

Conference Paper

Analysis of the Management Information System Application Related with Service Data at Hajj Regional General Hospital of Makassar

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Abstract

This study analyzes the information system at the Hajj Regional General Hospital of Makassar as a service that is needed for both professional health workers and the served community. The information is about service achievement targets, managerial strategic planning, efficiency and effectiveness of health services. This study aims to obtain information service data that will be utilized by a Management Information System (MIS) which includes computerization needs, information personnel, usage of computers and information system support. The research design is a descriptive survey which was conducted from July to August 2019 and data collection was performed by using questionnaires, observation and document review. The results of the study from 50 respondents showed that 29 respondents (58%) filled in basic data as service data information was very high and very complete (79.87%). Application of the hospital MIS based on the need for computerization and MIS personnel is very high, which are 88.87% and 89.96%. MIS has a great position and is more important in the hospital business industry due to service information is an indication of health service standards. Hospital MIS is an information system that performs all transaction management therefore information management has results in decision making by providing an indicator for the appearance of health services. One of its functions is to handle the recording of service costs, both for action and medication starting from outpatient care until the patient is discharged from the hospital. This research focuses on inpatient service data information that will be used as MIS, which includes computerization needs, information personnel, and the usage of computers and supporting information systems. Our study revealed that the application of MIS at Hajj Regional General Hospital of Makassar must be supported by the media of communication devices, application programs and human resources who have the profession in information systems and advice, the leadership and administrators that will improve the efforts of MIS which can be handled professionally to create an orderly administration, management and advance the quality of health services.

Keywords: Information Systems, Management, Service Data

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1. Introduction

The Hospital Management Information System (MIS) is aimed for achieving ordered administration as the effort to increase the efficiency of resource use which in turn to improve the quality of service. Hospital as a health service facility should be managed professionally. All things can run smoothly if an ordered administration is implemented based on accurate, fast, complete and understandable of hospital service information is.[1]

As the result of excessive government centralization, MIS focuses on data should emphasizes on interventions. Furthermore, the MIS gest more of burden, less utilized as an effective means of management. Meanwhile, the function of the hospital MIS should be more oriented towards the function of services in the hospital, this is not what many hospitals do. In the era of increasing competitive competition, hospitals must also be able to develop strategies. It is also hoped that hospital managers must study the philosophy, concepts, theories, empirical experiences and vision of the hospital.[2]

By realizing the need for information in management, at Hajj Regional General Hospital of Makassar is currently developing a Computerized Local Area Network-based Hospital MIS in several units but it always experiences problems and cannot function properly. Therefore, the prior applied information often does not function properly, then the manual system reapplied but there were problems in recording and reporting the documents by using the manual system which were not organized yet, scattered data were not well concentrated.[3, 4]

TABLE 1: Data collection, availability of computer technology and manpower Implementing technology at Hajj Regional General Hospital of Makassar, 2019

Installation	Data collection mechanism	Computer Technology Equipment	Technology Implementers
Outpatient	Daily census	There is no	There is no
Inpatient	Daily census	There is	There is no
Emergency	Daily census	There is	There is no
ICU	Daily census	There is	There is
ICCU	Daily census	There is	There is
Operating room	Registration	There is no	There is no
Birthing room	Daily census	There is no	There is no

Inpatient visit data for three years continues to increase / the trend is increasing. A significant increase in the number of patients treated has occurred in the last 3 years, in 2018 there was an increase in the number of patients treated by 1,195 and in 2019 there was an increase of 2,306 patients. This condition is caused by the addition of the number

of beds and health service policies. In line with this, the performance improvement is also indicated by the significant increase in the number of services for the average of monthly emergency visits, deliveries, and surgeries. Meanwhile, the average coverage of outpatient visits per month in the last three years has also increased.[3]

Based on the efficiency of the bed usage, the availability and Bed Occupancy Rate (BOR) are often below the standard, only in 2018 met the standard that was 68.32%. Likewise, for Internal Turn Over (TOI), the average length of empty bed or unoccupied for the last five years was always above the standard of 1-3 days, which is 4 days. This condition is related to the description of the use of beds at Hajj Regional General Hospital of Makassar that is still low, results in low hospital admissions, and wastes costs because the level of utility of the provided beds is below standard. However, the treated Long Of stay (LOS) and Bad Turn Over (BTO) have shown ideal values in accordance with the efficiency standards of bed utilization.[5]

1.1. Benefits of Hospital MIS Development

1. MIS Development: 1) Accurate data, less errors and less manipulation. 2) Front office system (data entered by each service unit) so that it is fast and always ready to use. 3) Transparency of time-to-time can be checked, analyzed or viewed according to the level of authority. 4) Improved service to patients (1) Patients enter (2) Patients (3) go home quickly (4) Cash out payments are fast (5) Long (6) queues are reduced (7) Patients can find out at any time the fees that should have been paid.[6, 7]
2. Hospital Medical Records, This module is useful for handling patient medical history data, such as Clinical History, Resume and Summary of Entry and Exit. The data format has been standardized in such a way as to help produce reports for the Ministry of Health[6]
3. Hospital Payment System, This module is used to handle the recording of service fees (actions & drugs) and payments for both inpatients and outpatients. Starting from registration (registration), costs incurred during treatment for inpatients, additional treatment costs for outpatients to the end of the payment. Billing for medical support services such as Radiology, Laboratory and Medical Rehabilitation is also included in this module.[6]
4. Very Fast Patient Data Search, the first service from the front desk / patient registration really needs to be considered a faster search for old patient data

and the creation of lists for new patients will affect the speed of medical services desired by hospital patients / consumers.[6, 8]

5. Various Reports Available, Diverse data in the Hospital MIS program are also supported by various types of reports. Recapitulation reporting is a hospital report that includes (a) Hospital activity data (b) Inpatient morbidity state data (c) Outpatient morbidity activity data (d) Hospital inventory data (e) Hospital personnel data (f) Hospital medical equipment data. [6, 9]
6. Hospital activity data in the form of the recapitulation form can be printed or sent by including the hospital's identity, name of the sender and information related to the recapitulation form.

Frame of mind

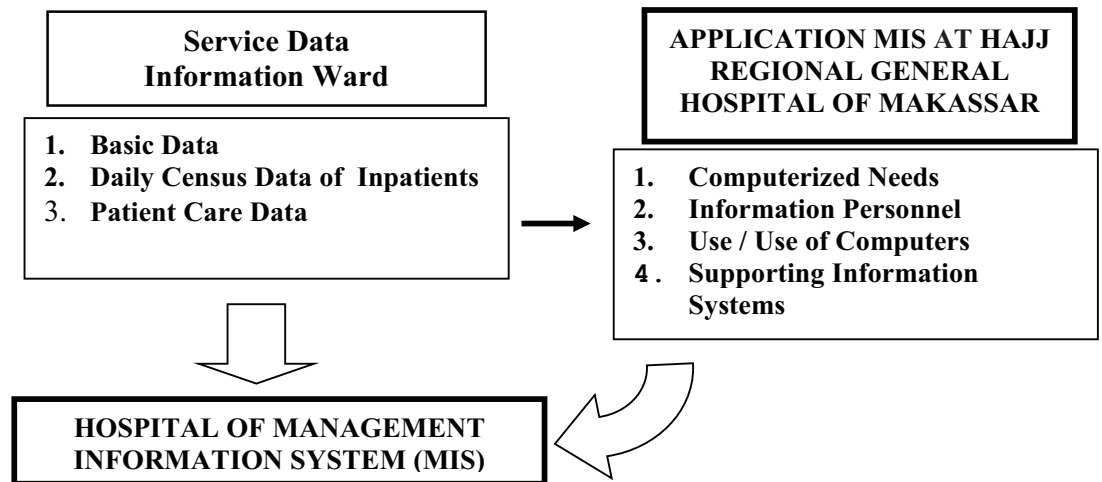


Figure 1

2. Methods and Equipment

Research Design, this type of research is a descriptive survey to obtain an analytical study of the application of Hospital MIS. This research was conducted at Hajj Regional General Hospital of Makassar in the Inpatient Room, from July to August 2019. This study used random sampling with purposive sampling technique of 50 people. Data Collection by using questionnaire. The use of a questions list distributed to respondents to find out the respondents' opinion on how to implement the Health MIS at Hajj Regional General Hospital of Makassar regarding service information. Each respondents' answer is scored. Very high answers are given a score of 4, Standard answers are given a score

of 3, Low answers are given a score of 2, Very low answers or no data are given a score of 1

Observation / Document Review Techniques was performed by directly observing the facts, especially the conditions in data centers in the Inpatient section and tracing documents / literature related to this study such as documents on the number of patients and other report data. Furthermore, the researchers collected and analyzed the form of the daily census reports.

3. Results

3.1. Basic data

TABLE 2: Distribution of Respondents based on Basic Data Information at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

BASIC DATA	SERVICE DATA INFORMATION				
	Very high	Standard	Lower	Very low	Total (%)
1. Fill in the basic data: day and date of the census activity	25 (50)	15 (30)	5 (10)	5 (10)	50 (100)
2. Fill in the type of space in the patient's daily census filling activity	28 (56)	13 (26)	5 (10)	4 (8)	50 (100)
3. Fill in the details: the number of the available beds	20 (40)	15 (30)	8 (16)	7 (14)	50 (100)
4. Fill in the number of initial patients according to the number of final patients (remaining patients)	29 (58)	14 (28)	5 (10)	2 (4)	50 (100)

The table above shows that the basic data information filled the number of initial patients according to the number of final patients (remaining patients) is very high as many as 29 respondents (58%) and overall basic data information at available, based on the results of the study shows data information. Service in very high category compared to other categories.

While the description of the results of the completeness of information on inpatient room service data, a qualitative percentage analysis is carried out in general as follows:

$$N = 4 \text{ Questions} \times 4 \text{ Items} \times 50 \text{ Respondents} = 800 \text{ all values}$$

$$n = 639 \text{ values generated from the respondents}$$

$$\text{Percentage} = 639 : 800 \times 100\% = 79.87\%$$

When categorized based on standard indicators, 79.87% is the category range 76% -100% (information on service data is very complete).

3.2. Daily Census Data of Inpatients

TABLE 3: Distribution of Respondents based on Information on Daily Census Data for Inpatients at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

DAILY CENSUS DATA OF INPATIENTS	SERVICE DATA INFORMATION				
	Very high	Standard	Lower	Very low	Total (%)
1. Fill in the name of the patient being treated and Medical Record	34 (68)	10 (20)	4 (8)	2 (4)	50 (100)
2. Fill in the type of maintenance class and its parts	27 (54)	15 (30)	4 (8)	4 (8)	50 (100)
3. Filling in the number of new incoming patients and transferring	26 (52)	15 (30)	4 (8)	5 (10)	50 (100)
4. Fill in the number of patients discharged from the hospital and transferred to another room	24 (48)	10 (20)	8 (16)	8 (16)	50 (100)
5. Fill in the data for the number of patients who died > 48 or <48 hours	30 (60)	15 (30)	3 (6)	2 (4)	50 (100)
6. Fill in the total number of patients out	29 (58)	13 (60)	4 (8)	4 (8)	50 (100)

The table above shows that as many as 34 respondents (68%) argued the service data information on daily census data for inpatients was very high category. Meanwhile the information filling in the data for the entire number of patients living and dying was in the standard category which as many as 13 respondents (60%) but overall Information on daily census data for inpatients shows that the service data information is in a very high category compared to other categories.

To get an overview of the completeness of service data information in general, a percentage measurement is performed: $\text{Percentage} = \frac{993}{800} \times 100\% = 82.75\%$

Therefore, the standard indicator is in the range of 76%-100%, which describes the service data information is very complete.

3.3. Patient Care Data

The table shows the results of as many as 26 respondents (52%) filling in the details of the number of patients remaining in the very high category including filling in the number of remaining patients who are still being treated and filling in the number of times the patients were hospitalized in the room as many as 23 respondents (46%). Furthermore, information on other inpatient room services is generally in the standard category based on the number of respondents in this study. To get a clearer picture, the following percentages as follows:

$$\text{Percentage} = \frac{631}{800} \times 100\% = 78.87\%$$

TABLE 4: Distribution of Respondents based on Information on Patient Care Data at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

PATIENT CARE DATA	SERVICE DATA INFORMATION				
	Very high	Standard	Lower	Very low	Total (%)
1. Fill in the number of times the patient was treated in the room	23 (46)	15 (30)	7 (14)	5 (10)	50 (100)
2. Fill in the number of patients entering and leaving the same day	20 (40)	17 (34)	7 (14)	6 (12)	50 (100)
3. Fill in the number of remaining patients who are still being treated	23 (46)	17 (34)	6 (12)	4 (8)	50 (100)
4. Fill in the details of the number of remaining patients of class	26 (52)	16 (32)	5 (10)	3 (6)	50 (100)

The 78.87% category scale in the category of service data information is very complete, it means that it describes the patient care data in the filled format in the Hospital Inpatient Room

4. Application of Hospital MIS

4.1. Computerized Needs

TABLE 5: Distribution of Respondents based on Information on Computerized Needs at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

COMPUTERIZED NEEDS	MIS APPLICATION				
	Very high	Standard	Lower	Very low	Total (%)
1. The need to fill in data in the daily census	34 (68)	16 (32)	0	0	50 (100)
2. The need to fill in data in BRM	38 (76)	12 (24)	0	0	50 (100)
3. Computerization in the room and its devices	24 (48)	21 (42)	5 (10)	0	50 (100)
4. The cost requirements for computer procurement are clear and consistent from the Manager	24 (48)	22 (44)	4 (8)	0	50 (100)

The table above shows that 48% of respondents though that the need for computerization is very high both for computerization in space and its devices as well as the cost needs in making a computer that is clear and consistent from the manager.

To determine clearly, the completeness of information on the application of the Hospital MIS, the following percentage measurements as follows:

$$\text{Percentage} = 711: 800 \times 100\% = 88.87\%$$

The percentage results above indicate the position of the category scale range in the size that the MIS implementation is needed.

4.2. Information Personnel

TABLE 6: Distribution of Respondents based on Information on Information Personnel at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

INFORMATION PERSONNEL	MIS APPLICATION				Total (%)
	Very high	Standard	Lower	Very low	
1. Nurses with the additional task of filling in the data into the daily census	32 (64)	14 (28)	4 (8)	0	50 (100)
2. Special power policy which has the following knowledge, namely Medical Records	28 (56)	17 (34)	3 (6)	2 (4)	50 (100)
3. There is a clear Standard Operating Procedures(SOP) in filling out patient service data	39 (78)	11 (22)	0	0	50 (100)
4. Personnel who are only responsible for maintaining and maintaining computer equipment	30 (60)	19 (38)	1 (2)	0	50 (100)

The table above shows that information personnel need a clear SOP in filling in patient service data as many as 39 respondents (78%) As many as 50% and above of all information staff respondents need the application of an information system because based on nurses with additional duties, the need for special personnel who have knowledge and personnel who are responsible for maintaining and maintaining information tools.

To get an idea of the application of computerized needs in inpatient rooms, it can be calculated:

$$\text{Percentage} = 717 \times 800 \times 100\% = 89.96\%$$

The measurement scale above with the results of 89.96% in the range of 76% -100% illustrates the application of the MIS required by the hospital, which is carried out by the information personnel.

4.3. Computer Use

Table of respondents' opinions regarding the use or use of computers as a form of application of the HospitalMIS provides the results of the use and utilization needs in the form of reporting, service audits and development of MIS in the very high category as showed by 38 respondents (76%) of the usage computer in Inpatient at Hajj Regional General Hospital of Makassar.

Furthermore, to find out the description of the completeness of service quality information, the percentage calculation is carried out as follows:

TABLE 7: Distribution of Respondents based on Information on the Use or Use of Computers at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

COMPUTER USE	MIS APPLICATION				Total (%)
	Very high	Standard	Lower	Very low	
1. Needs computerization with a network system to all parts of the room	34 (68)	14 (28)	1 (2)	1 (2)	50 (100)
2. Information needs across all sections including medical, nursing and manager services	33 (66)	16 (32)	0	1 (2)	50 (100)
3. The need for use and utilization in the form of reporting, service audits	38 (76)	10 (20)	2 (4)	0	50 (100)
4. Used directly by the patient with the result: satisfaction and guaranteed service	23 (46)	23 (46)	2 (4)	2 (4)	50 (100)

Percentage = $717 : 800 \times 100\% = 89.96\%$

The measurement scale of 89.96% is in the range of Service MIS in the hospital.

4.4. MIS Support

TABLE 8: Distribution of Respondents based on Information MIS Support at Hajj Regional General Hospital of Makassar, August 2019 (n=50)

SUPPORT OF MIS	MIS APPLICATION				Total (%)
	Very high	Standard	Lower	Very low	
1. Timeliness and accuracy in filling out the daily census format	37 (74)	12 (24)	1 (2)	0	50 (100)
2. The accuracy of time in sending service data to the Medical Record room	40 (80)	6 (12)	4 (8)	0	50 (100)
3. The need for data results and data display in the form of tables and graphics in the nurse's room to be informed	30 (60)	14 (28)	5 (10)	1 (2)	50 (100)
4. The need for managerial personnel as a form of action in decision making	27 (54)	20 (40)	3 (6)	0	50 (100)

The table above shows that according to respondents, the punctuality of sending service data to the medical record room were 40 respondents (80%) who argued that the support for MIS was very high, while those who thought that the timeliness and accuracy in filling out the daily census format were 37 respondents (74%) is a supporter of the MIS. For more details, the level of support for MIS can be calculated with the following percentage:

Percentage = $718 : 800 \times 100\% = 89.75\%$

The percentage result is based on the measurement scale that is set to be in the range of 75% -100%, which illustrates that the MIS application is urgently needed

5. Discussion

5.1. Filling in service data to describe the MIS

In writing data on each service activity unit, there are needs to be different at the level of the MIS in managing the results of the information such as the number and at least the number of patient visits as the information for the Front Office section but it is still in the form of data for the Resource manager. Because the information for resource managers is ratio analysis and for top management is about how bad the liquidity of the day. This difference in the nature of data and information must be recognized and explained to each of those who are concerned so that their position can be clearly defined.[10]

Learning basic information can be tedious because there has been little change in the past, but it's important to keep remembering us so we don't forget ourselves. Make sure that the MIS will show its benefits in a state of timesaving, cost saving, avoid duplication of work, and shorten processes. In addition, it is important to remember so that the MIS can process data into relevant information. Hospital MIS have a greater and more important position in the hospital business industry. If we look at the relationship between information for planning and informing for control with strategic, tactical and technical decision-making, it turns out that as a whole it requires information. MIS is an arrangement that deals with data collection, data management, presentation of information, analysis and conclusion of information as well as delivery of information required for hospital activities.[11]

By analyzing the application of the Hospital MIS, it can be seen that the data collection of a hospital is easy to carry out in an ordered administration. Effective control and supervision can be implemented if the hospital has information that is accurate, precise, complete, relevant, included in the format of the Hospital MIS which is easy to access[12]

5.2. Analysis of the Application of MIS

The development of a Hospital MIS should start with a continuous concentration of consistently considering the hospital's condition as zero. Start with where we are / start where we are, because maybe there are things that can be used. The things that need to be studied in this case include: 1) Network system as a line system, the program design mechanism used, Forms that must be set in the information system 2) Equipment: including computers and their devices 3) Implementing Personnel 4) Available funds.[13]

From the results of observations during the study, several obstacles come up from the information system developed in the inpatient service unit as a comprehensive service, namely the LAN system at Hajj Regional General Hospital of Makassar, including: 1) There was a congestion in the network of computer systems in service units and data access hard and very slow. 2) There is no system or Human Resources that can detect where the damage is occurred or network problems, so that it costs a lot if you consult with technicians / information technology personnel. 3) Adding a new computer network to the unit cannot. 4) There has never been training on operators in service units. 5) There is no overall coordination at the time of system design so that the data is not in accordance with what is needed in the service unit. 6) There is no guarantee or warranty from IT suppliers so that operations for less than one year have stalled. The treatment system is not clear. 7) No reliable programmer can solve IT problems[14]

6. Conclusion

The results of the analysis of Information Application System at Hajj Regional General Hospital of Makassar related to service data are: 1) Information on service data which includes Basic Data, Patient Daily Census Data and Patient Care Data shows that the average criterion is Very High, namely above 50% or above 26 respondents from 50 respondents which studied with the overall percentage of complete service data filling, namely 76% - 100%. 2) In the application of the Hospital MIS, which includes the need for computerization, information personnel, use or use of computers and support for the Management Information System, the standard criteria are very high and the results of the presentation of the measurement scale show that the application at Hajj Regional General Hospital of Makassar is needed.

Available communication media devices, hardware, computer, modem, Local Area Net Work network system, software, e-mail, application programs, and many hospital employees who can operate computer must support the application of the Hospital MIS. Constraints found in the application: Communication facilities or Internet networks are lack, IT human resources who specialize in MIS are not existed, software is not available in Makassar yet, so that if there are problems with IT equipment, it must be brought from Java, and other Human errors.

Suggestions

It is hoped that the leadership at Hajj Regional General Hospital of Makassar should pay attention, so that the Hospital MIS can be handled professionally in order to realize an ordered administration and increase the quality of service. It is expected the Management at Hajj Regional General Hospital of Makassar can make effective efforts to optimize the implementation of MIS through increasing attention to human resources in the field of IT, the need of incentives or special funds budgeted in planning the next fiscal year. The focus of the analysis of the Hospital MIS should be performed more in future researches, for the advancement of hospitals in Indonesia.

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