



Effect of Service Performance on Hospital Revenue Cycle Management in Central Java Province

Ir. Ahmad Gamal, SE, MM¹

Dr. Mahben Jalil, SE, MM²

¹University of W.R. Supratman Surabaya, East Java Indonesia

²University of Pancasakti Tegal, Central Java Indonesia

ABSTRACT

This study aims to determine how the influence of service performance (BOR and BTO) influences the hospital's Revenue Cycle Management in Central Java Province. Researchers focus on hospital finance in Central Java Province. Data is collected using secondary data that has been collected for analysis and used as a basis for decision making.

The data collected is accurate data, all sourced from hospital management data. In its implementation, secondary data is the main data that will be used as an analysis. The analytical tool in this study used to process data is descriptive analysis and multiple linear regression with the help of the SMART PLS version 3 software.

The results obtained indicate that service performance (BOR) has a significant positive effect on Revenue Cycle Management. Service performance (BTO) has a significant positive effect on hospital revenue management.

Keywords: service performance and *Revenue Cycle Management*

INTRODUCTION

Hospitals are non-profit oriented organizations or companies. Nonprofit-oriented companies usually use the income from services obtained to maintain operational continuity in order to continue to provide services to the community. According to Bastian (2008), a government hospital is a non-profit organization. A striking difference from this type of organization lies in the acquisition of funding sources. Government hospitals can obtain funds from the provincial / district or city (APBD) and funds from the Central Government.

Government hospitals that provide health services to the general public increasingly have an increasingly heavy burden. One of the problems that always arises is the difficulty in predicting the service needs needed by the community and the need for resources to support it. On the other hand the Hospital must always be ready at all times with the facilities, infrastructure, personnel and funds needed to support these services. In addition, the Hospital as a social unit is faced with increasingly difficult sources of funds to finance its needs. But on the other hand the Hospital is expected to work at a rate that is affordable to the wider community.

Changes in the Hospital's financial system and the Government's financial system as a whole are expected to fund managed by the Hospital will be greater and continue to increase in line with the increase in Non-Tax State Revenue (PNBP) and the preparation of the Public Service Agency from year to year. These conditions have a positive impact on service improvement, but also open up opportunities for the emergence of negative excesses of abuse in the management of state finances. This will have an impact on the decline in hospital financial performance. Therefore we need various efforts in overcoming it.

Based on these reasons, the hospital must make changes to hospital management, including financial management that can improve hospital performance, so that the financial performance of the hospital is in a healthy condition, able to compete and can provide quality health services according to community needs. It is necessary to reorganize hospital

management, including its financial management patterns, so that hospitals can operate more effectively and efficiently in the delivery of health services to the public, so hospitals need to be given the status of a Public Service Agency (BLU).

Related to the function of hospitals as health care institutions, many are determined by several factors. One of the most important factors is service in the inpatient unit. In this process the hospital management is expected to be able to manage the inpatient unit. The aspect that needs attention is the management of the patient's bed. Management of patient beds in hospitals requires hospital managers who are able to manage them professionally. A hospital manager needs to evaluate the efficiency of bed use for each class of inpatient unit.

The results of this evaluation can be used to relocate beds so they are not over loaded or have never been used. Hospital is a type C government hospital in Central Java Province. The storage system uses a decentralized storage system, which is a storage system by separating medical record documents on behalf of a patient between outpatient documents, emergency department documents, and inpatient documents in each in a separate folder or a separate room or place.

Based on research conducted by Singh and Wheeler (2012) concluded that there is a statistically significant relationship between periods of lower income and all four indicators of financial performance. This opinion is reinforced by research conducted by Fachri, Kartini, Hilmiana and Cahyandito (2017) with the results of the study which concluded that the institutional reputation of partnerships and hospitals has a significant effect on hospital performance both partially and simultaneously. Hospital reputation has a large impact on improving hospital performance when compared to institutional partnerships.

It is expected that with this status, the financial condition of hospitals will be healthier and services to the community will be better and the quality of health services will improve. So researchers are interested in researching with the title "Effect of Service Performance on Revenue Cycle Management (RCM) Hospital in Central Java Province.

LITERATURE REVIEW

Hospital

In general, hospitals based on their function of providing health services to the public are divided into several types:

1. General Hospital

Is a hospital that provides services to sufferers of various types of diseases, general medicine, surgery and so on. Usually have emergency care institutions that are on standby 24 hours to provide first aid

2. Specialized Hospital

Is a hospital that specializes in a disease that requires special treatment. Hospitals that can be categorized as specialized hospitals include trauma centers, children's hospitals, dental, elderly, etc. Usually these hospitals have affiliations with certain universities or medical centers.

3. Educational / research hospital

Is a public hospital associated with research and education activities in the medical faculty of an institution / university. usually used as a training ground for young doctors, trials of new drugs, or new treatment techniques

4. Hospital institutions / companies

A hospital established by an institution / company to provide health services to members of that institution / company

5. Clinic

It is a medical facility smaller than a hospital and only serves certain complaints. Clinics usually only accept outpatients and are run by nongovernmental organizations or doctors

who want to open a private practice. Collection of clinics called polyclinics.

Based on its ownership, hospitals in Indonesia can be divided into:

1. Government-Owned Hospital

The government-owned hospital is divided into a central government-owned hospital known as the Central Public Hospital (RSUP) and a hospital owned by the provincial and district or city government, namely the RSUD.

2. Hospitals in the form of Public Service Bodies (BLU)

BLU is an agency within the government that was formed to provide services to the community in the form of the supply of goods and / or services sold without prioritizing seeking profit and in carrying out its activities based on the principles of efficiency and productivity.

3. Private hospital

Is a hospital owned by an individual or legal entity. There are private hospitals owned by religious and humanitarian foundations or owned by companies.

Service performance

The function of providing hospital services (business) consists of sub-functions of medical services and non-medical services and the description is as follows:

1. Medical services which are divided into 3 (three) parts, namely:

a. medical services, namely services directly related to doctor services to the community.

b. Nursing services are services directly related to nursing services to the community.

c. medical support, namely services that function as supporters in improving the quality of health services to the community, namely:

1) medical support associated with patients

○ Pharmacy

○ Laboratory

○ Physiotherapy

○ Radiology

○ corpse screening

○ Central Sterile Supply Department (CSSD)

○ Operatie Khamer (OK)

○ Hemodialysis

○ Extracorporeal Shockwave Lithotripsy (ESWL)

○ Endoscopy

○ Echocardiography (ECG)

○ Nutrition

2) medical support that is not related to the patient

○ Installation of Maintenance of Hospital Facilities and Infrastructure (IPSRS)

○ Management Information Systems

○ Laundry

2. Non-medical services are services that function in improving the quality of hospital performance, but are not directly related to health services to the community, for example administration.

An indicator is a device that can be used in monitoring a particular process. Hospital service indicators that can be used to determine the level of utilization, quality, and efficiency of hospital services, among others (MOH, 2005):

1. Bed Occupancy Rate (BOR) is the percentage of bed use at a certain time unit used to determine the level of utilization of hospital beds. A low BOR rate indicates a lack of utilization of hospital care facilities by the community. A high BOR rate (more than 85%)

indicates a high level of utilization of beds that requires the development of hospitals or the addition of beds. Ideal parameter values between 60-85%.

2. Average Length of Stay (ALOS) is the average length of stay of a patient. Besides being used to measure the efficiency of ALOS hospitals, ALOS can also describe the quality of hospital services, if applied to certain diagnoses, it can be used as a matter for further observation. AVLOS values are ideal between 6-9 days.
3. Bed Turn Over (BTO): is the frequency of use of a bed in one period, the number of times a bed is used in one unit of time. Ideally, in one year, an average bed is used 40-50 times.
4. Turn Over Interval (TOI) is the average day when the bed is not occupied from being filled to the next time it is filled. The bigger the TOI, the more efficient the use of beds will be. Ideally, an empty bed is not filled in the range of 1-3 days.
5. Net Death Rate (NDR): net death rate, which is the death rate 48 hours after being treated for every 1000 patients discharged, is used to determine the quality of hospital services / care. The lower the NDR of a hospital means that the quality of hospital services is getting better. The tolerable NDR is less than 25 per 1000 discharged patients.
6. Gross Death Rate (GDR): the gross death rate is the general death rate for every 1000 patients discharged, used to determine the quality of hospital services / care. The lower the GDR means the better quality of hospital services. The GDR value should not be more than 45 per 1000 discharged patients.

Wirachjanto (2017: 35-36) Efforts made by hospitals in order to increase BOR:

1. Improve the quality of hospital services in all lines
2. Developing the quality and quantity of human resources and hospital infrastructure.
3. Innovating and developing superior service products
4. Hospitals through internal and external training, comparative studies
5. Continued evaluation of TT use
6. Optimizing the role of inpatient case managers
7. Optimizing the monitoring of empty beds by the duty manager and hospital admissions officer

Wirachjanto (2017: 37) Efforts made by the hospital in order to improve the achievement of BTO in accordance with the targets set:

1. Improve service quality in all lines.
2. Developing the quality and quantity of human resources and hospital infrastructure.
3. Refreshing the competency of the attending doctor
4. Ongoing evaluation of the competency of the attending physician
5. Improve patient and family education (PPK)
6. Increasing the role of home care in Surabaya Haji Hospital

Limitation in research for indicators of performance or efficiency of hospital services using BOR and BTO

Revenue cycle management (RCM)

Revenue Cycle Management is measured using two main financial indicators about the organization's ability to (1) generate and (2) collect patient income. Days in net receivables, also known as flat collection periods, are the most important financial measurement of hospital performance in managing revenue cycles (Berger, 2008). Calculated as a net patient account receivable times 365 days divided by net patient income, the average collection period illustrates the number of days of net patient income that the hospital has matured from the patient's bill after all income reductions.

In addition to the speed of revenue collection, Rauscher and Wheeler (2008) argue that an equally important indicator of revenue cycle management performance is the ability of hospitals to generate patient income by reducing revenue reductions and write-offs. We

measure the amount of revenue a hospital generates in relation to its assets as a mixture of hospital cases adjusted for net patient income divided by total assets. Scaling income by the mixed case index adjusts for differences in patient disease severity in the hospital. Expressing income as a percentage of total assets adjusts for differences in hospital size and thus differences in the volume of care provided

RESEARCH METHODS

This research uses primary and secondary data which are quantitative and qualitative in nature. Quantitative Data is data presented in the form of numbers or data that can be calculated in certain units. In this case the form of financial statements. Qualitative data is data that is not in the form of numbers, such as a general description of the company and other information needed for analysis. Primary data is data obtained through confirmation with hospital management. While secondary data is supplementary data obtained from the medical record unit, including data on recapitulation of hospital indicators for the period 2016 to 2018 and from the financial department, namely financial data including financial statements (balance sheet and income statement) for a period of three years, 2016 until 2018.

Multiple Linear Regression Analysis

Analysis of the effect of BOR (Bed Occupancy Rate) and BTO (Bed Turn Over) on revenue cycle management is carried out using multiple linear regression analysis approach (Ghozali, 2017).

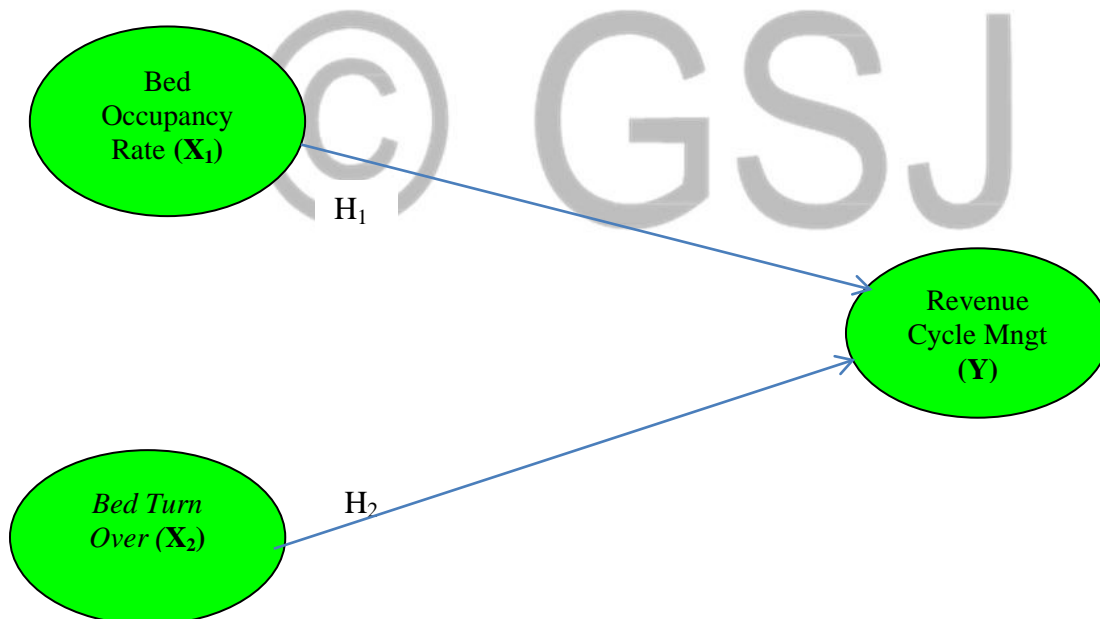


Figure 1. Multiple linear regression analysis

From this framework, it can be seen that service performance (BOR and BTO) are Independent Variables that can affect the parameters of the revenue cycle management as Dependent Variables.

Hypothesis testing

T distribution test (t test), t test is used to test the effect of each variable.

Decision making criteria t writing with t table:

- a. If $t_{\text{writes}} < t_{\text{table}}$, then H_0 is accepted. This means that the independent variable does not significantly influence the dependent variable

b. If $t_{\text{writes}} > t_{\text{table}}$, then H_0 is rejected. This means that the independent variable significantly influences the dependent variable

Criteria for making probability decisions (significance) with α 0.05:

a. if probability $> \alpha$ 0.05, then H_0 is accepted. This means that the independent variable does not significantly influence the dependent variable.

b. if probability $< \alpha$ 0.05, then H_0 is rejected. This means that the independent variable partially influences the dependent variable.

DISCUSSION

Hospital performance indicators are carried out by self assessment. The results of this assessment are used as material for monthly quality improvement meetings by the Hospital Directors and Medical Committee. The following are data obtained from the performance of the hospital inpatient services during the 2016-2018 period.

Table 1. Bed Occupancy Rate (BOR) of Hospital in 2016-2018

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
2016	12	57,08	61,77	59,7617	1,48462
2017	12	56,79	61,36	59,8450	1,27630
2018	12	57,08	61,77	59,8450	1,22394
Valid N (listwise)	12				

Based on Table 1, it can be seen descriptive statistics from the Bed Occupancy Rate (BOR) in each year 2106 to 2018. In 2016, it turned out that the lowest value was 57.08, while the highest value was 61.77 and the average value average of 59.7617 with a standard deviation of 1.277630. In 2017, it turned out that the one with the lowest value was 57.79, while the one with the highest value was 61.36 and an average value of 59.8450 with a standard deviation of 1.48462. In 2018, it turns out that the one with the lowest value is 57.08, while the one with the highest value is 61.77 with an average value of 59.8450. with a standard deviation of 1.22394. Based on the average per year for 2016 to 2018, it turns out that the highest average Bed Occupancy Rate is in 2017 and 2018.

BOR is very important in making hospital planning decisions, therefore it is not uncommon for hospitals to continue to increase visits, in this case the utilization of inpatient services so that revenue also increases. If the BOR is too high more than 85% then the number of beds in the hospital is inefficient so the hospital must increase the number of beds. Data obtained at BOR hospitals from 2016 to 2018 sequentially had an average of 59.76%, 59.84%, 59.84%. The BOR level of "X" hospitals always increases from 2016 to 2018. Based on this, several classes of care have reached the level of efficiency. BOR is still within the ideal value limit, which is between 60-85%. This shows that the hospital management has managed the inpatient installation well.

Table 2. Bed Turn Over (BTO) of Hospital in 2016-2018

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
2016	12	22,00	78,00	41,6667	15,76148
2017	12	31,00	62,00	46,3333	10,94061
2018	12	18,00	72,00	54,6667	16,84870
Valid N (listwise)	12				

Based on Table 2, it can be seen descriptive statistics from Bed Turn Over (BTO) in each year 2106 to 2018. In 2016, it appeared that the lowest value was 22.00, while the one with the highest value was 78.00 and the average value average of 42.6667 with a standard deviation of 15.76148. In 2017, it turns out that has the lowest value of 31.00, while those that have the highest value of 62.00 and an average value of 46.33333 with a standard deviation of 10.94061. In 2018, it turns out that has the lowest value of 18.00 while those that have the highest value of 72.00 with an average value of 54.6667 with a standard deviation of 16.84870. Based on the annual average for 2016 to 2018, it turns out that the highest Bed Turn Over average is in 2018.

Table 3. Revenue Cycle Management (RCM) of Hospital in 2016-2018

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
2016	12	,23	,75	,3967	,16087
2017	12	,25	,75	,3783	,15965
2018	12	,16	,75	,3467	,16967
Valid N (listwise)	12				

Based on Table 3, it can be seen descriptive statistics from Revenue Cycle Management (RCM) in each year 2106 to 2018. In 2016, it turns out that the one with the lowest value is 0.02, while the one with the highest value is 0.75 and the average value average of 0.3967 with a standard deviation of 0.16087. In 2017, it turns out that has the lowest value of 0.25, while the one that has the highest value of 0.75 and an average value of 0.3783 with a standard deviation of 0.15965. In 2018, it turns out that has the lowest value of 0.16, while those that have the highest value of 0.75 with an average value of 0.3467 with a standard deviation of 0.16967. Based on the average per year during 2016 to 2018, it turns out that the highest value of Revenue Cycle Management was in 2016.

Hypothesis test

To prove the hypothesis by looking at the significance of the influence between variables by looking at the parameter values and the significance of the statistical t coefficients. Regarding what SMART PLS 3.0 did by looking at the Bootstrapping Algorithm report, here are the results:

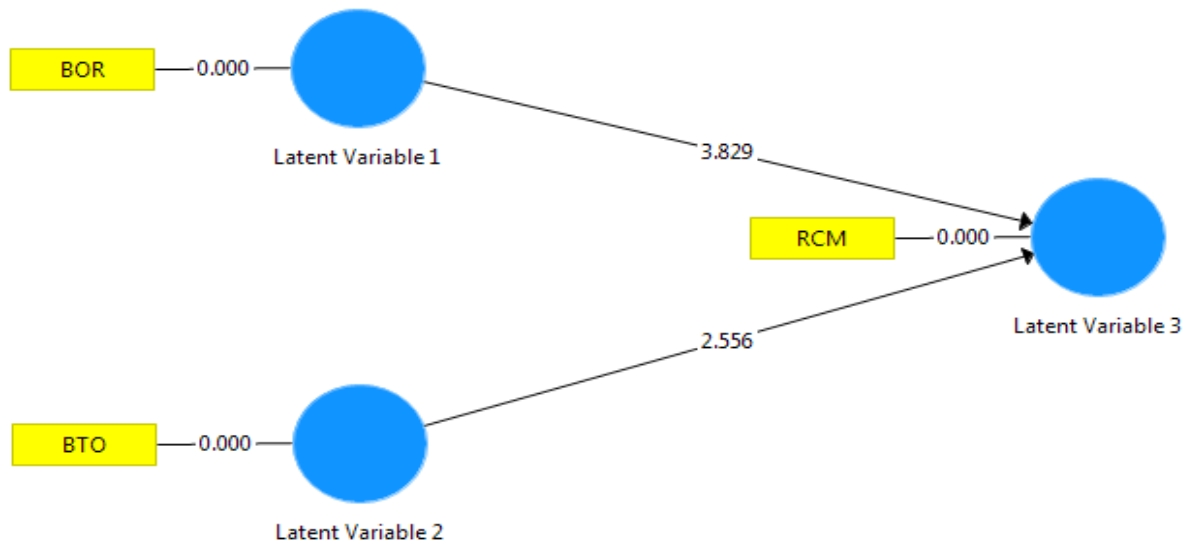


Figure 2. Test results for multiple Linear Regression Analysis

Hypothesis testing is done by looking at the Estimate for Path Coefficient, through the bootstrap menu on PLS. The T-statistic value shown in the path coefficient table must be greater than the t-table (Abdillah and Jogiyanto, 2015). The hypothesis is accepted, if the t-statistic value is higher than the t-table value (1.96) with a significance level of 5 percent

Tabel 5. Path Coefficients (Mean, STDEV, T-Values)

	Original Sample (O)	Sample Mean (M)	T- Statistics (O/STERR)	P-value	Decision
BOR -> RCM	-0,530	-0,532	3,829	0,000	Significant
BTO -> RCM	0,320	0,303	2,556	0,011	Significant

Hypothesis 1

Bed Occupancy Rate against Revenue Cycle Management

The results of data processing showed that the Bed Occupancy Rate variable towards Revenue Cycle Management was a significant result with a t-statistic value of 3.829. This value is greater than 1.96 and is supported by the original sample estimate value of -0.530 which indicates that the direction of the relationship between BOR and RCM is negative or bidirectional.

So the first hypothesis which states that BOR has a significant effect on RCM is accepted. The results of this study support the research conducted by Sidiq and Afrina (2017) to find that services at the Aceh Besar Regional General Hospital have a tendency to enter the efficiency area. It can be seen from the BOR indicator value in 2015 that 62% is still in the inefficient category

The higher the BOR value, the higher the use of existing beds for patient care while the more patients served means the heavier the workload of health workers at the hospital. As a result, patients can get less attention needed and the possibility of nosocomial infections also increases (Griffiths P, Renz A, Hughes J, 2009). The results support the research conducted by Satria, Sidin, and Noor (2012). Increasing the BOR value that is too high actually decreases the quality of the performance of the medical team and decreases patient satisfaction and safety. Thus in 2015 the Aceh Besar Regional Public Hospital was in a safe

position from an economic perspective with the opportunity to improve the quality of services to patients

Hypothesis 2

Bed Turn Over Stay against Revenue Cycle Management.

The results of data processing showed that the BTO variable on RCM was a significant result with a t-statistic value of 2.556. This value is greater than 1.96 and is supported by an original sample estimate of 0.320 which indicates that the direction of the relationship between BTO and RCM is positive or bidirectional. So the second hypothesis stating BTO has a significant effect on RCM is accepted. The results of this study support the research conducted by Sidiq and Afrina (2017) to find that services at the Aceh Besar Regional General Hospital have a tendency to enter the efficiency area. This can be seen from the indicator value of the BTO value reaching 45.7 still in the efficient category,

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

1. Bed Occupancy Rate has a significant effect on hospital revenue cycle management in the Province of Central Java.
2. Bed Turn Over has a significant effect on hospital revenue cycle management in the Province of Central Java.

Suggestion

1. Propose to the management to improve the quality of services in the hospital so that patients feel comfortable when treated in the inpatient ward.
2. Propose to management to inform the head of cleaning service to further improve hospital hygiene, especially in the inpatient ward.

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