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Lean Hospital: Strategy of Operational Financing Efficiency in Supply Chain Management

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ABSTRACT

Health financing in Indonesia has increased from 27 US \$ (2003) to 115 US \$ (2017) and will continue to increase as the population increases. The JKN era is also a burden where health financing managed by BPJS is always deficit every year. Hospitals as health service providers must be able to carry out operational cost efficiency as mandated by the JKN era, namely quality control and cost control. One of the cost efficiency methods is the implementation of lean management in hospital operational processes, especially the supply chain management process (procurement, inventory control, distribution planning and demand management). This study aims to evaluate the improvement process and cost efficiency after the implementation of lean management in the supply chain management process at the hospital. This study used a single holistic case study method with the unit of analysis at the Lean team level at Panti Rapih Hospital, Yogyakarta. Research subjects are employees in the team who are directly involved in the implementation of lean management. Selection of research subjects based on purposive sampling. The informants are 7 respondents for in-depth interview process in logistic unit and 3 informants from other unit. The research instrument used an interview guide. The result of this research is that lean management which is applied in the logistic unit of the neat orphanage hospital can reduce waste such as motion, inventory, and waiting time. In addition, another benefit that

can be felt by management is increasing cost efficiency. The conclusion of this study is that lean management is recommended to be applied in health services such as hospitals.

Keywords: cost efficiency, logistics management, lean healthcare, and supply chain management.

INTRODUCTION

Health funding tends to increase from year to year.¹⁻³ In America, financing spent on health is US \$ 2.5 trillion (2009) with a proportion of GDP of 17.3% and an increase of US \$ 4.5 trillion with a proportion of GDP of 19.3% (2019). The largest expense was found in hospital financing of US \$ 760.6 billion.¹ Meanwhile in Indonesia, health financing in 2010 amounted to 204.7 trillion, increasing to 455.5 trillion in 2018 with a low proportion of GDP at 3.1%.^{4,5}

The hospital environment is undeniably influenced by changes in the financing and service system in the era of the National Health Insurance (NHI). NHI requires hospitals to implement services based on quality control and cost control.⁶ One of the ways to carry out quality control and cost control in the hospital is by running services according to standards and carrying out operational cost efficiency. The implementation of NHI also had several impacts on hospitals, both from a financial and non-financial perspective. From a financial perspective, hospital funding depends heavily on Insurance and Social

Security (BPJS) as the main payer for health services in hospitals. As a consequence, the pending claim problem occurred due to BPJS financial instability. The increase in the number of patients due to the opening of extensive access to health services is also a new problem of increasing internal and external complaints when the hospital is not ready to face it.^{7,8} The uncertain hospital environment in Indonesia requires hospitals to be able to make continuous changes, one of which is the implementation of *lean management*.

Lean Management implemented in health organizations is known as "*Lean healthcare*". *Lean healthcare* has begun to develop in the last few years, focusing on increasing *customer value*.⁹ Several factors that play a role in the implementation of *Lean healthcare* are a stable commitment, transformational leadership, and an employee reward system.¹⁰⁻¹³ *Lean* comes from employees and is the ultimate goal for employee welfare so that the reward system and organizational culture are very important in its implementation.^{11,14}

The implementation of *Lean healthcare* is by the large amount of *waste* that occurs in hospitals with activities *non-value added* motivated of almost 95%. One of the biggest operational costs is costs for hospital logistics supplies such as pharmaceutical supplies. On the other hand, this supply can support almost 50% of hospital income.¹⁵ So that the supply chain management process in the hospital must prioritize the principles of cost effectiveness and efficiency¹⁶⁻¹⁸. From the phenomena and background above, a study is needed to evaluate the improvement process and cost efficiency resulting from the implementation of *lean management* in hospitals.

Panti Rapih Hospital Yogyakarta is a type B hospital with a bed capacity of 380 TT. Panti Rapih Hospital Yogyakarta serves general patients and JKN patients. Panti Rapih Hospital Yogyakarta is a hospital that is open and accepting changes with the opening of access to complaints and customer suggestions which continues to increase along with the JKN patient service since from 447 in 2015 complaints to 552 complaints in

2017. Panti Rapih Hospital needs to make good improvements. in terms of human resources, facilities and infrastructure, as well as the system as a whole in accordance with the values and preferences desired by the patient. In order to improve service improvements, Panti Rapih Hospital has implemented *Lean Management*. From the phenomena and background above, a study is needed to evaluate the improvement process and cost efficiency resulting from the implementation of *lean management* in hospitals.

METHOD

This study used an explanatory case study research method with a single holistic case study design. The unit of analysis in this research is the team *Lean* that is formed and carries out the implementation of *Lean management*. The case study design is suitable to be used to explore problems related to employee perceptions of implementing *lean healthcare* in this study. The population in this study were all employees involved in the process of implementing *lean healthcare* at Panti Rapih Hospital Yogyakarta. The sampling technique in this study is a *non probability sample with purposive sampling*.

The data collection process was carried out by means of in-depth interviews with several key informants, 7 employees who were directly involved in the *lean management* project in logistic unit. The validation process was carried out by triangulating data and triangulating methods. The population in this study were all employees involved in the process of implementing *lean healthcare* at Panti Rapih Hospital Yogyakarta with total 1.438 employees. The sampling technique in this study is a *non probability sample with purposive sampling*. Data triangulation was carried out with informants in other units involved in the logistic service process such as pharmaceutical unit, in-care unit, and out-care unit. The units are chosen based on the characteristic and core value of *lean implementation* are same since they have been trained by the same institutions. The informants are listed in table 1.

Table 1. List of Informants

No	Informants	Code of Informant
1	Head of Logistic unit	R1
2	Procurement staff 1	R2
3	Procurement staff 2	R3
4	Financing Staff	R4
5	logistic Administration	R5
6	Distribution Staff 1	R6
7	Distribution Staff 2	R7
8	Pharmaceutical staff	R8
9	In-care unit's nurse	R9
10	Out-care unit's nurse	R10

Method triangulation was also carried out by means of observation and document study such as blue print layout storage, kaizen document, value stream mapping document.

RESULT AND DISCUSSION

The supply chain management process at Panti Rapih starts from receiving goods, inputting invoices, storing goods, requesting units, distributing goods, checking stock, and ordering needs to purchases. The activities in each process can be seen through the following current state mapping:

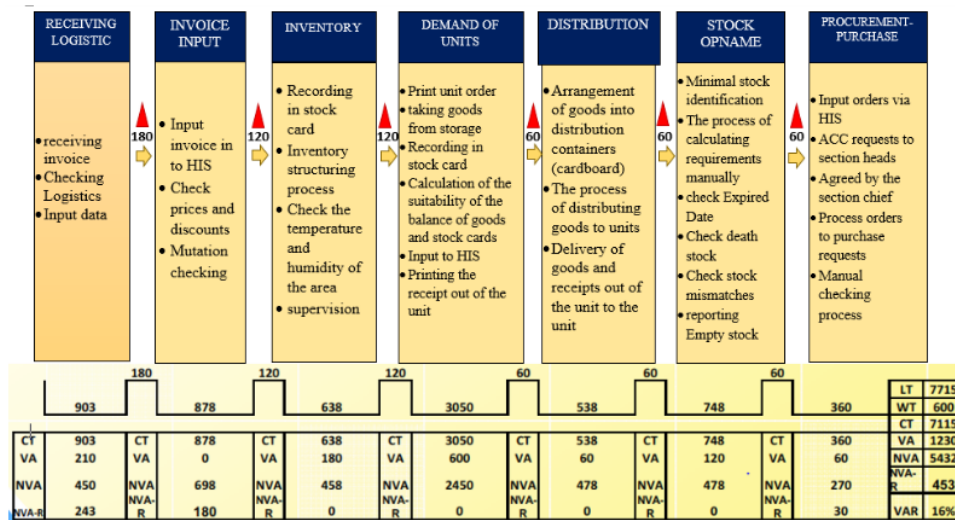


Figure 1. Current State Mapping of supply chain process in Panti Rapih Hospital

From Figure 1 it can be seen that the waiting time (▲) spent from receiving, storing, distributing, to purchasing goods is 600 minutes (10 hours). The distribution of

total service process time for each activity and process value analysis can be seen in the following figure:

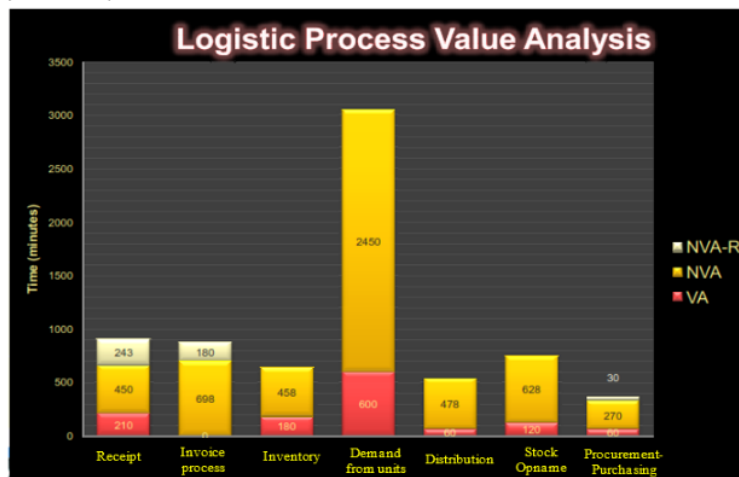


Figure 2. Logistic process value analysis

Figure 2 explains that the supply chain management process in RSPR from receiving goods to purchasing goods requires total time (lead time) for 7,715 minutes (128.6 hours). The total comparison of activities that have value added (Value Added) of all activities (Value Added Ratio) is only 16%. This means that actually the time required for the logistic service process is only 16% of the total time spent, while the rest is useless time (waiting time). This useless time will remain as the problem when the management did not take the focus on how to reduce it.¹⁹

From the data above, improvement is needed in the supply chain management process at Panti Rapih Hospital. One of them is the implementation of lean management in all units in the hospital. In the process of identifying waste, the hospital has been able to utilize various tools such as Value Stream Mapping which is carried out in all units. Through Value Stream Mapping, the hospital can easily identify the waste and evaluate the extent to which the waste has been removed.²⁰⁻²² The results of Lean implementation are closely related to the monitoring and evaluation system of the Lean management activity process. Lean is a daily job so ideally monitoring is also done on a daily basis.²³ So that within a certain period it can be evaluated and analyzed the efficiency trend. Lean monitoring on a monthly basis is considered not conducive compared to weekly or daily. The more real time the data is obtained, the better the quality of the monitoring will be.²⁴

The implementation of lean management in the logistics section of the neat nursing home is by redesigning the layout of storage, just in time mineral gallons, redesigning the linen warehouse, direct procurement of warehouse requests in the

morning, and shortening the accoord process for non-routine requests.

"We are now just in time, they (user units) have to make demand order into their own account, so third parties (suppliers) directly distribute to the unit (those who need it). This make zero inventory" R1

With zero inventory of gallon mineral water warehouse, the mineral water warehouse is eliminated and is converted into the medicine warehouse. This also reduces employee motion because warehouse and unit staff do not need to pick up and deliver gallons. As explained by the distribution staff:

"For morning demand supplies of pharmaceutical supplies used in the room. For example, bandages, plaster so that there is no recipe we count at morning order from units. Previously, from logistics, we had to go to pharmaceutical installation to the related unit. So even though there are certain items that are needed only certain units. So yes, we think why not go straight from us to the unit. After all, the pharmacy that accepts is not pharmaceutical technical personnel. So, I coordinated with the pharmacy, ask for a little space, and the distribution is direct from us" R6, R7

The lean management program that has been implemented in the supply chain management process has resulted in several advantages besides reducing waste as well as increasing cost efficiency. This can be seen in table 2.

Table 2. Results of implementation of *Lean* management in Logistics Unit of Panti Rapih Hospital

No	Programs	Output Implementation of Lean Management	Benefit / Waste Reduction
1	Redesigning layout	Changes in warehouse layout reduce motion of officers	<i>Motion, inventory</i>
2	<i>Just in time</i> mineral water gallon	zero inventory	<i>Inventory</i>
3	Redesign warehouse linen	Cost efficiency Rp. 40,098,747 period July 2017 - March 2018	<i>Cost Efficiency</i>

		Inventory reduction 9.1 m ² (from 15 cabinets to 5 cabinets)	<i>Inventory</i>
4	Direct procurement of morning requests warehouse	Cost efficiency Rp. 1,034,856,779 January-May 2018	<i>Cost Efficiency</i>
5	Accord of non-routine requests	Decreased lead time from 484 minutes to 38 minutes	<i>Time</i>

Table 2 informs that the lean management program implemented in the logistics unit of the Panti Rapih hospital can not only reduce waste such as motion, inventory, and time, but also increase cost efficiency. For example, in the direct procurement program for the Morning Demand Warehouse, by cutting the morning demand flow and reducing inventory at the pharmacy depot. This has a big impact in the first 6 months of implementation with a large efficiency reaching more than 1 billion. This efficiency is the indirect benefit of using lean management in supply chain management proses.^{18,25} The resulting benefits are in line with several previous studies that lean can increase efficiency by reducing the required inventory.^{9,26,27}

Seeing the evaluation of the achievement of the lean management program in the logistics unit brings hope for the hospital to make lean as the goal of the supply chain management process. The implementation of lean management in the hospital is a continuous process in accordance with the goal of lean, continues improvement. Some ideas and innovations are still being carried out in all units in the neat nursing home hospital.

CONCLUSION

Panti Rapih Hospital has implemented lean management in the supply chain management process, starting from invoice receipt, invoice processing, goods storage, unit request, distribution, stock taking, and procurement to purchasing. The application of lean principles is carried out with the aim of reducing the waste that occurs in each process. In the end, the benefits obtained are not only waste reduction but cost efficiency. Thus, the function of the hospital as a health service to patients can be maximized. The application of lean management can be beneficial not only for management, employees, but for patients in general.

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