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System Analysis and Implementation of Standard Operating Procedure (SOP) Towards Maximum Efficiency in Warehousing in Bekasi Raya

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ABSTRACT

This study discusses the problem of operational efficiency in warehouses in the Bekasi Raya area which is not yet optimal due to the lack of structured warehouse management systems and inconsistent implementation of Standard Operating Procedures (SOPs). The purpose of this study is to analyze the warehouse management system implemented and evaluate the extent to which SOPs contribute to increasing efficiency. The urgency of the study lies in the vital role of Bekasi Raya as a national industrial and logistics area that demands an effective and professional warehousing system. The method used is a descriptive qualitative approach through observation, in-depth interviews, and SOP document studies in five purposively selected warehousing companies. The results of the study indicate that although most warehouses already have SOPs, their implementation is not optimal due to lack of training, periodic evaluations, and the lack of integration of SOPs with technology-based management systems. In conclusion, SOPs that are implemented consistently and integrated with the warehouse management system can significantly increase efficiency. Digitalization, periodic training, and ongoing supervision are needed to support maximum efficiency in warehouse operations.

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1. INTRODUCTION

In the middle of competition an increasingly growing industry strict, efficiency in management warehouse has transformed from just option become need crucial strategic. Operational warehouse holds a vital role as foundation main in support smoothness supply, start from ensure availability materials and products appropriate time, pressing cost operational, up to strengthen Power responsive organization in a comprehensive way.

Manufacturing company, it is necessary realize that sustainability business term longer more worth compared to just to achieve profit momentarily. To stay in the middle competition good at level national both global and local, are required effort optimization internal system. One of step main in this process is to increase performance system supporters, including system management logistics.

According to [1] System management logistics own a very crucial role for companies engaged in the field service and also

manufacturing. Role of Management warehousing help manage warehouse with more efficient and effective so that No make product damaged, dirty, or difficult found [2].

Currently, one of the phenomena that occurs in the warehouse area of Greater Bekasi is accumulation goods on site storage temporary. Condition This due to Because still it is stored the real stuff Already No used, even though in a way physique Not yet experienced damage. This is cause capacity storage become limited and disturbing efficiency operational warehouse, especially in the process of exiting enter active goods. The implementation of Warehouse Management System (WMS) can become solution for overcome problem this, because system This capable identify the status of goods in a way accurate, manage rotation stock based on FIFO or FEFO [3] principle, as well as give warning to items that are not Again own movement (dead stock). With WMS, management warehouse can take more decisions appropriate related removal, deletion, or optimization room storage, so that efficiency operational can improved in a way significant [4]. On the side other, every company has standard operational procedures (SOP) or rule in do activity warehousing, but still, many have not own provision special regarding the maximum storage time limit goods. According to [5] Preparation of SOP is required in activities in warehousing, with objective for ensuring every process is running in a consistent way, improve efficiency operational, minimizing risk error, guard quality services, as well as ensure safety and security goods and also power work involved.

Viewed from condition capacity warehouse not yet utilized optimally, plus with implementation *warehouse management system* (WMS) that has not been walk in a way maximum. This is show that procedures that have been set in implementation work Not yet fully implemented in a way consistent in the field, so hinder control stock and efficiency operational warehouse in a way overall.

It is necessary to conclude that repair system management warehousing and implementation standard operational procedures (SOP) to overcome various problems that occur in the Bekasi Raya area warehouse. In the repair process, with implementation method *fishbone* diagram used for help identify root reason from problem in a systematic way, so that implemented solutionsbbecome more appropriate target [6]. So, researchers will discuss *System Analysis and Implementation of Standard Operating Procedure (SOP) Towards Maximum Efficiency in Warehousing in Bekasi Raya*.

2. LITERATURE REVIEW

Management Operational

Management operational is part from organization business in charge for produce goods or service [7]. According to Pitoy et al., [8], management operation is a process that is continuous and effective use function management for integrate various source Power in a way efficient in frame reach objective.

System Logistics Management

System is combination between networks between systems [9], whereas management is skill to work on source Power [10], temporary that warehouse is a backup area goods for temporary time [11]. In terms of short system management, the warehouse has an understanding that is control from mutual activities relate in every activity storage good for temporary time. Activities storage that is usually done among they accept from supplier, handling goods, expenses a goods To the Address is objective from activity storage. Function system management warehouse is for handle material problems that exist in the complex and aim for keep the activities in warehouse can walk smoothly. Management [12] warehousing made for needs classification activity warehousing that can influence the unity of the production process. When management warehousing is implemented with good can grow efficiency in management material or material handling in the warehouse.

Standard Operating Procedure (SOP)

Standard Operation Procedure is a bound writing with the procedures carried out as sequentially For handle a tasks that have objective For get provision very effective work from worker with the lowest cost [11], With the existence of SOP has hope can made into a guidelines main for employee in carry out work to have consistency in implementation his job [13].

Fishbone Diagram

Fishbone diagram or normal known with fishbone diagram is techniques used for develop quality. In this diagram will show the impact caused from a problems caused from diverse trigger [6].

3. METHODS

Methodology study This use approach descriptive qualitative with method studies case study For to obtain deep understanding about System management warehousing as well as implementation *Standard Operating Procedure* (SOP) in frame increase efficiency operational warehouse in the Bekasi Raya area. Research this focuses on phenomena that occur in the field, especially How SOP implementation plays a role in repair channel work and management logistics insidewarehouse.

The population in study is all over company manufacturing and logistics that have facility warehousing in the Bekasi Raya area, including Bekasi City and Bekasi Regency. The technique determination sample done in a way *purposive sampling*, namely with choose warehouse companies that have implementing SOP in operational and willing provide data and access observation to researchers.

Data collection was carried out with three main techniques, namely interview in-depth, observation direct, and study documentation. Interview done with a few related parties direct with management warehouse, such as manager logistics, warehouse supervisor, and staff operational. Observation done with observe the work process warehouse in a way direct, covering reception goods, storage, expenditure, as well as channel movement goods. Documentation study involving collection document related such as warehouse SOP, warehouse layout, structure organization, as well as report operational support study.

Data that has been collected analyzed with use technique qualitative data analysis, which begins from the data reduction process to filter relevant information, presentation of data in form narrative and visual (such as table or diagram), and drawing conclusions based on interpretation of data in the field. The results of this process used for identify obstacles faced in implementation of SOPs and formulate recommendation repair use reach maximum efficiency in activity warehousing.

4. RESULTS AND DISCUSSION

Analysis Implementation *Warehousing Management System* (WMS)

In activities warehousing Of course there is source Power man as the mover activities in the Warehouse. Where in Warehouse management of course the need for structure organization designed for efficiency and accuracy in managing current goods, good in the process of receiving, storing, and delivery. As for the position highest there is *Warehouse Manager* is responsible answer on overall operational warehouse, including supervision staff, control stock, and reporting performance to Management Company. Underneath, there is a Warehouse Supervisor who regulates activity daily warehouse as well as ensure procedure walk in accordance standard operational. Then there is Staff Receiving Staff on duty check, note, and confirm goods arrived in accordance with document delivery. Next, Staff Storage (Put away Staff) plays a role in putting goods in the right location in accordance system applicable storage for easy found moment needed. Staff Picker and Packer are responsible answer in take goods in accordance order as well as pack it up For sent to customer or other units. In addition, there is also an Inventory Control Staff whose job is to manage and control stock goods, including do recording and auditing periodically. In the warehouse scale large, the role of Quality Control (QC) is also very

important for ensure goods in condition well and appropriate standard before saved or sent. All role this each other related and contributing in create channel orderly, efficient and error- free work in operational warehousing.

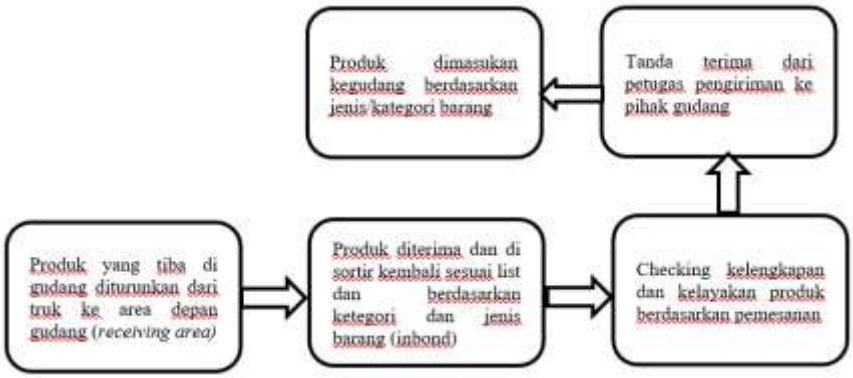
All over structure organization This support implementation system management warehousing consisting of from a number of activity main, namely receiving, storage goods (put away), Movement of Goods in the Warehouse (Internal Movement), taking goods (picking), packaging (packing), and shipping (shipping). Each activity the need good coordination between part for guard smoothness current goods, avoid errors, and improve efficiency operational warehouse in a way overall.

1. *Inbound* material receipt (*Receiving*)

Material acceptance is the initial process from implementation management warehousing, begins when the material arrives at the front area warehouse (receiving area). Activities the first thing to do is Unloading or the process of lowering goods sent by the supplier. This is conveyed by informant 1 as follows:

"That *receiving area location for the process of unloading goods or decline Items shipped from the supplier. The goods sent from the supplier must checked quantity and quality the goods new after that the part separation process is carried out or if here He called it separation based on zone basis.*" (Quote) interview informant 1, on September 5, 2022).

Based on quote interview the show that for do storage of materials in the warehouse No direct brought to in warehouse. However, the materials that have placed in *the receiving* area will sorted and grouped based on *zone base* or *store area.* Then, the material that has been grouped will checked completeness and eligibility goods based on Ordering. The Material Receipt Scheme in the warehouse in a way general can see in Figure 1.



Source: Data Processing (2023).

Figure 1. Activity Material Receiving

2. Material Handling

In material handling, there are a number of activity main ones include (1) Storage goods (put away), Where the activity this determine location optimal storage based on type and frequency goods used. (2) Movement stuff insidewarehouse (Internal Movement), Activities this move goods from one location to other locations within warehouse, such as from rack to the sorting area, or from storage area to the packing area. (3) Pick-up goods (picking), Taking goods in accordance with request list or order customers, the methods used in activity this including: FIFO, LIFO, or FEFO depending type goods. And (4) Packaging, where activity this with method packing the goods to be sent for safe keeping during the shipping process. Activities This must done in a way efficient For ensure smoothness channel logistics , reduce time wait , and minimize risk damage or lost goods . However mostly in warehousing activity This No walk in a way

efficient Because lack of standardization procedure work , limitations training power work , use manual systems that slow down the process, as well as not enough optimal use room storage . This is conveyed by informant 3 as follows:

"One *of challenge the main thing we face in the warehouse is lack of standardization procedure work. In addition, training for power work is still going on limited, so that Lots activities that have not been done in a way efficient. Our process is still Lots depend on manual system, which makes channel Work become slowly. Usage room storage is not optimal, especially in activity material handling such as storage, movement, retrieval, up to packaging goods"* (Quote interview informant 3, on September 5, 2022).

Based on quote interview the show that for do material handling required integrated system such as Warehouse Management System (WMS). With implement the system can minimize error in handling.

3. Releasing Goods (*Shipping*)

Material release from in warehouse to production involving a series steps required for ensure supply material or the right material, the right quantity and the right time for fulfil need production. The material release process begins at the time production do booking to warehouse. As conveyed by informant 3:

"Our *material release process based on request production. When the inventory there out of stock (shortage), they will send required material requests for start or continue the production process. Later we here verify request and the preparation process immediately for delivery to production.*" (Quote interview with informant 3, September 5, 2022).

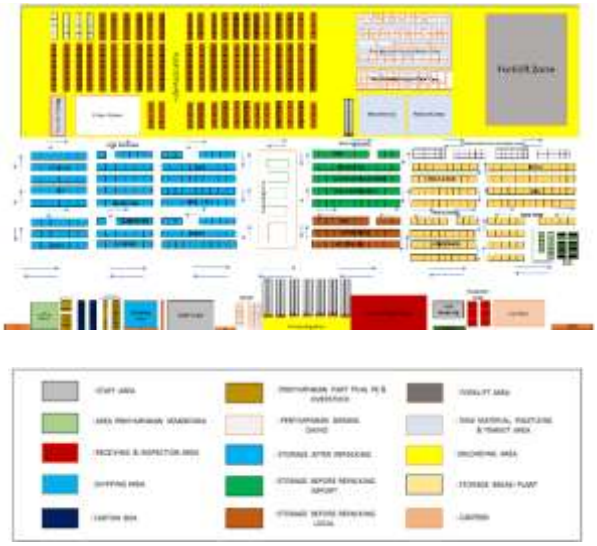
Production department do material request in section warehouse through system *Request Order* (RO). System *Request Order* (RO) is request sent through system information contains the requested material data. In this Request Order system, the warehouse operator is responsible answer will verify request through computers and requests the printed in the form of a sheet paper or what is called RO sheet. This is conveyed by informant 2:

"Later the PIC from production will send material request using Request Order (RO) system. With RO system later PIC from production only send request through existing computerthere (part production). Then the operator is responsible answer will verify request, print request into RO sheet and directly prepare the requested materials with carry the trolley accordingly with type request from part production. At the time taking material parts, the operator also ensures the part number and quantity in accordance with request with use scanner tool called BHT. How it works tool This with direct BHT rays to direction QR code on the RO sheet, if sounds very means the material Correct but If sound the material twice No in accordance with sheet ." (Quote interview with informant 2, on September 5, 2022).

From the quote interview can see in the process of taking material parts from the shutter or rack location storage use tool help trolley for transport material in a way efficient. Before the material comes out to production, done inspection quality for ensure that the material is suitable with request. After make sure the material is ready in accordance request, material will be brought to the shipping area for quick sent to part Production. Shipping done in accordance with timetable production and needs production. Every stage in the process of releasing materials recorded and reported. The operator is responsible answer will do recording and reporting covers amount of material issued, date and time expenditure, as well as information other relevant. Recording this important for ensure accuracy stock and prepare the release process next.

In addition to the implementation system management warehousing, an effective layout is required so that activities storage, retrieval and delivery goods can walk in a way efficient and organized. Layout good warehouseallow channel movement goods become smoother, reduce time search goods, minimize risk damage, as well as optimize use available space. With Thus, the combination between system structured management and proper warehouse layout will increase

productivity as well as support smoothness operational in a way Overall . The proposed layout in warehousing can see in figure 2.



Source : Data Processing (2023) .

Figure 2. Warehouse Layout

Based on Figure 1. Storage goods in warehouse based on classification function goods and classification speed flow current. Classification function goods, namely classification goods raw material and classification goods half so (work in process). In the classification speed current goods *fast moving* and *slow moving*. With system proposed arrangementactivities inside warehouse become more effective and efficient. With existence proposal repair flow current warehousing this expected can reduce time used for distribute goods as well as increase productivity Work.

Implementation Standard Operational Procedure (SOP)

Based on results observation live , interview with staff warehouse , and analysis to available SOP documents , found that company has have a written SOP that includes all major processes warehousing , starting from reception goods , storage , retrieval , to delivery . However, its implementation in the field Not yet fully optimal. Compliance level against SOP only reach around 70%, which shows that Still there is inconsistency in implementation procedure. One of the factor the cause is still its use manual recording for in and out goods, which are vulnerable cause data errors and inconsistencies.

In addition, the results study show that company not yet regularly organize training related to warehousing SOP. Employees new generally Study direct from colleague senior work without follow training official, so that understanding to procedure become No evenly distributed. Infrastructure Supporter like system management warehouse (WMS) also not yet available in a way maximum, so that management goods Still nature conventional. On the other hand, it was also found that there was practice adjustment in the field that is not documented formally. Condition this cause the occurrence mismatch between procedure written and practical real, which in the end can bother effectiveness of internal audits as well as external.

Discussion to results the show that the existence of SOP as guidelines Work No Enough If No supported by ongoing training , supervision implementation , as well as use technology information . SOP should be become tool for guard consistency, efficiency, and security operational warehouse, but without understanding and awareness full from the implementers, SOP will tend

ignored. Therefore that, company recommended for stage training periodic for all over staff warehouse, implement digital systems such as barcode scanners and WMS for support accurate recording, as well as update SOPs regularly periodic based on evaluation and needs field. With steps mentioned, warehousing SOP can truly functioning as tool control and improvement performance Logistics Company.

Discussion

Activities that occur in warehousing Bekasi Raya factory has same activity as explained by [14] own three activity namely: (1) Acceptance materials (Receiving), (2) Handling materials (Material Handling), and (3) Expenditure Materials (Shipping). Activities done in accordance with the processes or procedures established by management every Company.

Based on procedure reception goods, time goods arrive from supplier, goods the brought to the receiving area for done checking completeness by the QC Receiving operator. If the goods has accordingly, the QC Receiving operator will complete document hand over receive (A-Notice) and input stock data to in system information company, namely CIGMA (Computer Integrated of Manufacturing).

Viewed from the material handling methods applied in Bekasi Raya warehouses, almost 70% apply First in First out (FIFO) method, p this in accordance with study [15] that is a method arrangement where the first item enter will go out moreover first. Arrangement goods in warehouse integrated use code items attached to each shutter or rack storage. The rest using FEFO and LIFO.

In the process of issuing goods in Bekasi Raya warehouse, used RO (Request Order) System application for facilitate part production in do material part request. This RO application make it easier activity expenditure goods only with use device computers and internet networks. The operator will processing request material part expenditure based on the RO sheet that has been printed. So that all activity warehousing can walk more efficient and effective, required layout planning good warehouse. This is in line with Jacobus & Sumarauw's opinion [16]that state that warehouse with room random and distributed , such as in the canopy area , of course not enough efficient compared to with warehouse that has room clean and tidy layout with Good .

Warehousing in the Bekasi Raya area has a layout sufficient storage well . In addition , it has done proposal layout fix warehouse , as can seen in Figure 2. However , the flow current stuff inside warehouse Still Not yet maximum , and still found accumulation goods , which causes activity warehousing Not yet walk optimally . The problems that exist in Bekasi Raya Warehouse need to be completed in a way fundamental , so that the problem similar No return appear later day and effort improvements made No become in vain .

Mirza et al[17] to put forward that the fishbone diagram can used For help identify root reason a problems . Through interviews and observations , roots problem Then classified to in four aspect main , namely man , methods , materials, and environment . Grouping This done Because factors the own significant influence to the occurrence problem . As for fishbone, it can seen in Figure 3.

Source: Data Processing (2023).

Figure 3. Fishbone diagram.

Based on image 3 above, can know that seen from method, problem main lies in not existence clear rulesabout duration storage, layout goods, and cleanliness warehouse. This is because storage goods become No regular, difficult tracked, and potentially cause inefficiency time. In the aspect human, problem appear consequence lack of attention staff to condition warehouse, dependency on instructions superiors, and burden overwork. Condition This reduce initiative staff and resulted in suboptimal performance.

Environmental factors also contribute to the problem, such as accumulation goods that have been No used but still saved Because Not yet damaged, and the amount type the thing that makes warehouse overload. While that, from material side, the actual goods No own mark functional still saved, so that fulfil room storage and reduce efficiency. For overcome problem this, is required steps systematic like implementation of storage SOP, training staff for increase awareness and initiative, as well as periodic audits for optimize room warehouse. In addition, the use of technology management warehouse can help in tracking and automation of processes. With repair fourth aspect said, warehouse can operate more efficient, organized, and supportive productivity company in a way overall.

Standard Operational Warehousing Procedure (SOP) For Efficiency of Goods In and Out and Stock Control

In ensuring smooth warehousing process and optimization room storage , required implementation of warehousing SOPs which include mechanism in and out goods , monitoring *dead stock* , as well maximum limit provisions storage .

Procedure reception goods started with verification documents and inspection physique goods, continued with real-time recording to in system management warehouse (WMS) and placement goods according to the zone and FIFO/FEFO principles. While that, the process of issuing goods must referring to the request official (pick *list)*, followed by recording stock exit and update system data for ensure accuracy inventory. For prevent accumulation goods No moving, **system warning *dead stock*** activated with to mark items that are not own movement for 3 months. The item will enter in report weekly / monthly along with recommendation action like discounts,

relocation, or deletion. If within 6 months still No absorbed, goods will evaluated more carry on for donated or deleted from inventory.

In addition, the **maximum limit storage** enforced based on category goods, for example 1 month for goods fast broken, 6 months for non-perishable goods, and 12 months for goods seasonal. Goods exceeding the limit will be marked as *overstock* and follow up with cleaning strategy stock. Support technology such as WMS and barcode scanners become key efficiency, allowing real-time tracking and automation warning. This SOP also involves monthly audits and evaluations. Periodic every 6 months for ensure relevance with need operational. With implementation structured this, company can reach efficiency room warehouse, savings costs, and improvements accuracy inventory in a way sustainable.

5. CONCLUSION

Based on results discussion , can concluded that system management Effective warehousing is highly dependent on the existence and implementation of Standard Operational Clear, structured and implemented procedures (SOP) in a way consistent . SOP plays a role important as guidelines in arrange all over activity warehousing, starting from reception, storage, retrieval, to deliver Goods. Good implementation of SOP can increase efficiency operational, minimizing errors, and ensure security and accuracy of goods data. However thus, success SOP implementation also requires support system adequate management, such as use technology information (e.g. Warehouse Management System), training periodic for staff warehouse, and continuous monitoring and evaluation. Withoutexistence integrated system and culturedisciplined work to procedure, SOP only will become document administrative which is not give impact significant to performance warehouse. Therefore that, integration between system management Strong warehousing and SOPs is key main in realize management professional, efficient and competitive warehouse.

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