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## **Evaluation of the Implementation of Hospital Management Information System at Yowari Public Hospital, Jayapura Regency, Papua Province**

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### **Abstract**

**Background:** As a health-care provider unit, the hospital must be able to set strategic policies for its internal structure in terms of management and human resource development. Hospitals are required to create a hospital management information system to assist the health-care process. **Objectives:** The goal of this study was to evaluate how far the progress of the implementation of the Management Information System at Yowari Public Hospital in Jayapura Regency in 2022. **Methods:** This type of research is descriptive qualitative by conducting in-depth interviews and documents review in November 2022 till January 2023. The research informants consisted of 13 informants (1 key informant, 6 main informants and 6 additional informants) chosen by purposive sampling. Data then analyzed qualitatively. **Result:** The findings of this study indicate that the process of evaluating the implementation of the hospital management information system at the Yowari Public Hospital, Jayapura Regency, from the input, process, and output aspects, has not been running effectively, both in terms of human resources, application use, and the quality of health services provided to patients. According to the findings of this study, there is still a need for commitment, monitoring, and development of human resources in the implementation and operation of the application.

**Keywords:** Evaluation; Hospital Management Information Systems.

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## **1. Introduction**

Hospitals are institutions that provide health services to the community, with management processes that necessitate a large amount of data and information flowing throughout the service process. In today's digital-based information development period, healthcare institutions must be able to increase performance and competitiveness as a corporate entity while not decreasing the social and humanitarian mission that is carried out and is the primary responsibility [1].

As a health-care provider unit, the hospital must be able to set strategic policies for its internal structure in terms of management and human resource development. As a health-care institution, hospitals are required to create a hospital management information system to assist the health-care process [1, 2].

The hospital management information system implementation is a computer system that processes and integrates all process flows in the health care industry through coordination networks, reporting, and administrative procedures in order to collect information quickly, precisely, and reliably. The hospital computer-based hospital management information system aids in hospital operational management. This is outlined in Article 2 of the Regulation of the Ministry of Health of the Republic of Indonesia No. 82 of 2013, which states that hospital management information system intends to increase efficiency, effectiveness, professionalism, performance, access, and hospital services [3].

Some of the issues that frequently arise from the mechanism for implementing hospital management information systems in Indonesia are duplication of data and activities, data quality that does not meet requirements, inaccuracies in reporting time, feedback that does not work optimally, low information utilization and non-optimal resources [1, 2]. Number of studies done in Australia in 2013 demonstrated that many nations across the world utilize hospital management information systems to develop health-care policies; therefore political policies cannot modify the health-care management system in hospitals. Many issues and obstacles that occur in the usage of hospital information management systems, however, include a lack of investment and advice in the form of advocacy and a priority in building hospital management information systems [1, 2]. This differs from the findings of Nicola Hodge (2015), who discovered that numerous underdeveloped nations already have health information, particularly in hospitals that are strong enough or have an effective system [4]. This is because every country requires accurate and timely information, particularly in health care. It will impact policy and can be deadly to health care planning choices if no investment is made in a hospital management information system [5, 1].

Presently, Indonesia has mandated that some areas create technology-based health service technology, particularly hospital management information systems. Indonesia adopts information processing linked to health service information storage, retrieval, sharing, and usage for major communication and decision making. Nonetheless, it cannot be denied that a lack of person understanding of how to utilize technology is a significant impediment to the introduction of hospital management information systems. In response to technological obstacles, Papua Province created and executed this matter. Numerous hospitals, both public and commercial, have developed a hospital management information system program as a means of developing effective and

efficient information and as a foundation for making choices about patient services. This information system has been deployed in around 8 government and commercial hospitals, however it cannot be disputed that it has not been working efficiently due to many hurdles such as human resources, device connections, and so on. Yowari Hospital, a government-owned hospital of category C located in Jayapura Regency, has also created a hospital management information system. Yowari Hospital's efforts to stay up with the newest scientific and technology breakthroughs will begin in 2021 with the Hospital Management Information System Khanza application, which is easier to use and comprehend for hospitals, health centers, and clinics. The present form of implementation at the Yowari Public Hospital in Jayapura Regency is planned to link to all service units, although the Hospital Management Information System is only operational in the Outpatient and Inpatient Units. Based on this dilemma, the research sought to determine how far the evaluation process for the implementation of the Hospital Management Information System at Yowari Public Hospital, Jayapura Regency has progressed.

**2. Methods**

The research method employed was qualitative, with a narrative approach. This method is used to determine how far the hospital management information system installation at Yowari Public Hospital in Jayapura Regency has progressed and if it is feasible for evaluation. This study was carried out to collect data and facts from the field. Data was collected through in-depth interviews and then analyzed qualitatively. This research was carried out at the Yowari Public Hospital, Jayapura Regency for 3 months from November 2022 to January 2023. The informants were selected using a purposive sampling technique, they are: 1. Key informants was the director of the Yowari Regional General Hospital (RSUD), Jayapura Regency; 2. Main informants were 6 people consisting of the Head of the Hospital Management Information System section, the Head of the Medical Record Unit, the Head of the Finance Section, the Secretary of the BPJS health insurance, the Head of Administration, and the Person in Charge of the Pharmacy Installation; and 3. Additional Informants totaled 6 people who were staff in each service unit at the Yowari Public Hospital, Jayapura Regency. The list of the informants can be seen in Table 1.

**Table 1:** The characteristics of Informants based on Age, Gender, and Position.

No.	Initial	Age (years)	Gender	Position	Level of Informant
1.	PMR	53	Female	Director	Key informant
2.	WW	42	Female	Head of the hospital management information system	Main informant
3.	EKO	23	Male	Head of the Medical Record Unit	Main informant
4.	WWN	41	Male	Head of the Finance Section	Main informant
5.	SY	53	Female	Secretary of the BPJS health insurance	Main informant
6.	SGB	45	Male	Head of administration	Main informant
7.	ND	41	Female	Postpartum room staff	Additional informant
8.	MLY	52	Male	Head of radiology	Additional informant
9.	NM	41	Female	Head of the laboratory	Additional informant
10.	RT	38	Male	Head of the operating room	Additional informant
11.	RN	45	Female	Head of pharmacy	Main informant
12.	LRY	42	Female	Head of nutrition	Additional informant
13.	TT	36	Male	IT Staff	Additional informant

### **3. Results**

The research findings were obtained through interviews, observations, and document inspection. These three processes are meant to assess the extent to which the hospital management information system is being implemented at Yowari Public Hospital in Jayapura Regency. The evaluation of the hospital management information system is anticipated to offer feedback on the future process of deploying information systems.

#### **3.1. Input**

##### **3.1.1. Human Resources**

In accordance with the results of informant interviews, the hospital management information system was implemented at the Yowari Public Hospital in Jayapura Regency. The informant's statement indicating that basically all of the hospital's human resources had received socialization and some had obtained training indicated this.

##### **3.1.2. Hospital Management Information System**

The results of the interviews and observations show that all Hospital Management Information System applications have been installed in each service unit. Some of the obstacles encountered are because the Hospital Management Information System is currently an application that is difficult to apply by all units and the application cannot fully synchronize properly such as BPJS health, finance, and several other hospital management supports. There are numerous different statements in which the inpatient and outpatient units of the Hospital Management Information System application can already be used, even though that they have not been able to run effectively because they are not connected to the Hospital Management Information System application in the hospital service unit. The Hospital Management Information System program has been implemented in hospitals since 2021, but several units still do not understand how to operate it, resulting in only outpatient and inpatient care having implemented.

##### **3.1.3. Financing**

In terms of the financial mechanism for the deployment of the Hospital Management Information System, the Yowari Public Hospital in Jayapura Regency has developed an operating budget each year. This money is set out for human resource training, contract renewals for application usage, software maintenance, and other purposes. Based on the findings of the interviews, it is possible to infer that the hospital has a Hospital Management Information System finance system for acquiring software, computers, maintenance, human resource training, and other items. This budget, however, is not specified every year.

##### **3.1.4. Regulation**

According to the findings of the interviews and document review, there were no specific regulations on the implementation of the Hospital Management Information System at the Yowari Public Hospital in Jayapura Regency, both from the hospital and the Regional Government. There are no regulations for the implementation

of Hospital Management Information System at Yowari Public Hospital. This is based on the findings of interviews, which reveal that there are no regulations related to Hospital Management Information System both internally and externally.

### **3.2. Process**

#### **3.2.1. Use of the Hospital Management Information System**

According to the findings of informant interviews, the usage of the Hospital Management Information System did not go smoothly. Some of the issues that occur from the usage of this Hospital Management Information System are related to its complexity, and the connection mechanism from one service unit to another cannot be correctly connected. It is possible to infer that the Yowari Public Hospital's Hospital Management Information System has not gone as planned.

#### **3.2.2. Organizational Structure of the Hospital Management Information System**

According to the findings of interviews and document reviews, Yowari Public Hospital has an organizational structure for implementing Hospital Management Information System, with the Director of the hospital as the main person in charge of Hospital Management Information System and the executors being the Head of Sub-Division of Medical Records and the Hospital Management Information System. It is supported in its execution by the Hospital Management Information System Administration Manager and the Installation and Hardware Manager. The primary responsibilities of the Head of Medical Records and Hospital Management Information System are to plan activities for Yowari Public Hospital's Management Information System, coordinate activity implementation in each Hospital Management Information System implementation unit, and monitor and evaluate activity implementation in the Hospital Management Information System work unit.

#### **3.2.3. Monitoring System for Hospital Management Information System**

The monitoring system was established based on the results of informant interviews; however it has not been functioning successfully. Monitoring actually occur only once a year in 2022.

### **3.3. Output**

#### **3.3.1. System Quality**

The quality of the application systems employed must be matched with support for the installation of information systems. According to the findings of informant interviews, the Hospital Management Information System at Yowari Public Hospital employs the Hospital Management Information System Khanza application, which is essentially a free application but is unable to suit the hospital's needs.

#### **3.3.2. Quality of Information**

According to the findings of interviews and observations with numerous informants, this Hospital Management Information System was still being built for the internal scope before it reached the external environment stage,

in this case, health care customers.

### **3.3.3. Service Quality**

Talking about service quality is strongly intertwined to the information obtained by service users. For the time being, the implementation of Hospital Management Information System has been able to assist the service process, particularly outpatient care, where patients who previously had to wait 15-20 minutes may now wait 5 to 10 minutes.

## **4. Discussion**

### **4.1. Input**

The Hospital Management Information System is a system that integrates the whole hospital management process, beginning with service and ending with regulation. The Hospital Management Information System's goal is to improve a hospital's efficiency, effectiveness, professionalism, performance, access, and services [1].

The implementation of Hospital Management Information System cannot be separated from the input factors that provide the basis for the system's implementation. In terms of Human Resources, Yowari Public Hospital has carried out socialization on the implementation of Hospital Management Information System at the hospital and provided the opportunity for 2 (two) of its staff, namely the Head of Medical Records and IT, to participate in Hospital Management Information System training. On the basis of the results of interviews and observations with informants, Yowari Public Hospital has provided training and outreach in the implementation of the Hospital Management Information System at Yowai Public Hospital, Jayapura Regency.

According to the Minister of Health of the Republic of Indonesia Number 82 of 2013, in article 10 paragraph (3), hospitals must improve their human resource capabilities through education and training, as well as technical assistance, in order to organize a quality, effective, and efficient Hospital Management Information System [3]. The findings of this study are consistent with the findings of Salis and Jepisah's (2022) research on "Management of Management Information Systems at Dumai City Hospital in 2021," which revealed that in order to improve one's skills in their field, particularly in implementing management information systems in hospitals, one requires development and training [6].

This assertion is supported by the research of Aini, and colleagues and colleagues (2022), who revealed in his research on "Strategy for the Development of Hospital Management Information System Transformation (SIM-RS) at RUSD dr. Iskak Tulungagung" that one of the obstacles in implementing management Information System in hospitals was a lack of knowledge and skills of human resources in implementing the system [7]. To prepare for this, hospitals must be able to monitor development or hire skilled operators capable of operating the Hospital Management Information System in hospitals so that the Hospital Management Information System may function and be carried out properly in hospitals.

Apart from human resources, Hospital Management Information System, in this case, the application, has a significant impact on the implementation of Hospital Management Information System in hospitals. According

to the findings of the interview, the Hospital Management Information System application has been around for a long time and has been installed in Yowari Public Hospital, Jayapura Regency, but it is considered complicated, has not met the needs of the hospital, and cannot yet be connected to BPJS services. This is seen as ineffectual in the installation of a Hospital Management Information System.

This study contradicts the findings of Rusdiyanti (2021), who discovered that the development of applications used by hospitals that can be temporarily connected with all service units in the hospital according to the needs of hospital management greatly influenced the implementation of Hospital Management Information System [8]. This begins when the patient enters the hospital and continues until the patient leaves. Apart from that, the adoption of a Hospital Management Information System is supposed to offer users with exact and reliable information regarding health services [9].

Talking about the implementation of a Hospital Management Information System from the input viewpoint is strongly intertwined to the financing aspect. The most significant part of this is finance, because every implementation of the hospital management information method needs funds. According to the findings of informant interviews and document assessments related to the implementation of the Hospital Management Information System at Yowari Hospital, funding is being prepared to meet the needs of computers, software, Hospital Management Information System applications, and maintenance. The budget, however, cannot be forecast every year.

A binding regulation or policy is required to guarantee consistency in the sustainability of the Hospital Management Information System. These regulations or policies can be implemented internally through the director's policies or externally through regional regulations. Nevertheless, according to the research findings, there were no norms or policies that were binding both internally and externally in the implementation of the Hospital Management Information System at Yowari Public Hospital.

This study contradicts the findings of Mohi and colleagues (2022) on "Quality of Administrative Services Based on the Implementation of Hospital Management Information System in Gorontalo Regency," which found that in order to support the implementation of a quality and accountable Hospital Management Information System, hospital institutions must have standard policies in place [10].

The input findings for the evaluation of the hospital management information system implementation at Yowari Public Hospital, only take place in 2022. Based on observations and interviews with informants, this is not consistent with what is expected. So that there is a need to improve a good management mechanism, it may begin with human resources to establish rules, which will serve as the foundation for providing good, effective, and efficient services to patients.

If we already have well-trained human resources in all units, applications that support hospital demands, suitable financial mechanisms, and accountable regulations, the unit connection and cooperation system for health services will be properly and effectively implemented. This will also simplify and lessen the workload of health personnel when it comes to reporting.

#### **4.2. Process**

Regardless of the input factor, the Hospital Management Information System management mechanism still needs development; over the course of this research, several items required renovation. This study procedure begins with the use of the application. According to the interview results, the Hospital Management Information System program has not been functioning efficiently. Some of the challenges found were the usage of programs that were regarded sophisticated or difficult to use and poorly understood by some units, despite the fact that this was strongly tied to the input element, especially human resources, which still had lazy habits or didn't want to know [11].

According to research performed by Mohi and colleagues (2022), the Hospital Management Information System is the most significant component in achieving hospital sustainability, particularly in the process of recording and reporting. The obstacles that are frequently encountered during the implementation process of the Hospital Management Information System are due to the increasing development of science and technology through computer software applications, which makes it difficult for most people to apply the Hospital Management Information System and causes some officers to continue using the manual mechanism [10].

These are the most difficult conditions to treat in hospitals. This is due to the fact that a manual method might cause the recording and reporting process to take a lengthy time. Apart from that, it is a problem to develop hospital policies.

To anticipate some of the challenges associated with the implementation of Hospital Management Information System at Yowari Hospital, Jayapura Regency, the Director has established an organizational structure for the implementation of Hospital Management Information System and Medical Records at Yowari Hospital. The person in charge of implementing the Hospital Management Information System is directly led by the director by appointing the Head of Medical Records and Hospital Management Information System as the main executor, who is assisted by the administration system and the use of installations and hardware in each hospital service unit.

According to the findings of the interviews, the Hospital Management Information System organization is doing well. Notwithstanding the fact that the monitoring system has proved ineffective. According to some of the findings of informant interviews, monitoring will only be done once in 2022. The monitoring findings also did not get any response from the unit's leadership or person in charge regarding the unit's limits in adopting the Hospital Management Information System.

According to Dewi's (2019) research, there must be a well-coordinated implementation mechanism in the process of adopting Hospital Management Information System, ranging from coordinating Hospital Management Information System implementation through employing Hospital Management Information System to a continual monitoring process [12]. Excellent organization strengthens policymakers' responsibilities to establish and ensure the smooth operation of Hospital Management Information System in hospitals. If Hospital Management Information System is used effectively, the system for recording, reporting, and policy

making becomes more effective and efficient; nevertheless, this cannot be divorced from the person in charge's responsibility for monitoring the Hospital Management Information System application system's implementation in each unit [13].

There will undoubtedly be many obstacles in the process of implementing Hospital Management Information System, particularly if human resources is unable to use and utilize the application. However, with a well-coordinated monitoring system, the Hospital Management Information System process can be evaluated annually with satisfactory results and provides quality information to users of hospital services.

#### **4.3. Output**

The final result of Hospital Management Information System's initial installation at Yowari Public Hospital in Jayapura Regency is the predicted outcome of the Hospital Management Information System assessment procedure. When we talk about output, we mean output that serves to offer an overview or represent the outcomes of the input and what operations have been performed.

The quality of systems, information, and services is the outcome of the Hospital Management Information System evaluation at Yowari Public Hospital in Jayapura Regency. According to the findings of the interviews, these three components have not been able to function as successfully as service providers and consumers had hoped. This is proven by police who continue to find the Hospital Management Information System program difficult to grasp and time consuming, causing their work to take longer; the information collected by users is solely internal in nature, relating to road maintenance and hospitalization. Hence, it is possible to infer, in detail, that the Hospital Management Information System evaluation at Yowari Public Hospital did not go as planned.

Agustina and colleagues (2018) discovered that when evaluating a hospital management information system, a quality method is required in using the hospital management information system application so that the information needed by service users related to the hospital is more easily obtained and accessible in general so that service users get accurate information about the services they want to receive as users [14]. As a result, it is possible to infer that system quality, information quality, and service quality all have an impact on hospital organization in terms of data accuracy and policy formulation [15].

### **5. Conclusion**

The following conclusion based on the findings of this study: the process of evaluating the implementation of the hospital management information system at the Yowari Public Hospital, Jayapura Regency, from the input, process, and output aspects, has not been running effectively, both in terms of human resources and the use of applications, as well as the quality of health services that are provided to patients.

#### **5.1. Input**

Yowari Public Hospital in Jayapura Regency implemented the hospital management information system. Almost all of the hospital's staff had been socialized and trained. Since 2021, hospitals has implemented the

Hospital Management Information System program, but several units still don't know how to use it, limiting services to outpatient and inpatient. The hospital finances software, computers, maintenance, human resource training, and other items. This budget is not set annually. The Hospital Management Information System is unregulated.

## **5.2. Process**

The Hospital Management Information System was problematic. The complexity of this Hospital Management Information System causes challenges with service unit connections. Yowari Public Hospital's Hospital Management Information System may have failed. Yowari Public Hospital's Hospital Management Information System is managed by the Director and executed by the Chief of Sub-Division of Medical Records and HMIS. The Hospital Management Information System Administration Manager and Installation and Hardware Manager execute it. The Chief of Medical Records and Hospital Management Information System plans, coordinates, and monitors Yowari Public Hospital's Management Information System operations. The monitoring system has failed. 2022 monitoring occurs once a year.

## **5.2. Output**

Yowari Public Hospital uses the free Hospital Management Information System Khanza application, which doesn't meet the hospital's demands. Before reaching health care clients, this Hospital Management Information System was being constructed internally. Hospital Management Information System has improved outpatient treatment, reducing wait times from 15-20 minutes to 5-10 minutes.

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