Improvement of Inventory Sharing Process at Home Furnishing Company

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Abstract. This research analyses the inventory-sharing process for a home furnishing company with decentralized inventory management that executes an inventory-sharing process called stock balancing, which aims to balance inventory levels between stores. Previously, the inventory exceeded total capacity with a high overstock level, but product availability was low, thus affecting business commerciality and stock holding. The cycle time of weekly execution was too long, up to one month, and did not significantly impact inventory structure due to inventory discrepancy. This study aims to investigate and identify issues in the current stock balancing process, to analyze the impact on total inventory level, and also to design business process improvement in a shorter cycle time. A qualitative method is conducted in this research, and data collection is done through interviews and observations. The research began with analyzing the current process to identify the root cause. Then, proposing process improvements through ten business process improvement steps, including techniques such as nonvalue added analysis, elimination, reduced cycle time, and automation. The result projects that the stock balancing process can be improved by eliminating four duplicating activities, and the cycle time could be shortened by 50%. In addition, this study suggests supporting factors such as system integration and dedicated manpower to fully support the stock balancing process.

Keywords: *Business Process Improvement, Inventory Management, Inventory Sharing, Product Availability.*

1 INTRODUCTION

Managing inventory became more challenging due to a higher risk of overstock and stockout. Various challenges companies face worldwide require them to find solutions for other ways of selling, especially in supply chain management. Thus, innovation and agility are prerequisites for supply chain strategy [1]. One of the problems faced by many retail stores is inventory distortion [2]. PT ABCD is a home furnishing company in Indonesia with several stores and sells around 8000 stock-keeping units (SKU). The company also

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experienced product availability issues, leading to decreased sales. Product availability and overstock level are two metrics measured by PT ABCD as their operations performance indicators. As of 2022, the product availability was around 84% from the goal of 96%, and the overstock level reached 70% from the 40% goal. This condition certainly impacted the total holding level and sales plan. Aside from maintaining the forecasting and ordering process, PT ABCD set a routine of inventory sharing called stock balancing to cope with the inventory issue. Inventory sharing is moving inventory from one unit to another in a different location [3].

In practice, even though stock balancing has been carried out since July 2022, it has not significantly helped improve PT ABCD Indonesia's inventory. Product availability figures only increase slowly, and overstock levels are very difficult to reduce. There are also problems with the weekly execution, such as a very long lead time for the stock balancing process, reaching one month, and inventory inaccuracy if the volume of shipments is high. Therefore, it is necessary to improve business processes so that the stock balancing process can run more efficiently and overcome inventory problems. Thus, the research aims to design and propose improvement suggestions to increase efficiency and reduce cycle time.

Inventory Sharing

Inventory sharing is moving inventory from one unit to another in a different location [3]. One of the problems companies face regarding their inventory is the existence of uncertainty in the supply chain, which causes stockouts and overstocks. Yan and Zhao (2015) said that collaboration within an organization with several branches/business units continues to experience growth. Additionally, one business unit can balance its inventory levels by reducing overstock items or receiving stock from other stores experiencing overstock through inventory sharing [4]. Through the exchange process, inventory levels will become more balanced, and service levels will increase, although amid uncertainty [3].

Business Process Management

Kaniski and Vincek (2018) define a business process as a series of activities in a business that are processed to provide value for its customers [5]. Process improvement (PI) is defined by Hammer (2002) as a structured approach to an update process that is well-designed and executed in end-to-end processes in the company [6].

Susan Page (2010) [7] suggests that ten steps need to be taken by companies to improve business processes with the explanation below:

1. Develop the process inventory
2. Establish the foundation
3. Draw the process map
4. Estimated time and cost
5. Verify the process map
6. Apply improvement techniques
7. Create internal controls, tools, and metrics
8. Test and rework
9. Implement the change
10. Drive continuous improvement

2 METHODS

Research design is a plan and structure designed to answer the problem. Research design can be the basis of design to help researchers with limited resources in data collection, measurement, and data analysis [8]. This researchis a descriptive study with a qualitative method to obtain problems and propose improvements to the inventory-sharing process in a home furnishing company. Interviewswere conducted to gain knowledge and understanding of the inventory-sharing processat PT ABCD. The population in this research is the entire stock balancing process at PT ABCD from July 2022 until April 2023. Thesample in this study is the stock balancing process, which will be carried out in March 2023. The sampling process used non-probability sampling, specifically purposive sampling, to choose seven employees as interviewees based on working experience and knowledge. On the side, choose the time of operations of the inventory sharing process. The interview process was conducted online due to limitations in offline activity during a pandemic.

2. 1 Data collection

Data was collected through several methods, including interviews, observation, and literature study. Data was obtained through interviews with the research subjects consisting of logistics managers, supply chain managers, service fulfillment leaders, and logistics leaders. Observations were conducted to observe the inventory-sharing process executed by related parties during office hours at PT ABCD. Secondary data was sourced from the company's data and documents, including the company's profile, Key Performance Indicators (KPI), and books and journals.

2.2 Data analysis

Process analysis in this study is conducted through ten steps of Business Process Improvement, according to Susan Page (2010) [7].

3. RESULT AND DISCUSSION

Figure 1 explains the current weekly inventory-sharing process flow in PT ABCD.

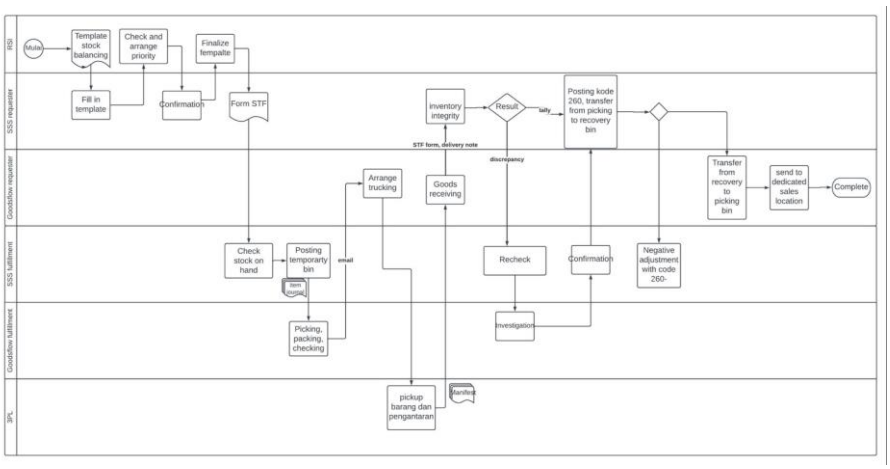

Fig 1. Stock Balancing Process Map

The total process time for the stock balancing process was around 16 to 44 hours. At the same time, the cycle time reaches 60 to 220 hours based on 8 hours of daily working hours. Therefore, cycle time requires 9 to 28 days.

Improvement of Business Process

This process can occur after an analysis is carried out by applying business process improvement techniques of value-added, reduced cycle time, simplification, and automation.

Value added analysis

Value-added analysis is divided into three classifications: non-value added (NVA), value added (VA), and business value added (BVA). In total, there are three non-value added (NVA) activities: making templates, confirmation, and adjustments in the system.

Simplification

This activity is having to prepare to send a template and give confirmation. The next activity that is analyzed and can be eliminated is during the process of making adjustments to the system. Lastly, the investigation will be removed if the stock balancing process occurs only when there is an inventory discrepancy.

Reduce Cycle Time

According to Table 4, several activities can be reduced in cycle time according to the results of the interviews, which are giving confirmation, picking and packing process, inventory integrity, and manual adjustment if the process is supported by sufficient manpower and technology.

Automation

Automation is planned to integrate with the MVBC system and use Mobile Goodsflow in each unit. Until 2023, the MVBC system is not fully integrated between each business

unit, which is possible to adopt as a benchmark for the Singapore branch. The system integration had been implemented in the Singapore branch and ran efficiently at the store.

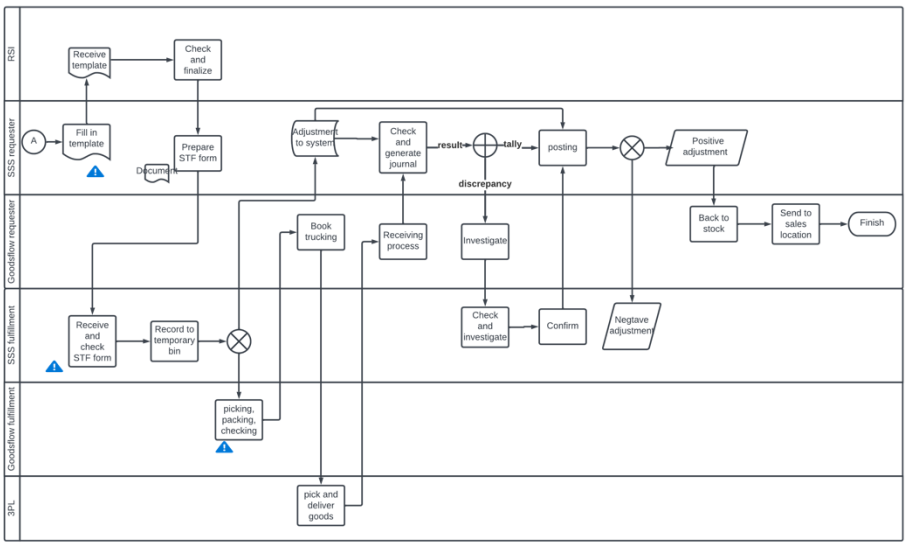

Fig 2. Stock Balancing Process Map after improvement

This process was formed based on the results of discussions, and adjustments have never been formally documented. Therefore, the formulation and creation of SOPs are urgently needed so that all employees involved have guidelines and benchmarks for the success of the stock balancing process.

The subsequent discovery was the discovery of several errors, for example, during the picking and counting process, which caused inventory discrepancies. This process still needs to be run manually for the picking and packing process. Errors can be prevented by providing training and training related to PT ABCD products, for example, SKU numbers, colors, and materials. With training, it is hoped that employees will be able to carry out the picking process more accurately and pack more safely so that goods will not be damaged. The training will also positively impact the counting process so that employees can differentiate each incoming article (SKU) and count more accurately.

Researchers then recalculate the savings in terms of time that can be generated from the new business process flow. In the table above is the new total process and cycle time. In the existing flow, the process time is 16 to 50 hours, and the cycle time is 9 to 36 days, depending on the situation in each business unit. After improving the process, the process time becomes 11 to 35 hours, and the cycle time becomes 6 to 14 days. Thus, the process can be completed in a shorter time.

4 CONCLUSION

To improve the inventory-sharing process, PT ABCD should consider several findings to achieve efficient processes and reduce cycle time. Firstly, to eliminate three stages that fall into the category of non-value added (NVA). Next, to implement technology in the system and integrate the system across multiple channels to reduce manual processes. Next, to increase the number of dedicated manpower specifically to carry out the stock balancing process and to create and distribute Standard Operating Procedures (SOP) for the stock balancing process. If those suggestions are taken and processed in the whole stock balancing process, it could reduce cycle time from 60 to 220 hours to 46 to 112 hours.

For future studies, we could consider several points. In this study, we measure the process solely based on the process lead time and do not measure costs as another benchmark due to data confidentiality. Therefore, a suggestion is to measure in terms of related costs, such as transportation and warehouse storage costs. This research also excludes forecasting; thus, it will be beneficial to include forecasting in the following studies. Lastly, to develop and conduct research in other areas related to inventory performance, such as inventory ordering systems and warehouse management.

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