health was launched in 2014 coinciding with National Health Day and the 69th Heroes' Day, Mrs. Tri Risma Harini, the Mayor of Surabaya, felt sad about the long queues at Surabaya health facilities which seemed to worsen the condition of patients. This condition encouraged the formation and operation of E-Health in Surabaya.

3. At ehealth.surabaya.go.id/pendaftaran, E-Health is designed multilingual, supporting Indonesian, Javanese, and Madurese to reach a wider community.

4. Patients and the public can register at E-Health Surabaya to avoid queues at government health services.

5. Patients can choose the language of instruction to be used during the registration process.

6. How to register at E-Health is very easy. Patients choose the services they need. RSUD Bhakti Dharma Husada and RSUD dr. M. Soewandhie is an available hospital. The health center is selected based on the division of the city of Surabaya. Patients choose the type of registration based on their population status, namely whether they are residents of Surabaya or not. Furthermore, patients decide on a polyclinic or clinic based on the Medical services they want. Patients are given instructions on how to fill in the data according to the type of population they choose. Patients fill in the NIK of patients with Surabaya ID cards and then select "take a queue number" after data

verification appears. After that, the queue number printing system ensures that patients are present at the scheduled time.

E-Health, E-Hospital, and SIMRS Benefits

The effective implementation of E-Health, E-Hospital, and SIMRS can bring positive transformation to the world of health, improve service quality, and provide a better experience for patients and medical personnel. E-Health brings many benefits to patients, medical personnel, and healthcare institutions, including:

1. Improving Accuracy and Efficiency of Services:

   a. Preventing medical errors: Accurate electronic medical records help doctors make the right diagnosis and treatment.

   b. Speeding up administrative processes: The use of technology streamlines the process of patient registration, scheduling, and medication management.

   c. Easing the dissemination of health information: The wider community can access accurate and up-to-date health information through the E-Health platform.

2. Improving the Quality of Health Services:

   a. Facilitating communication: E-Health improves communication and collaboration between medical personnel, so that patients receive more comprehensive care.

   b. Supporting decision-making: Centralized patient data helps doctors make more precise, data-based decisions.

   c. Enabling patient monitoring: E-Health allows real-time monitoring of patient conditions, so that doctors can detect changes and provide early intervention.

E-Hospital offers various benefits to hospitals and patients, including:

1. Improving Efficiency: E-Hospital speeds up administrative processes, reduces patient waiting times, and improves overall hospital operational efficiency.

2. Improve Service Quality: E-Hospital helps hospitals provide better services to patients, such as easy access to medical information, better communication with medical staff, and a more comfortable inpatient experience.

3. Improve Patient Data Security: E-Hospital implements a strict data security system to protect the confidentiality of patient information.

4. Facilitate Decision Making: E-Hospital provides data and analysis that helps hospitals make better decisions regarding operations and services.

SIMRS provides many benefits for hospitals and patients, including:

1. Efficient Patient Data Management: SIMRS allows centralized and easily accessible storage of patient data, so doctors can easily view patient health history.

2. Improve Accuracy of Diagnosis and Treatment: Easy access to complete and accurate patient data helps doctors make more precise diagnoses and treatments.

3. Improve Operational Efficiency: SIMRS streamlines the process of administration, patient registration, and drug management, thereby improving hospital operational efficiency.

4. Improving Service Quality: SIMRS helps hospitals provide better services to patients, such as easy access to medical information, better communication with medical staff, and a more comfortable inpatient experience.

5. Improving Patient Data Security: SIMRS implements a strict data security system to protect the confidentiality of patient information.

E-Hospital and E-Health Constraints

1. Providing optimal e-services requires integration of operations across all sectors. Hospitals often face data that is difficult to access, which is a major problem in this regard.

2. A stable network is required to access.

CONCLUSIONS AND RECOMMENDATIONS

From the discussion above, it can be concluded that E-Health and E-Hospital services can make it easier for people to access health services easily and efficiently. Can provide more complete services, such as adding several Hospitals and Health Centers to its website, giving customers access to the various Hospitals they need.

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