

IMPROVING RAW MATERIAL PICKING EFFICIENCY IN THE WAREHOUSE: A CASE STUDY OF ABC COMPANY LIMITED

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ABSTRACT

This research studies raw material warehouses and focuses on raw material waste. This research aim to 1) study the warehouse management of ABC Company Limited, 2) to analyze internal problems in the warehouse management of ABC Company Limited, and 3) to guidelines for improving the warehouse management efficiency of ABC Company Limited. The data was collected from interviews and analyzing the flow of activities and causes of problems using a Flow Process Chart and Why-Why Analysis. The result found that the lack of item location labeling on the storage shelves resulted in unclear storage positions and delayed picking activities. Therefore, the researchers applied warehouse management concepts by setting location names on the shelves and using Stock cards as tools to improve raw material picking efficiency. The study results showed that it was possible to reduce costs and minimize work delays, thus enhancing warehouse management efficiency and customer satisfaction.

Keywords: Warehouse, Stock cards, Efficiency

INTRODUCTION

Currently, logistics plays a significant role in every business. Warehousing is part of the logistics process. Generally, warehouses are responsible for storing goods awaiting movement and distribution. Effective warehouse management reduces errors and increases operational efficiency.

Case study company is an import, production, and distribution company of metalworking machinery, roofing structures, and various crane equipment. Warehouse operations include storage and picking processes that are not efficient. There is no location labeling in storage and absence of recording in storage management.

This problems effort raw materials searching time and production, causing delays in the picking process. Additionally, some items of raw materials are not found by employees, impacting warehouse management. The research team has recognized the issues, losses, and impacts incurred and aims to study methods to improve storage and picking efficiency in warehouse.

OBJECTIVE

1. To study the warehouse management of ABC Company Limited.
2. To analyze the warehouse management and internal problems of ABC Company Limited.
3. To guidelines for improving warehouse management efficiency of ABC Company Limited.

METHODOLOGY

- **Steps for conducting research are as follows**



Fig. 1 Steps for conducting research
Source: Researcher

- **Data Collection**

Gather information on the warehouse operation processes of the case study company through inquiries and observations.

- **Why-Why Analysis**

Niran Vutthisak (2015) stated that Why-Why Analysis is a tool that can systematically analyze the causes of problems or root factors leading to problems, to solve problems and prevent their recurrence. The process involves the following steps:

1. Define the problem topic.
2. Study the structure and functions of the problematic part.
3. Define the investigation topics.
4. Check and confirm the investigation results.
5. Identify the causes of the factors that lead to the problem.
6. Verify correctness.
7. Establish preventive measures.

Why-Why Analysis is a cause-and-effect analysis that can clearly identify the occurring problems. It starts by asking "why," gradually getting closer to the problem, thus enabling more effective problem management.

- **Flow Process Chart**

Nonthiya and Pinmanee (2019) utilize the Flow Process Chart to analyze the flow process of materials, components, personnel, and equipment moving within the process, along with activities, using the standard symbols of 5 elements specified by ASME in the United States as shown in Figure 2.

Symbol	Meaning	Definition
○	Operation	- Alteration of chemical or physical properties of a substance - Assembly or disassembly of components - Preparation of materials for subsequent work - Planning, calculation, issuing commands, or receiving commands
□	Inspection	- Inspecting the characteristics of an object - Inspecting the quality or quantity
➔	Transportation	- Transporting goods from one point to another - Movement, personnel are walking
D	Delay	- Temporary material storage during operations - Waiting for the next phase of work to begin
▽	Storage	- Storing materials in a permanent location requiring instructions for movement. - Storing components that await for a long period of time.

Fig. 2 The symbols used in the Flow Process Chart.
Source: Nonthiya and Pinmanee (2019)

- **Data Analysis**

Using information obtained from unstructured interviews and participant observation, together with Why-Why Analysis theory, Niran Wutthitsak (2015) explained that Why-Why Analysis is a tool that can analyze the causes of problems or root factors leading to problems.

- **Setting Location Name**

Setting location names for selective racks at each point used for storing raw materials and creating location name signs to enhance operational efficiency.

- **Stock Card**

Recording data of raw materials flow in the past, Both in the process of storing and picking products. to understand the flow of raw materials and know the location and quantity.

RESULTS

After using data obtained from unstructured interviews, the researchers analyzed and identified the root causes of the problems using the Why-Why Analysis method, It was found that the lack of item location labeling on the storage and absence of recording in storage management are the main causes of the problems and processes that affect the efficiency of raw material picking as shown in Figure 3.

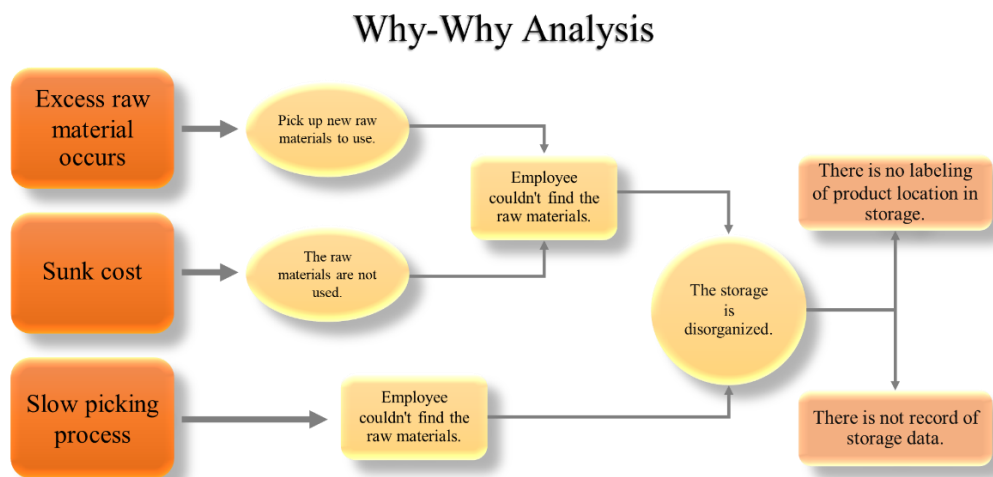


Fig. 3 Analysis of the cause of the problem with Why-Why Analysis

Source: Researcher

And considering the workflow process using the Flow Process Chart, it was found that there was disorganized raw material storage due to the lack of setting locations name and absence of recording storage data. Sometimes, employees would store materials based on their own familiarity or convenience, leading to disorganized storage and difficulties in searching for raw materials, resulting in delays in picking activities as shown in Figure 4.

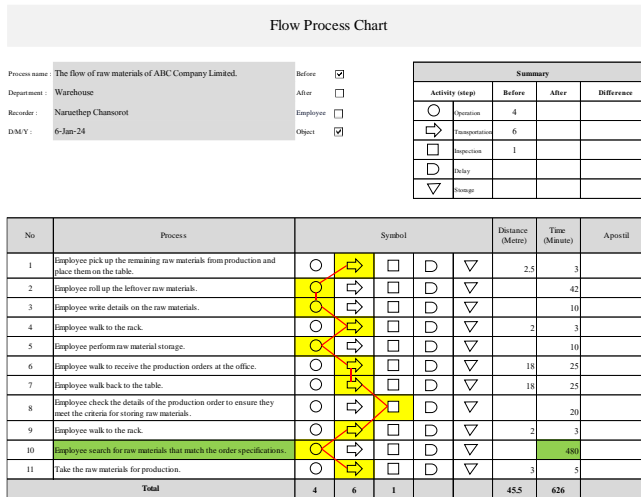


Fig. 4 Flow process chart before efficiency improvement
Source: Researcher

Before the improvement found that the process consuming the most time was the searching for raw materials, resulting from the lack of organization in storage locations, causing employees to spend unnecessary time searching for materials. This led to subsequent delays in other work processes. The total time for all operations was 626 seconds

After the improvement, the researchers implemented a method of setting locations name and stock cards to enhance efficiency, making it convenient for searching and easy for picking materials. This resulted in much faster operations, improving efficiency in warehouse management, and reducing the time for the work process to 256 seconds as shown in Figure 5.

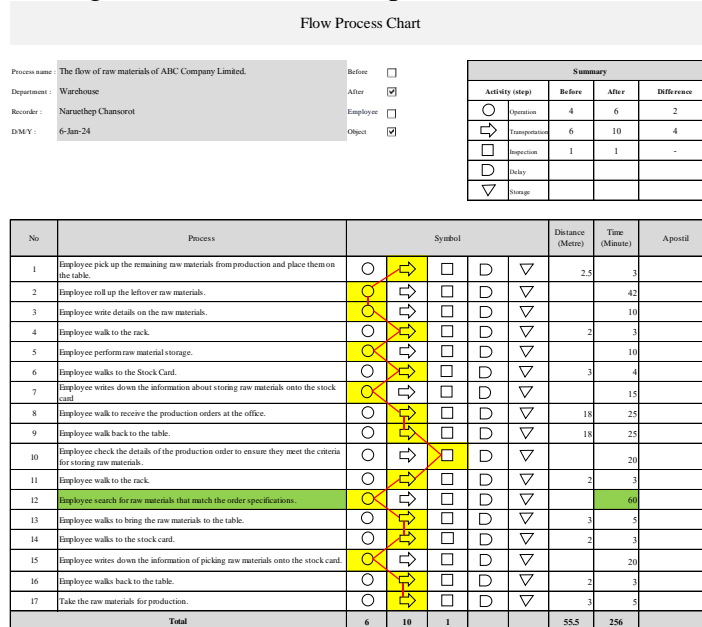


Fig. 5 Flow process chart after efficiency improvement
Source: Researcher

CONCLUSION AND FUTURE WORK

After analyzing the problems that occurred within the warehouse of ABC Company Limited, which stemmed from inefficient management, resulting difficulties in searching for raw materials and picking process taking longer than necessary due to the lack of location names in the storage and no recording of storage data, the researchers improved operations by setting location name to the selective racks used for storing raw materials and stock cards to record storage and picking materials. After the operation, it was found that the positions used for storing raw materials were clearly recorded and made known to the employees, enabling employees to locate them easily and resulting in faster picking processes, thus reducing delays caused by difficulties in finding or retrieving materials. Before the improvement, the total operation time was 626 seconds. After the improvement, the total operation time was to 256 seconds. This resulted in a reduction of 370 seconds about 59.11%. Furthermore, upon examining the orders from January, it was found that there were 15 orders where the materials could not be found for production. After the efficiency improvement, all January orders were successfully fulfilled, resulting in a reduction of raw material costs by 835 Baht, from a total raw material cost of 5,140 Baht about 16.25%.

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