

ANALYSIS OF ACTIVITY BASED COSTING AS THE BASIS FOR INPATIENT SERVICES TARIFF AT INTAN MEDIKA LAMONGAN HOSPITAL

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Article History:

Received: 25/03/2024

Accepted: 30/08/2024

Available Online: 30/08/2024

ABSTRACT

Activity Based Costing (ABC) is a cost assignment system based on the activities carried out by the company to produce products. The aim of this research was to find information about calculation and comparison of prices for inpatient room rates using conventional cost calculation methods with the ABC method. This was the quantitative descriptive research conducted interviews with the person in charge of the VIP room of inpatient service and financial department who related to the research data. The results of the research showed that the calculation of inpatient service rates using the ABC method for the VIP class is IDR 160,499. From these results, when compared with the tariff used by Intan Medika Hospital of IDR 266,000, the ABC method provides cheaper results with a difference of IDR 105,501. So by reducing rates according to the ABC method, Intan Medika Hospital can expand its market because if it uses more appropriate prices and provides good qualities, customers will choose to use Intan Medika Lamongan Hospital, so that Intan Medika Lamongan Hospital could increase the occupancy of VIP room of inpatient service and have a long-term profits.

Keywords: *Activity Based Costing, cost driver, tariff, financial, hospital.*

INTRODUCTION

As services to patients increase, the hospital costs incurred are useful to support the provision of facilities provided by the hospital in serving patients¹. In this case, the hospital needs an appropriate accounting method to calculate the costs incurred

according to its service activities². So far, hospitals only used a traditional cost system in determining basic prices which does not reflect specific activities because many cost are categorized as indirect and tend to be fixed³. To control costs, hospitals need an appropriate accounting system, especially cost calculation

methods to produce accurate cost information regarding the costs of their service activities⁴. The importance of cost accuracy is not based on several costs incurred. However, it is based more on the concept of cost assignment. The aim of providing accurate cost information is that what is charged corresponds to what is consumed⁵. Due to inaccuracies in cost assignment, resulting errors in determining costs. The previous research stated that cost in healthcare services sometimes is determined by the market prices⁶. Therefore, it is necessary to implement a new system to overcome this problem and find a solution⁷. It needs to implement a system for determining the cost of products based on their activities that known as activitybased costing (ABC). Activity Based Costing (ABC) can analyze the relationship between costs and activities more precisely than traditional cost calculations⁸.

Activity Based Costing is a cost assignment system based on the activities carried out by the company to generate its products^{9,10}. The ABC method improves the accuracy of product cost calculations by recognizing that many of the fixed overhead costs vary in proportion to changes other than production volume. By understanding what causes these costs to increase and decrease, these costs can be traced to each product¹¹. The ABC system also has benefits on its application, i.e., it makes easier to make good decisions because the cost calculation for objects is more accurate^{10,12}. Moreover the ABC system also makes easier to control costs at the individual and departmental levels¹³. It could be done because ABC is more focuses on unit cost rather than total cost¹⁴. In the ABC method, costs arise due to 3 activities produced by the product. This approach uses cost drivers which are based on activities that generate costs and would be

more suitable if applied to companies that produce a variety of products¹⁵. Where ABC states the cause of the emergence of funds, namely an activity that creates goods¹⁶.

Intan Medika Hospital which is located at Karangbinangun Lamongan City, East Java is a general hospital with health services ranging from general to specialist, equipped with 24-hour medical support services. The hospital as an economic unit has production and consumption functions. The economic activities which carried out in economic unit are in the form of health services. The driving factor is economic activity, which arises from the need for health services¹⁷. To be able to carry out its functions, technological advances in the health sector can have an impact on financing and investment at high costs. The use of ABC (Activity Based Costing) analysis provides many advantages in terms of accurate cost calculations for companies that have overhead costs and produce a variety of products¹⁸. This study aimed to calculate the price for inpatient room rates using ABC method especially in VIP room due to its occupancy was low. The evaluation of the existing price for VIP room have to be done because the market are very sensitive to that. The demand form market of health service categorized as elasticity demand¹⁹. It means that the higher price of the health service will reduce the demand for it²⁰.

Based on the description above the author is interested in analyzing inpatient VIP tariff using the ABC Method at Intan Medika Lamongan Hospital.

METHODS

This research was quantitative descriptive. The research stages were carried out as follow: Calculate the basic price of inpatient rooms based on the Activity Based Costing System method²¹ is start from

Identifying activities, i.e laundry service, cleaning service, administrative service, nursing care, etc. after that, classifying activity-based costs into various activities, identifying cost drivers and determining the rate per unit cost driver using the formula:

$$\text{Cost Driver of unit tariff} = \frac{\text{number of activity}}{\text{Cost Driver}}$$

The rate per unit cost driver then will be assigned to costs of products using cost driver rates and activity measurement. Those steps including : charging overhead costs from each activity to each room is calculated using the following formula:

$$\text{Overhead Cost} = \text{tariff unit of Cost Driver} \times \text{Cost Driver chosen}$$

Then the calculation of rates for each type of room using the ABC method can be calculated using the following formula:

$$\text{Room's Tariff} = \text{Cost of Inpatient} + \text{profit}$$

The final step is comparing hospital inpatient rates based on the Activity Based Costing System with traditional methods. Then analyze the price of hospitalization between the two methods and make conclusions. The variable in this study is a single variable, namely the unit cost of VIP inpatient rates, namely the amount of fees that must be paid by patients when staying in a VIP room per day. This variable can be determined from

Table 1. Operational Definition of Variables

Variable	Definition	Gauge
Building depreciation costs	The depreciation costs of an	Building price ÷

Variable	Definition	Gauge
	asset at a certain point during its useful life	Benefit period
Equipment depreciation costs	The cost of depreciation of equipment at a certain point during its useful life	Tool price ÷ Useful time
Nursing costs	Costs incurred to pay for nursing services	Nursing costs for a year ÷ cost driver
Administrative costs	Costs incurred to pay for hospital administration	Administrative costs for a year ÷ cost driver
Water costs	Costs incurred to pay for water	Water costs for a year ÷ cost driver
Electricity cost	Costs incurred to pay for electricity	Electricity costs for a year ÷ cost driver
Laundry costs	Costs incurred to pay for something that has been used	Cost of consumables for a year ÷ cost driver
Cleaning fees	Costs incurred for room cleaning	Cleaning costs for a year ÷ cost driver

Variable	Definition	Gauge
Food costs	Costs incurred to make food	Food costs for a year ÷ cost driver

RESULTS AND DISCUSSION

Identifying Activities

There are nine cost activities in the inpatient unit. These cost activities include:

- a. Nurse's salary (7 staff): The nurse's salary for one year is IDR 269,950,800. The entire nurse's salary is allocated to each room.
- b. Consumption costs: Patient consumption costs are costs incurred to provide food and drink for patients. The types of food and drinks given to patients are different for each class, resulting in costs of IDR 89,000,000 annually.
- c. Laundry costs: These costs consist of costs incurred to provide washing materials, electricity costs and water requirements, resulting in a cost of IDR 25,000,000 annually.
- d. Administrative costs: Administrative costs consist of costs incurred for making forms related to inpatients, shopping for office stationery, electricity costs for the administration room, etc. So the costs incurred are IDR 48,270,000 annually.
- e. Electricity and water costs in VIP room wards: The room of course requires electricity to run the AC, fan, lights and water for drinking. Annual electricity and water costs are IDR 36,000,000 annually.
- f. Cleaning costs: With a clean environment, the patient will feel comfortable and will speed up the recovery process. Thus incurring costs of IDR 55,500,000 annually including

salary of cleaning services.

- g. Building depreciation costs: The depreciation costs for a hospital building for one year are IDR 113,580,051. The amount of depreciation costs is obtained from the initial cost of the asset divided by its life span. The life span is calculated as 20 years with the inflation rate is 7%.
- h. Facility depreciation costs: Facility depreciation costs are costs borne by the hospital due to the depreciation in the value of goods used due to the use of the facility. Depreciation of facilities consists of depreciation of TVs (7), Acs (10), refrigerators (8), patient beds (7), cupboards (7), etc. The total facility depreciation costs for one year are IDR 53,196,750 annually.

Classifying Cost Activities into Various Activities.

This activity arises due to maintaining the facilities owned by the hospital. Activities included in facility sustaining activity costs are building maintenance costs, building depreciation costs, and facility depreciation costs. To make it easier to understand the activities above, details of the costs included in the various activities can be seen in the table below:

Table 2. Details of Activity Costs

Cost Elements	Amount/year
Unit level activity costs	
Nurse Salary Costs	269,950,800
Laundry Fees	25,000,000
Consumption Costs	89,000,000
Electricity & Water Costs	36,000,000
Batch related activity costs	
Cleaning Fees	55,500,000
Administrative costs	48,270,000

Facility sustaining activity costs	
Building Depreciation Costs	113,580,051
Facility Depreciation Costs	53,196,750

After these activities have been identified according to their categories, the next step is to identify the cost drivers for each activity cost. The identification intended in determining activity groups is the rate or unit cost driver. Identification of cost drivers can be shown in the table below:

1. Identifying Cost Drivers.

Table 3. Grouping of Inpatient Costs and Inpatient Cost Drivers

Activity	Drivers	Cost Driver	Amount (IDR)
Unit level activity costs			
a. Nurse salary costs	Number of inpatient length of stay (days)	7447	269,950,800
VIP Class	Number of inpatient days	1056	
b. Electricity and water costs	Kwh	85,093	36,000,000
VIP Class	Kwh	25,845	
c. Consumption costs	Number of in patient days	7447	According to Tariff
VIP Room	Number of inpatient days	1056	
d. laundry cost	Number of inpatient days	7447	25,000,000
VIP Room	Number of inpatient days	1056	
Batch related activity costs			
a. cleaning fees	Room size	156 m²	55,500,000
VIP Class	Room size	28 m ²	
b. administrative costs	Number of patients	2,055	48,270,000
VIP Class	Number of patients	315	
Facility sustaining activity costs			
Building depreciation costs	Room size	156 m ²	113,580,051
VIP Class	Room size	28 m ²	
Facility depreciation costs	Number of inpatient days	7447	53,196,750
VIP Class	Number of inpatient days	1056	8,125,500

Determine the Trif per Unit Cost Driver.

After identifying the cost driver, then determine the rate per unit of the cost driver.

The calculation is done by dividing the total costs by the cost driver. The calculations can be seen in the table below:

Table 4. Determination of Rates per Unit

Activity	Total (IDR)	Cost Driver	Rate/Unit
<i>Unit level activity costs</i>			
a. Nurse salary costs	269,950,800	7447	36,250
VIP Class		1056	
b. Electricity and water costs	36,000,000	85,093	423
VIP Class		25,845	
c. Consumption costs	89,000,000	7447	35,000
VIP Class		1056	
d. Laundry costs	25,000,000	7447	3,357
VIP Class		1056	
<i>Batch related activity costs</i>			
a. Cleaning fees	55,500,000	156	355,769
VIP Class		28	
b. Administrative costs	48,270,000	2,055	23,489
VIP Class		315	
<i>Facility sustaining activity costs</i>			
Building depreciation costs	113,580,051	156	728,077
VIP Class		28	
Facility depreciation costs	53,196,750	7447	
VIP Class	8,125,500	1056	7,694

Calculating the Basic Cost of Inpatient Care.

The stages carried out in calculating inpatient rates are as follows:

- a. Calculating the overhead costs charged for each class by: Overhead Cost charged = cost driver rate per unit x driver used by each inpatient class.

- b. Adding up all activity costs that have been grouped
- c. Dividing the total activity costs for each inpatient class by the number of inpatient days in each class. Add expected profit.

To calculate the basic price of VIP class inpatient rates, see the table below:

Table 5. VIP Class Inpatient Service Rates

No	Cost Elements	Cost Driver Rates	Drivers	Total
1	Nurse salary costs	IDR 36,250	1056	IDR 38,280,000
2	Electricity and water costs	IDR 423	25845	IDR 10,932,845
3	Consumption costs	IDR 35,000	1056	IDR 36,960,000
4	Laundry costs	IDR 3,357	1056	IDR 3,544,992
5	Cleaning fees	IDR 355,769	28	IDR 9,961,532
6	Administrative costs	IDR 23,489	315	IDR 7,399,035

7	Building depreciation costs	IDR 728,077	28	IDR 20,386,156
8	Facility depreciation costs			
	a. VIP Class	IDR 7,694	1056	IDR 8,124,864
Total cost				IDR 135,589,424
Length of Days of Use				1056
Inpatient rates per room				IDR 128,399
(25%) Profit				IDR 32,100
Total VIP Inpatient Rates				IDR 160,499

Comparison of Hospital Existing Tariff with New Tariff Based on Activity Based Costing Method

Table 6. Comparison of Inpatient Service Rates

Room type	Intan Medika Hospital Rates	RatesABC method	Difference	Comparison Results n
VIP	IDR 266,000	IDR 160,499	IDR 105,501	Cheaper

From the calculation above, it can be seen that the results of calculating inpatient service rates using the Activity Based Costing method for the VIP class are IDR 160,499. From these results, when compared with the rates used by Intan Medika Hospital, the Activity Based Costing method provides cheaper results with a difference of IDR 105,501. The difference occurs because the overhead costs for each product are only charged to one cost driver. As a result, there tends to be distortion in overhead costs. Meanwhile, in the Activity Based Costing method, overhead costs for each product are charged to many cost drivers. So that in the Activity Based Costing method, we are able to allocate activity costs to each room appropriately based on the consumption of each activity¹⁰.

The results of the Activity Based Costing calculations can also be used as material for the Intan Medika Lamongan Hospital marketing team, because the annual

number of patients in the VIP class tends to be small compared to other classes with a total of only 315 patients using the VIP class. It is hoped that if hospitals use VIP inpatient rates using the Activity Based Costing method, they can attract customers to use VIP inpatient rooms and generate higher profits.

The results of research from Made Dana Saputra and Made Agus Putrayasa in 2018 with the title Analysis of Activity Based Costing in determining the rates for inpatient services at Graha Asih General Hospital. The result is the calculation of inpatient service rates. It can be concluded that the calculation of inpatient service rates uses the ABC system, carried out in two stages. The first stage costs are traced to the activities that give rise to the costs and then the second stage assigns the activity costs to the product²².

By reducing rates according to the Activity Based Costing method, Intan Medika Hospital can expand its market because if it uses more appropriate prices and provides

good quality, customers will choose to use Intan Medika Lamongan Hospital, in this way Intan Medika Lamongan Hospital can increase long term benefits. And also by using relatively lower prices, it can increase cross-selling, such as if customers choose to seek treatment at the Intan Medika Lamongan Hospital, then sales of other goods such as medicine can then increase the use of poly poly available by the hospital, and also increase cooperative income. And most importantly, using relatively low prices can increase patient satisfaction.

CONCLUSION

Based on the results of the research and discussion in the previous chapter, it can be concluded that the calculation results for

inpatient service rates using the Activity Based Costing method for the VIP class are IDR 160,499. From these results, when compared with the tariff used by Intan Medika Hospital of IDR 266,000, the Activity Based Costing method provides cheaper results with a difference of IDR 105,501. It is suggested that the next research of activity based costing can be focused on the activity of the health service that may burden the cash flow such as caesarean procedure.

ACKNOWLEDGEMENT

Thanks to the Research and Community Development Department, Universitas Muhammadiyah Lamongan for the funding from research grant No.024/III.3.AU/F/INT/2023.

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