

Optimization of the Procurement Process of Pharmaceutical Supplies at Dr. M Goenawan Partowidigdo Pulmonary Hospital with a Lean Six Sigma Approach

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Abstract. Internal barriers in the procurement process and pharmaceutical supply planning are barriers that can be controlled through interventions. The research focuses on proposing changes to the pharmaceutical supply management system, particularly in the aspects of planning and procurement within the internal team of the RSPG Cisarua Bogor. The intervention in this research applying lean six sigma extends only up to the “improve” phase. Data collection involves in-depth interviews with informants involved in the pharmaceutical supply planning and procurement process, as well as observation and document analysis. The research ends in group discussions to reach an agreement. The research findings reveal that a lack of established procedures in the pharmaceutical supply procurement process contributes to prolonged procedures and the absence of efficiency benchmarks within the system. Moreover, an unavailability of tools to facilitate the pharmaceutical supply procurement process causes low internal team communication. The “improve” phase of lean six sigma leads to proposed changes to the standards of operational procedures for routine pharmaceutical procurement, indicator applications of procurement efficiency and the utilization of the ABC VEN functioning as a tool within the pharmaceutical supply procurement process. The proposed improvement to tackle the matter includes the utilization of ABC VEN and efficiency indicators to overcome waste overproduction identified during the pharmaceutical supply planning process. In addition, it also involves the establishment of a new standard of operating procedure covering timelines, tools for pharmaceutical supply categorization based on ABC VEN and procurement efficiency indicator to handle waste waiting during the pharmaceutical supply procurement process.

Keywords: Pharmaceutical procurement; Lean Six Sigma; ABC VEN; Efficiency indicator; Hospital Procurement Process

1 Introduction

Hospital pharmacy installations are a few of the contributors to hospital performance, reflecting service performance or financial performance. The hospital pharmacy installations are also closely related to other functional units such as medical units and financial units. It emphasizes the importance of effective and efficient management of the pharmaceutical installation aiming to provide optimal service performance and sound financial performance leading to seamless inter-unit coordination. The efficiency of the hospital pharmacy installation focuses on service workflows, pharmaceutical inventory control processes, as well as the capacity and the credibility of human resources in pharmacies and associated units [1–5].

The complexity of the procurement process involves multiple individuals with diverse educational backgrounds so that a necessary tool is required to ensure the efficient and effective execution of the procurement processes. The hospital has already established buffer stock notifications and ABC VEN

reports with limited access only for the pharmaceutical installations. However, at present, procurement efficiency indicators are not available causing insufficient evaluations of the procurement process. This situation recalls the necessity for a collective agreement on how the procurement system flows and whether additional tools are needed in the decision-making process with both existing *buffer stock* notification and ABC VEN reports that can be accessed by all individuals involved in the procurement process. Furthermore, it also underscores whether the assessment of efficiency indicators can function as references in evaluating the efficiency of the pharmaceutical supply procurement processes. This research aims to propose solutions for tackling the challenges at RSPG Cisarua Bogor involving planning management and procurement management of pharmaceuticals by formulating proposals for improvement efforts in the procurement process system at the hospital.

Hospital pharmacy installation have gather a wealth data about pharmaceutical usage, tren and requirement. The data can be used in the pharmaceutical procurement

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planning process as a basis information. However, the existing data has not been properly utilized. This has an effect on the management of pharmaceutical supplies. Besides that, it can also influence the management of the pharmaceutical supplies procurement budget. Data processed within a certain period of time will provide accurate information to predict the need for hospital pharmaceutical supplies. However, if it not properly analyze and utilize, it leads to missed opportunity for efficient procurement and budget management.

2 Theoretical Review

The logistics management cycle commences with planning, budgeting, procurement, storage, distribution, reporting and destruction or elimination [6, 7]. Each part of the cycle must be completed clearly and continuously between one another for achieving a cyclical equilibrium. This procurement process must be centralized within the hospital pharmacy installation. The procurement cycle is reflected in [6] *MDS-2: The Selection, Procurement, Distribution and Use of Pharmaceuticals* issued by the *Managing Drugs Supply* department, a division of *Management Science for Health* and a non-profit institution focusing on global health management.

The procurement flow at each hospital has different stages [8]. Procurement involves pharmaceutical elements as management of pharmaceutical supplies and financial elements as a part of budget management [1]. The medical department is required as a consideration from the user side of pharmaceutical supplies. All of these elements have the same goal, namely providing optimal health services to patients in accordance with the existing budget capacity [9, 10].

Pharmaceutical supply management efficiency indicators published by Pudjastuti in 2006 are designed based on understanding, experience and studies of applicable regulations. Accordingly, these indicators possess a more comprehensive ability to describe the management of pharmaceutical supplies. There are four categories in these indicators namely planning, procurement, storage, and distribution. The efficient planning indicators mainly deal with the similarities between the formulated plan based on the necessities and required budget. Meanwhile, the procurement efficiency indicator emphasizes the procurement patterns and the payment patterns of pharmaceutical supplies. This also acts as a tool for measuring effectiveness and efficiency of the procurement process. Moreover, the Lean Six Sigma is utilized as an approach to optimize the procurement process,

The application of Lean Six Sigma approach is intended to delineate waste and variation within each phase of the procurement process. In addition, it is also a way of continuous improvement. The impact of Lean Six Sigma interventions in hospital business is expected to be improvements in service as well as effective and efficient care to patients. In this way, this can elevate customer value as the main focus of healthcare services. Lean Six Sigma is based on DMAIC concepts such as Defining, Measuring, Analyzing, Improving and

Controlling. These concepts enable us to clarify problems as a whole, identify weak points, analyze the roots of the problems and provide innovative suggestions to address the issues. The next process is to evaluate the suggested innovations based on their effectiveness according to the results of the interventions. Thus, the overall process offers extensive understanding regarding the core problem of the discussed issue.

3 Research Methods

This study follows the Lean Six Sigma approach with a qualitative design supported by quantitative data. The initial step of the study is to examine the ABC VEN data that has been compiled by the pharmacy installation of RSPG Cisarua Bogor during the periods of January to March 2023. Subsequently, in-depth interviews were conducted with predetermined informants who were personnels at the implementation level. The final step is Focus Group Discussion with the board of directors, relevant managers related to the procurement and the operational staff. In this way, implementing the consensus generates advantages namely to involve existing stakeholders in the decision-making process and to mitigate potential researcher bias. The research timeline spanned from March 2023 to May 2023. The research has passed ethical clearance issued by the Ethics Review Team of the Faculty of Public Health, University of Indonesia. In addition, permissions from the Chief Executive Officer of RSPG Cisarua Bogor were obtained. The informants also had signed consent forms as they had agreed to participate in the research. The researcher maintains the confidentiality of data and informant identities.

4 Research Results

The informants in this study are at the managerial level and the operational staff. There is a new appointed director during the research due to a change in the board of directors. Thus, the new director refused to be interviewed and the previous one also objected to being interviewed.

4.1 Flow of Pharmaceutical Supplies Planning and Procurement System at RSPG Cisarua Bogor

4.1.1 Notification of buffer stock in the process of planning the procurement of pharmaceutical supplies

Within the Hospital Information System, there is a module designed to generate *buffer stock* notification systems named the *stock warning system* consisting of warehouse warning stock, outpatient depot warning stock and inpatient depot *warning stock*. During field observation, data buffer stock is presented on the working documents as the foundation for pharmaceutical supply planning. The working

documents are refined with the evaluation from the head of the installation before being passed to the head of supporting service coordinator. Both data buffer stock and warning stock are only accessible within the scope of pharmacy. In the permanent procedure issued by the hospital No. OT.02.02/XXXIV.1/06285/2022, it is stated that the calculation of future usage plus buffer stock ($d + \% \text{ buffer stock} = e$) is conducted at the planning stage. The results of collaborative discussion confirms in depth-interviews stating that the utilization of warning stock as a basis for consideration in the preparation of pharmaceutical supply planning has been implemented. The formulation of buffer stock is conducted in layers from warehouse buffer stock and buffer stock of each pharmaceutical depot. The arrangement of buffer stock refers to the average of consumption patterns within the hospital over a period of two months. Referring to the triangulated results, there is a planning process based on buffer stock notification. This practice is completed within the scope of pharmacy representing a fundamental competency of pharmaceutical work.

4.1.2 The use of ABC VEN in the pharmaceutical supply procurement planning process

The preparation of ABC VEN is also carried out by the head of IFRS. The ABC VEN data is not comprehended by other staff regardless of their medical and non-medical educational backgrounds. It is reflected in the following excerpts of the interview with an informant possessing non-medical educational background:

"What's that? I don't understand that at all. But looking at it again, it seems to be helpful in facilitating the grouping of procurements so that it is clear what the purchase plan is." (I1)

Non-medical informants heavily rely on their experiences in deciding or simply following the recommendations proposed by the technical unit. According to hospital regulation No. OT.02.02/XXXIV.1/06285/2022, the formative planning refers to the study of disease development, treatment patterns, priority scales and development plan. The discussion process in the collaborative forum reveals that ABC VEN has been applied in the pharmaceutical scope even though other divisions cannot comprehend its implementation. The truth is that grouping using ABC VEN method can be the solutions of budget allocation needed by the budget planning division of the hospital.

The triangulated results show that the use of ABC VEN in planning has been carried out in accordance with the direction from the highest leadership at RSPG Cisarua Bogor. In the planning process, this concept has been applied and supported by other analysis. Nevertheless, this concept is still widely unknown to components outside the pharmacy so that it becomes the factor in determining the perception of insufficient planning proposals.

4.1.3 Flow of procurement of pharmaceutical supplies

Based on all informants' reports, the procurement flow at RSPG Cisarua Bogor is similar since the submissions are made by the technical unit, in this case the Hospital Pharmacy Installation. Submissions are centralized through the pharmaceutical installations. Another important information reveals that there is informal information sharing regarding the procurement plan. This signifies a problem related to Human Resources since PPBJ functional position does not exist causing the procurement process to be regarded as supplementary activity.

The flow of pharmaceutical procurement contained in the standard procedure No. OT.02.02/XXXIV.2/00073/2023 for urgent procurement states that procurement is proposed by the head of IFRS either verbally or in writing to the coordinator of support services, who then communicates to the technical director and KDP. The procurement workflow follows the existing working relation procedures at RSPG Cisarua Bogor. In limited discussions at the hospital, it was concluded that there is an urgency to form certain guidelines in the process of procuring pharmaceutical supplies. This is related to the absence of timelines in written reference documents. At present, the proposals of pharmaceutical supplies are still in manual forms causing difficulties in monitoring the pharmaceutical supply procurement process. The triangulated findings indicate that the procurement flow is not written in the fixed standard procedures as per the written regulations. This impacts unclear and non-accountable procurement processes in forms of the workflow and timeline.

4.2 VA, NVA and Waste Activities in the Procurement Process of Pharmaceutical Supplies at RSPG Cisarua Bogor

4.2.1 Identify value activities based on value stream maps

The results of informant interviews show that the VA process looks more than the NVA. NVA-shaped processes are *necessary*. The document also reflects that both planning and urgent procurement activities must be acknowledged by the head of the Pharmaceutical Installation.

The President Director as the Power of Attorney for Budget Users must also know during the urgent procurement process. The results of observations show that working papers are a means of evaluating pharmaceutical supply planning. This is included in value-added activities. Meanwhile, observations during the procurement process by ULP show that there is a lack of value-adding activities, including them as non-value added. The results of collaborative discussion showed that value added and *non-value added* activities were in accordance with the results of interviews, document tracing and observation. Non-value added activities are included activities involving the board of

directors and regarded as exclusive activities. This particular activity can be categorized as *necessary but Non value added* (NNVA). These activities can be seen in the value stream map in Figure 1:

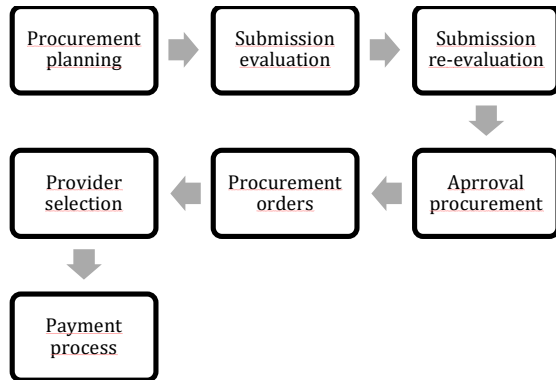


Fig. 1. Value Stream Map (Current Map)

4.2.2 Waste identification

The results of in-depth interviews conducted by researchers show that there are activities included in the categories of *I overproduction and waste waiting*. The result of observing the document No. OT.02.02/XXXIV.1/06285/2023 on pharmaceutical procurement planning reveals the identification of excessive activity like waiting for the approval of the technical director without clarity of timeline in fixed procedure. In the group discussion process, the waste waiting process happens because the submission of pharmaceutical supplies procurement was manual. In contrast, overproduction occurs due to the cross-test process that does not use the similar data source causing repeated calculations. This increases the process time of procuring pharmaceutical supplies at RSPG Cisarua Bogor. Based on the triangulated method carried out, it can be concluded that *waste* activities can be described in the table 1 as follows:

Table 1. VA and NVA identification

Activities	VA/ NVA	Kinds
Planning		
Planning the procurement of pharmaceutical supplies with working papers	VA	
Evaluation of pharmaceutical supply procurement plan with ABC VEN	VA	
Re-evaluation of the procurement of pharmaceutical supplies by looking at medical record files and casemix	NVA	Over Production
Placement of budget allocation for procurement of pharmaceutical supplies	VA	

Length of time for approval of the application for the procurement plan of pharmaceutical supplies by KDP	NVA	Waiting
Procurement		
Length of time for approval of the procurement of pharmaceutical supplies by the power of budget users	NVA	Waiting
The duration of the process of selecting pharmaceutical supplies in the e-catalog by ULP	NVA	Waiting
Process payments according to the predetermined budget currency	VA	

4.3 The Root of the Problem in the Pharmaceutical Supplies Procurement System at RSPG Cisarua Bogor

In the planning process, the source of the problem is the distrust of the presented data. In the procurement process, external factors are regarded as the cause of the obstruction of the procurement process. At the time of observation, problems do not exist both in the work process and the variable compositions on the working paper. Meanwhile, during the procurement process, the existing problem is informal reference used in the process since formal reference does not have a clear timeline for the procurement process. The result of document observation reflects that the planning process has already contained procedures in accordance with pharmaceutical standards, namely by using *buffer stock* calculations and estimates of future needs. Meanwhile, fixed procedures for the procurement process of pharmaceutical supplies have not been established. The documents found only discuss the procurement of urgent pharmaceutical supplies. In the directed discussion process, it is concluded that the problem in the pharmaceutical supply procurement system in the internal RSPG Cisarua Bogor is a manual process so that the data for the verification process cannot be accessed by the procurement department functioning as a decision maker. In addition, the grouping of pharmaceutical supplies is still unclear, causing confusion in the budget section of RSPG Cisarua Bogor. The three methods carried out in this study show that there are internal and external factors that influence the procurement process. Internal factors indicate that there are indications of ineffective internal communication in the process of procuring pharmaceutical supplies. Constraints in internal communication are reflected in confusion in the grouping of pharmaceutical supplies from the perspective of budget compilers. In addition, manual processes lead to an inability to know real time information. This obstacle can be overcome by referring to the fixed procedures that exist in the hospital. Nevertheless, in tracing the documents, these fixed

procedures have not been obtained. The lack of human resources due to the regulation of exclusion of the position of BLU in regulations related to PPBJ causes the procurement process to be constrained. In-depth analysis using fishbone analysis can be shown in the Figure 2:

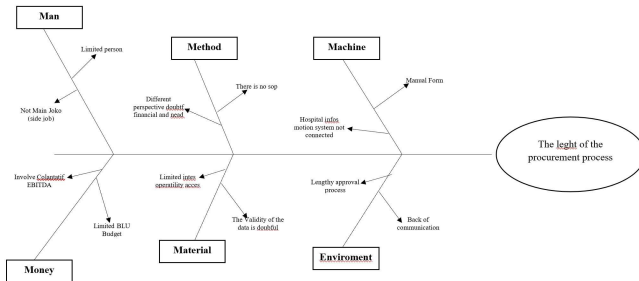


Fig. 2. Fishbone Diagram

4.4 Proposed Efforts to Improve the Procurement Process at RSPG Cisarua Bogor

4.4.1 Proposed improvement of SPO in the process of procuring pharmaceutical supplies

In an in-depth interview, one informant supports improvements in hospital procedures. Based on the document tracing carried out, there is a lack of standard procedure for procurement of pharmaceutical supplies containing the flow of procurement of pharmaceutical supplies. Based on field observations, it indicates that the absence of SPO in the procurement process causes the inexistence of well-documented standard procedures in the formal procurement process. Moreover, the results of the group discussion shows that the process flow of procurement of pharmaceutical supplies does not have a fixed standard procedure. This leads to the absence of standard procedures for the length of time to procure pharmaceutical supplies. Accordingly, in the newly created written procedure document *the timeline* of procurement. In addition, another alternative is making a digital procurement process with the purpose of integrating the hospital's internal system with the hospital's information system. The results of the triangulated method clarify that the absence of written standard operating procedures for the procurement of pharmaceutical supplies causes chaotic flow in the process of procurement of pharmaceutical supplies. Eventually, the creation or change of standard operating procedures is urgently required as a part of continuous improvement efforts for hospitals.

4.4.2 Proposed use of planning and procurement indicators in the process of procurement of pharmaceutical supplies

Pharmaceutical supply procurement indicators are unidentified so they do not serve as part of pharmaceutical supply procurement evaluation. In tracing the documents, indicators of pharmaceutical supply procurement either from annual reports, annual

performance reports or work unit reports were not found. The applied indicators are only those of hospitals in general. The results of the focused discussion reveals that the urgency of applying indicators in the procurement processes is assumed to be unnecessary considering that the hospital only uses mandatory indicators issued by the Ministry of Health. The implementation of procurement efficiency indicators can only be applied once it is required by the hospital. The comprehensive results of the research methods conducted indicate that the utilization of efficiency indicators in the procurement process has not been fully understood within RSPG Cisarua Bogor. The urgency of incorporating efficiency indicators into the procurement process is still considered unnecessary because it is not mandatory based on the Ministry of Health. The application of the indicators in addition to being a benchmark for efficiency remains to be a consideration of a comprehensive system evaluation for hospitals.

4.4.3 ABC VEN proposal as a tool in the procurement process

In the planning process carried out by pharmacists, the use of ABC VEN as a tool has been carried out. The document search carried out shows that the use of ABC VEN in the planning process has been written in the permanent procedure No. OT.02.02/XXXIV.1/06285/2022, namely in the planning procedure for the procurement of pharmaceutical supplies. During focused discussions, the proposed use of ABC VEN in the pharmaceutical supply procurement process can be used in budget allocations. Grouping with ABC VEN can help in budget allocations. In addition, the ABC VEN allocations can function as a reference in the planning process as well as a priority of pharmaceutical supply procurement at RSPG Cisarua Bogor. The application of ABC VEN has been used in the planning process, but grouping in the procurement process is not conducted. Accordingly, it can be suggested as a proposal for the use of grouping pharmaceutical supplies in the procurement process. The ABC VEN proposal as a grouping of pharmaceutical supplies becomes more applicable when it is used not only by the planning department but also by the budgeting or finance department. The ABC VEN grouping is an applicable tool in grouping pharmaceutical supply items for the budget department. Furthermore, it also simplifies identification for pharmaceutical supply procurement activities.

5 Discussion

5.1 Flow of Pharmaceutical Supplies Planning and Procurement System at RSPG Cisarua Bogor

5.1.1 Notification of buffer stock in the process of planning the procurement of pharmaceutical supplies

Notification of *buffer* stock already existed in the pharmacy module in the hospital information system in the form of a warning stock function as a tool in the planning process. This is supported by the results of research which shows that in the pharmaceutical scope, the utilization of this system as a tool in compiling a list of required pharmaceutical supply plans has been carried out. However, this system is not accessible to decision makers in the pharmaceutical supply planning process.

Planning the procurement of pharmaceutical supplies must be executed in a measured and well-organized manner so that it ensures a streamlined system that operates efficiently with minimal obstacles [11]. The flow of the planning system involves notification of *buffer* stock, in this case the *warning stock* in the Hospital Information System, including the composition from the demand and financial perspectives. The workflow of the procurement system is carried out effectively and efficiently by prioritizing a balance between demands and financial capabilities [12–14]. The application of accurate data in the planning process results in streamlined hospital business processes [1, 15].

Accurate and up to date data must always support the decision making process [10, 16]. When decision makers do not have data or cannot access data, bias can arise in the results of their decisions. Data processed properly can produce information that can be accounted for with the purpose of ensuring that the decision can be right on target [3, 15]. Therefore, decision makers must be able to access data used as a basis for decision making in order to provide proper and correct decisions.

5.1.2 The use of ABC VEN in the pharmaceutical supply procurement planning process

The results reveal that the preparation of pharmaceutical supply planning has used ABC VEN as one of the preparation tools since it is significantly proven based on in-depth interviews, document reviews, observations and FGDs. Nevertheless, the concept is not widely known by other divisions to improve the effectiveness of the procurement process.

The use of ABC VEN as part of the grouping of pharmaceutical supplies procurement has been applied in pharmaceutical work [13, 14, 17]. Grouping with ABC VEN is completed because it is classified based on hospital needs while considering the costs incurred by each item of pharmaceutical supplies [14, 17]. The composition results will certainly be unique and different in each hospital. The ABC VEN method is a

combination of ABC analysis and VEN classification [13, 17].

Traditionally, each element in the procurement system will arrange procurement based on a priority scale. However, individuals do not have the same view on this matter. The use of ABC VEN grouping which is widely known in pharmacy certainly cannot stand alone. [13, 14]. These characteristics in the ABC VEN grouping will make it easier for team members to understand the position of each item of pharmaceutical supplies in the inventory stock turnover.

The application of the ABC VEN evaluation model in the planning process also helps sharpen the results of pharmaceutical supply procurement planning [1, 18]. The ABC VEN evaluation capturing pharmaceutical supplies in terms of needs and financial value empower this tool to optimize the pharmaceutical supply planning process [10, 12]. The ABC VEN grouping can be a solution to the problem of how to make pharmaceutical supplies groups on budget because it can be easily interpreted by divisions that do not have any health educational background with the purpose of facilitating the evaluation of a pharmaceutical supply procurement application.

The problems faced by this planning department can be assisted by the pharmacy department by making groups according to the pharmaceutical supply group in ABC VEN. This grouping is more practical because it focuses on the nature of supplies in managing pharmaceutical supply logistics instead of focusing on the types of supplies. Pharmacists working in IFRS can provide an understanding of the ABC VEN grouping to the budget planning department. It is reflected in the discussion process at FGD that the grouping can be a solution of crucial problems in the budget planning department.

5.1.3 Flow of procurement of pharmaceutical supplies

The flow of pharmaceutical procurement has a crucial problem where the hospital's fixed procedures regarding procurement do not exist. A procurement process without a recognized fixed procedure will make it a customary process without any legal reference. A fixed procedure is only understood as supporting documentation for accreditation instead of a basis for action. There are seven stages in the planning and procurement flow at RSPG Cisarua Bogor. A manual procurement process with a flow involving two boards of directors will create inefficiencies in the pharmaceutical supply procurement system.

The efficiency of the procurement flow of pharmaceutical supplies also concentrates on regulations [1, 4]. Standard operating procedures or fixed procedures in hospitals can be evaluated periodically both in terms of the procurement process flow and from the procurement process timeline. The purpose of this evaluation is to simplify the procurement process so that it is maintained well concerning the bureaucracy of procurement documents and the speed of meeting procurement demands. A well-documented procurement system that has fixed standard procedures

confirmed by the leadership, in this case the president director, can facilitate the evaluation and conclusion of information obtained from pharmaceutical supply procurement data [1, 4].

Without a procedure in the internal policy order, the procedure proceeded is only an informal procedure that can potentially cause interdivisional problems. This certainly must be avoided in the implementation of a business process especially in hospitals involving many professions and educational backgrounds in their business processes.

The process flow of planning and procuring pharmaceutical supplies conducted manually and through long stages has the possibility of inefficiencies. Regulations issued by the Ministry of Finance regarding the procurement of goods and services exclude BLU. This is intended for the purpose of developing concepts in accordance with the existing ecosystem in the hospital. The aspiration is for hospitals to be managed with a fine business framework, ensuring effective and efficient business operations. Acting in the capacity of the leader of the hospital, the President Director possesses the autonomy to improve the hospital optimally.

5.2 VA, NVA and Waste Activities in the Procurement Process of Pharmaceutical Supplies at RSPG Cisarua Bogor

5.2.1 Identify value activities based on value stream maps

Internal constraints are the most controllable in a logistics management cycle. Internal barriers involve resources within the hospital itself [6]. When the hospital can identify internal obstacles, it can be more *agile* in changing following external situations and conditions. In this way, it is crucial to understand the weak points in the business processes prevailing in the hospital [19, 20].

Evaluation in an existing business process is a necessity for every business unit [18, 21]. The evaluation is mainly related to the unit that generates revenue and costs for the company [21, 22]. The example is the pharmaceutical unit with its important planning and procurement processes.

The results signifies that the activity points in pharmaceutical supply planning included in non-value added occurs due to doubts in the data presented in the pharmaceutical supply planning application. This leads to the re-evaluation process using other methods and it can be regarded as one of the obstacles in the pharmaceutical supply planning process. In addition, trust in the competence and integrity of personnel in pharmaceutical installations is also one of the factors for this re-evaluation.

This issue constitutes a crucial concern because of the lack of understanding of each other's points of view in the procurement process. Divergent points of views cause different justifications. Thus, the variations of justifications can be reconciled through the definite

guidelines within the planning system and tools in the pharmaceutical supply planning system.

5.2.2 Waste identification

The identification of waste in this study was spotted in the ranks of decision makers in the process of procuring pharmaceutical supplies. Waste at the planning point happens due to reevaluation applying different methods in calculating pharmaceutical supply needs. *Waste* that occurs on the board of directors includes Necessary but Non Value Added (NNVA).

Waste at the planning point can be optimized by opening access to supporting service coordinators enabling them to access data for conducting the same basic calculation standards. In this way, it can minimize calculations that are not in accordance with needs.

Waste on the board of directors exists because the process is carried out manually. This affects the procurement process negatively once the directors are not in place. Utilizing information technology is the best solution to tackle the issue [23]. The use of information technology is also one of the pillars in increasing the speed and ease of leadership in monitoring the performance of the subordinate tiers [3, 15]. Although this activity is considered non-value added, it remains important in the process of procuring pharmaceutical supplies. The role of leadership decisions is paramount to manage a balanced and compliant business process aligned with the applicable regulations [23].

5.2.3 The Root of the Problem in the Pharmaceutical Supplies Procurement System at RSPG Cisarua Bogor

These results signify indications of ineffective internal communication in the process of procuring pharmaceutical supplies. Constraints in internal communication are reflected in confusion in the grouping of pharmaceutical supplies from the perspective of budget compilers. In addition, it can be seen in the manual process causing the inability to comprehend the position of the application in real time. Referring to the existing procedure at the hospitals can be the solution, but the fixed procedures have not been obtained. In hospital accreditation, the existence of standard operating procedures has become a necessity. However, the drafting of the regulation is only based on copying the regulations of other hospitals. This deviates from the purpose for which the rules were formed. Hospital regulations are local and customized ensuring differences among hospitals [24]. The variations are based on the adaptation process to the existing ecosystem in the hospitals. Hospitals without standard rules as needed will place the rules as a mere display instead of a work reference. The content of the regulation will also not be fully applied. This creates internal barriers in the hospital's business processes. Internal obstacles in the process of procuring pharmaceutical supplies have been investigated by Saputra in 2019 concluding that unclear coordination is one of the inhibiting factors. This lack of clarity in

coordination reflects the absence of standard operating procedures that are fully comprehended by every individual involved in the procurement process of pharmaceutical supplies. Therefore, written procedures become mandatory in a hospital system [25].

5.3 Proposed Efforts to Improve the Procurement Process at RSPG Cisarua Bogor

5.3.1 Proposed improvement of SPO in the process of procuring pharmaceutical supplies

The addition of standard operating procedures in the procurement process must be tackled immediately. In addition to being formed, each element in the procurement process must also understand the procedures and apply them in the work process. Standard procedures are created according to the needs of the organization. Formulating fixed procedures for the procurement process of pharmaceutical supplies becomes the basic reference in the procurement process.

Making standard procedures that are appropriate to the hospital ecosystem will facilitate coordination in activities. Poor coordination will hamper the process of procuring pharmaceutical supplies [25]. Standard fixed procedures for pharmaceutical supplies procurement work are also a formal reference in pharmaceutical supply procurement activities.

Standard operating procedures in each hospital will be different. This depends on the organizational culture, organizational structure, authority between each section and the job description of each individual in the hospital. Improvements to standard operating procedures are customized depending on the needs of the hospital [11, 26].

The need for RSPG Cisarua Bogor as a referral hospital with class A type is effective and efficient hospital governance. Hospital governance refers to written regulations used as a reference and basis for evaluation in hospitals. This evaluation is part of the *continuous improvement* needed during this period [21, 22]. This improvement in operational standards must involve all elements in the hospital related to the policy [5, 16]. Accordingly, the process can ensure that the policies are collectively adhered to, not just a complement to accreditation alone.

5.3.2 Proposed use of planning and procurement indicators in the process of procurement of pharmaceutical supplies

Planning indicators at RSPG Cisarua Bogor have not been calculated by looking at efficiency factors in the process of procuring pharmaceutical supplies. Indicators of the efficiency of procurement of pharmaceutical supplies are not calculated, but data to calculate these indicators exist. The existing data has not been utilized optimally to determine the efficiency of the planning and procurement process at RSPG Cisarua Bogor.

Data that is not processed properly will not be of much use to the organization. If the data is processed properly, it can be important information for

organizations to improve themselves. Hospitals as complex business organizations are required to change continuously with the times. Therefore, the information possessed by the hospital must be comprehensive in order to compete well with other hospitals.

The use of procurement indicators has been widely recognized by hospitals in Indonesia. This indicator of the efficiency of pharmaceutical supply procurement includes the process of planning, procurement, storage and distribution. This efficiency indicator is important to be a benchmark for efficiency in the process of planning and procuring pharmaceutical supplies. The results of the indicator can be the basis for internal evaluations performed periodically [20, 27].

The efficiency indicator of drug management in hospital pharmacy popularized by Pudjastuti in 2006 states that this indicator can present valid, sensitive and specific data. The use of planning and procurement efficiency indicators has an important urgency in the context of pharmaceutical supply management.

Indicators that can more sharply describe hospital conditions objectively will ease the difficulties for hospitals to take further steps in their business strategy. This involves the use of pharmaceutical supply management indicators that are more specific to discuss pharmaceutical supply management necessary. By looking at existing indicators, hospitals can formulate steps and strategies at ease. Hospital management is different from one another causing the use of tools that function to sharpen analysis is needed as part of understanding the overall situation and condition of the hospital. In other words, this will not be achieved using common indicators.

5.3.3 ABC VEN proposal as a tool in the procurement process

Understanding the ABC VEN grouping in pharmaceutical supplies can facilitate the setting of pharmaceutical supply procurement priorities. Thus, the utilization of grouping with ABC VEN in procurement systems is helpful for non-pharmaceutical parts to understand the urgency of each item. Grouping with this system is also the basis of communication between pharmaceutical and non-pharmaceutical departments regarding the priority of purchasing pharmaceutical supplies.

The use of ABC VEN as a grouping tool for pharmaceutical supplies helps to identify groups based on importance, cost value and use value [13, 14, 17]. The ABC VEN grouping is widely known among pharmaceutical personnel. The ABC VEN grouping in each hospital is different so that the ABC VEN group is customized. In other words, it cannot be used in other hospitals. Each hospital has a different ABC VEN arrangement on its pharmaceutical supply items.

The ABC VEN guideline, serving as a classification guide in the management of pharmaceutical supplies, will ensure effective communications among hospitals departments. In addition, planning references will enhance the planning reference to determine the priorities of pharmaceutical supply management. Accurate planning will boost hospital performance,

especially from the financial aspect. Proper planning will also reduce the chance for drug stock outs.

The shortage of medications is an unavoidable situation within healthcare facilities. The prevention entails precise and meticulous planning of pharmaceutical supplies and it relates to the financial status of the hospital. In this way, maximizing the available budget allocation is required to meet the needs of pharmaceutical supplies in hospitals. Hospitals' failures in planning causes shortage of medication so that urgent procurement becomes necessary. Urgent procurement will certainly increase hospital costs to meet the needs of pharmaceutical supplies. Therefore, the presence of tools in planning and procuring pharmaceutical supplies is essential for effective pharmaceutical supply management.

6 Conclusion

The result findings show that proposed intervention can be carried out in various terms. In the short term, it is urgent to open access to pharmaceutical modules for decision makers and to formulate standard operating procedures containing procurement indicators. In the medium term, the research suggests a development of a hospital information system based on the research results, involving the ABC VEN categorizing and buffer stock as part of the online procurement system. In the long term, it advocates the government regarding the pivotal role of Procurement and Goods/Services Procurement Policy (PPBJ) within the Government Business Entity (BLU) to elevate the effectiveness and efficiency of the pharmaceutical supply procurement process.

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