

THE UTILIZING OF THE FIFO SYSTEM FOR ANALYSING AND DESIGN INVENTORY CONTROL WITHIN A COMMUNITY ENTERPRISE GROUP IN UDON THANI

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ABSTRACT

Every entity requires inventory to facilitate the seamless operation of its functions. It acts as a crucial connection between the production and distribution processes. The allocation of resources to inventories represents a major portion of current assets or working capital in the majority of enterprises. Therefore, maintaining effective control and management of inventories is crucial. This study aims to explore strategies for enhancing the efficient management of large inventories within community enterprises in Udonthani province. It proposes utilizing ABC analysis to classify products based on their annual turnover value into 3 groups: Group A, Group B and Group C, arranged in descending order of importance. This research will Implementing the 5S activities to improve the operations of the group. Subsequently, incorporating the FIFO (First In, First Out) system will benefit the organization by preventing the misplacement of components and the storage of outdated materials. Therefore, classifying inventory and inventory and implementing the FIFO inventory system enables inventory executives or responsible individuals within community enterprises to prioritize product orders. This allows them to establish policies for effective inventory control within each group, ultimately saving time and reducing unnecessary expenses. Consequently, this optimized approach contributes to maximizing benefits for community enterprise groups.

Keywords: Inventory Management, Inventory Control, FIFO System

INTRODUCTION

Data constitutes information in our surroundings, not inherently accessible, and can be strategically employed in business contexts (Arvidsson, Holmstrom, & Lyytinen, 2014). An inventory information system is designed to gather information, manage data related to inventory, transform the data into meaningful information, and present this information to users through reports (Sari, 2015). Businesses involved in manufacturing typically need an inventory system. This system usually encompasses functions such as procurement, receiving, storage, order management, retrieval, shipping, and product

returns. An alternative description of inventory information systems is a system that oversees transactional and inventory data within a warehouse (Taleizadeh, Noori-daryan & Cardenas-Barron, 2015).

First In First Out (FIFO) system is used to optimize the use of raw material for reducing the wastage of raw material due to expiry of the raw material stock (Deepa & Niyati, 2016). DNS to analysis the existing problem of the inventory information system and to design the system which can record the quality of incoming goods and goods that come out based on FIFO method (Parlar, Perry & Stadjie, 2011).

The objective of this research is to assess the current issues with inventory information system of Pla Ra Lon Nikhom Songkhro community enterprises group to align with the group's requirements and to develop a system capable of documenting the quality of incoming and outgoing goods using 5S and the FIFO method.

The paper is organized into four sections. In addition to the introduction, the second section provides details on the study's methodology, the third section outlines the results and discussion, and the final section offers conclusions.

OBJECTIVE

1. To study investigate the inventory management issues of Pla Ra Lon Nikhom Songkhro community enterprises group
2. To study the application of 5S and FIFO systems in managing the inventory of Pla Ra Lon Nikhom Songkhro community enterprises group

METHODOLOGY

The research focused on employees at Pla Ra Lon Nikhom Songkhro community enterprises group as the target population. The sample size comprised 20 employees selected through specific sampling methods. The 16 products available for sale were classified based on their distinct characteristics namely Fermented fish simmer, Jeow bong, Pimp jeow bong, Sun dried striped snakehead fish, Sun dried nile tilapia, Sun dried whisker sheatfishes, Grilled fish chilli paste, grilled fish meal, boiled fermented fish sauce, pimp hell chili paste and Fish meal spicy dip. Unstructured interviews were employed as the method for collecting data in this research.

The research involved conducting interviews with members of community enterprises engaged in production, aiming to collect information from financial and accounting documents for the convenience of the interviewees. During the interview process, the community enterprise leader and 20 individuals responsible for inventory management were interviewed. These individuals included the store manager overseeing the procurement, storage, and distribution of inventory. To gather data on the distribution of tasks among employees in various departments, including responsibilities related to product ordering, inventory maintenance, and other operational aspects. This includes obtaining information on the proportion of consumption, the cost associated with each product type, and the duration required for order processing.

5S

Engaging in 5S activities constitutes a structured approach to visual management, incorporating various elements ranging from floor mats to user manuals. It extends beyond mere cleanliness and organization, emphasizing the enhancement of efficiency and the attainment of maximum profits. The focus lies on employing specific tools to generate efficiency and value, involving activities such as observation, analysis, collaboration, and identifying tradeoffs. Additionally, it encompasses the practice of eliminating drawbacks or disadvantages.

5S,

sometimes referred to as 5S, refers to five Japanese terms used to describe the steps of the 5S system of image management. Each person begins a phase with an S. In Japanese, 5S is Seiri, Seiton, Seiso, Seiketsu, and Shitsuke. In English, 5S is translated as Sort, Set in Order, Shine, Standardize, and Sustain.

FIFO system

The FIFO (First In, First Out) system will be collecting inventory from storage before new arrivals, as per international principles, is a practice acknowledged for the advantages it brings through the FIFO piking method. This approach serves the purpose of minimizing product deterioration and maintaining the product value of Pla Ra Lon Nikhom Songkhro community enterprises. It also aids in preventing products from lingering in stock, streamlining accounting processes by allowing the measurement of inventory value or monthly variable value. The implementation of the FIFO system contributes to fostering business growth by enhancing potential opportunities.

RESULTS

Products of Pla Ra Lon nikhom songkhro community enterprise group. Grouped the products according to the ABC analysis method to classify the inventory (Muenjitnoy, Seanbudda & Kumklong, 2023). Which the group of Pla Ra Lon nikhom songkhro community enterprise selling 16 items of products, which are classified according to the nature of the product namely Fermented fish simmer, Jeow bong , Pimp jeow bong, Sun dried striped snakehead fish, Sun dried nile tilapia , Sun dried whisker sheatfishes, Grilled fish chilli paste, grilled fish meal, Boiled fermented fish sauce, Pimp hell chili paste and Fish meal spicy dip. From Table 1.

Inventory within Group A are as follows Jeow Bong (plastic jar) and size of product are 50 g., 100 g. and 200 g., tight and rigorous control is essential for managing this inventory group. The procurement and utilization of inventory necessitate thorough and comprehensive documentation, with regular and ongoing audits in place.

Inventory within Group B are as follows Fermented fish simmer (plastic jar) 200 g., Sun dried striped snakehead fish (bag) 100 g., Sun dried nile tilapia (bag) 150 g., Sun dried whisker Sheatfishes (bag) 100 g. and Grilled fish chilli paste (plastic jar) 200 g., regular control measures are applied to manage this inventory group, involving a moderate level of strict oversight. This includes periodic audits, occurring monthly or quarterly, based on the enterprise group's management preferences. The system requires maintaining a detailed product list and records of disbursements, even for infrequent purchases, aiming to minimize the risk of losses. Additionally, routine checks on warehouse inventory are conducted to ensure safety and sufficiency, mitigating the potential for product shortages.

And inventory within Group C are as follows Pimp Jeow Bong (plastic jar) 150 g. and 240 g. , Grilled fish meal (bag) 50 g. and 200 g. , Boiled Fermented fish sauce (bottle) 250 g. and 500 g. , Pimp Hell chili paste (plastic jar) 100 g. and Fish meal spicy dip (bag) 200 g., Limited or no record-keeping is needed for this inventory group, which consists of low-value but plentiful items. Stringent controls are unnecessary, and occasional checks on select product counts are sufficient. Utilizing an end-of-period inventory system, the approach involves allowing some time to elapse before reviewing the warehouse to identify any shortages and subsequently placing orders for additional products.

Table 1

Inventory data in Pla Ra Lon Nikhom Songkhro community enterprises Group Warehouse

No.	Inventory Item	package size (g.)	Price per unit (Baht)	Group of ABC Analysis
1	Fermented fish simmer (plastic jar)	200	80	B
2	Jeow Bong (plastic jar)	50	20	A
3	Jeow Bong (plastic jar)	100	35	A
4	Jeow Bong (plastic jar)	200	50	A
5	Pimp Jeow Bong (plastic jar)	150	40	C
6	Pimp Jeow Bong (plastic jar)	240	80	C
7	Sun dried striped snakehead fish (bag)	100	100	B
8	Sun dried nile tilapia (bag)	150	150	B
9	Sun dried whisker Sheatfishes (bag)	100	100	B
10	Grilled fish chilli paste (plastic jar)	200	100	B
11	Grilled fish meal (bag)	50	50	C
12	Grilled fish meal (bag)	200	150	C
13	Boiled Fermented fish sauce (bottle)	250	20	C
14	Boiled Fermented fish sauce (bottle)	500	40	C
15	Pimp Hell chili paste (plastic jar)	100	40	C
16	Fish meal spicy dip (bag)	200	150	C

After that, Utilizing the 5S principles and implementing the FIFO system to enhance inventory management.

The 5S activities represent a systematic approach to visual management, encompassing everything from floor layout to user manuals.

1. Seiri or Sort: Begin by clearly separating what needs to be organized into "necessary" and "unnecessary" items or categorizing different items into distinct categories, making it clear whether they are work-related. This step is time-consuming and requires a significant amount of intention. You must be decisive about what is useful, what should be prioritized, or what is genuinely essential. Therefore, overcoming any feelings of reluctance or attachment can be a significant challenge in this process.

2. Seiton or Set in Order: Organizing things systematically, considering usability, safety, and simplicity, involves placing items in an accessible area. It may include labeling items to indicate what they are, which category they belong to, or where they should be stored for convenience. This method is a step that saves time on small details, allowing more time for other tasks.

3. Seiso or Shine: Cleaning, sweeping, and wiping, as we commonly understand, contribute to creating a work environment that is pleasant and conducive to productivity throughout the day. This has a significant impact on the morale of employees because a good surrounding atmosphere enables smoother workflow. Moreover, when it comes to cleaning factory machinery, it can enhance efficiency and prolong the lifespan of the equipment.

4. Seiketsu or Standardize: Employee well-being is a result of practicing the first 3S. Therefore, we should consult with the team to determine the standards of well-being that employees desire or should receive. This ensures that everyone adheres to maintaining order according to those standards rigorously. When an organization achieves a positive well-being, employee efficiency tends to improve as well.

5. Shitsuke or Sustain: The last "S" focuses on establishing discipline or instilling genuine habits. This is a crucial and challenging step because the term "habit" doesn't develop from a single action but from consistent and repetitive practices until it becomes a routine. This step is the most important and difficult because the term "habit" does not arise from a single action, but from consistent and repeated practices until it becomes a regular part of one's behavior and is applied most extensively throughout the organization.

Subsequently, analyzing the implemented inventory information system for the Pla Ra Lon Nikhom Songkhro Community Enterprises Group can assist in recording the entry and exit of goods, data processing, and report generation. The method employed for recording inventory transactions is FIFO, wherein the goods that enter first are issued first. Essential functions within the system include:

1. Storing and managing all inventory data: The system must be capable of recording and managing information related to the storage and handling of all raw materials and products of the Pla Ra Lon Nikhom Songkhro Community Enterprises Group.

2. Generating automatic sequence numbers: The system should be able to assign sequence numbers automatically for every incoming and outgoing transaction of raw materials and all products within the Pla Ra Lon Nikhom Songkhro Community Enterprises Group.

3. Recording the quality of raw materials and goods: The system should record information regarding the quality of all raw materials and products within the Pla Ra Lon Nikhom Songkhro Community Enterprises Group that have been documented.

4. Recording collaboration agreements: The system should be able to record information related to collaboration agreements.

5. Generating reports on the demand for raw materials and products: The system should be capable of generating reports on the demand for all raw materials and products within the Pla Ra Lon Nikhom Songkhro Community Enterprises Group.

6. Recording procurement letters to prevent data redundancy and loss of reporting records: The system should be able to record procurement letter information to prevent data loss and redundancy.

7. Generating reports on raw materials and products: The system should be able to generate reports on the incoming and outgoing raw materials and products, with accessibility based on dates, months, or years.

Table 2
The amount and percentage of waste before and after the improvement

	Before	After
Amount of waste	48	5
Percent of waste	24 %	2.5 %

The Results on the research results obtained through data analysis, utilizing the ABC Analysis method in inventory management by categorizing products according to their value, the study aimed to analyze and segregate inventory items. Additionally, the application of the FIFO method was employed to address various issues. This approach aimed to enhance the efficiency of managing medical supply warehouse activities for the Pla Ra Lon Nikhom Songkhro Community Enterprises Group, which is consistent with Moryadee, Kosalwat, Jitt-Ae & Rabob (2020), conducted research to find the data collected from the research was analyzed by categorizing products based on the principles of ABC Analysis in inventory management. This involved grouping products according to their value, and then conducting an analysis to separate them into inventory categories. Additionally, the FIFO method was employed to address issues in various aspects. This overall approach aimed to enhance the efficiency of managing medical supply warehouse activities.

Moreover, the application of the 5S activities and the FIFO system enhances the efficiency of inventory management within the warehouse, allowing for a significant reduction in storage space. This is achieved through clear categorization of raw materials and products, systematic organization, and convenient and efficient storage arrangements. The implementation of these practices facilitates ease of retrieval and storage. Additionally, it helps minimize expenses associated with stockpiling, reducing costs related to the prolonged storage of goods and lowering expenses incurred in the handling and disposal of expired or obsolete inventory. From Table 2. Which is consistent with Wongwan, Setthachotsombut & Areeerakuikan (2021), the efficient warehouse management involves maintaining an appropriate quantity of products and clear categorization. Clearly classifying products helps reduce expenses related to the handling and disposal of goods during the movement of inventory out of the warehouse. It also minimizes costs associated with waste generated from storing stock for extended periods.

CONCLUSION AND FUTURE WORK

Evaluation of the inventory information system implemented for Pla Ra Lon Nikhom Songkhro Community Enterprises Group can aid in documenting the incoming and outgoing flow of materials and goods, processing data and generating reports. The system utilizes the FIFO method for recording the inventory of materials and goods, ensuring that items entering the inventory are the first to be issued. Essential functions in the system include Saving and overseeing all inventory information. The system could assign an automated serial number for every recorded incoming and outgoing materials and goods, documenting the quality of materials and goods, collaboration agreements, material and goods demand reports, and procurement correspondence to prevent data redundancy and loss of evidence in reporting

records. The system is capable of generating inventory reports for materials and goods accessible on a daily, monthly, or yearly basis.

Future research, it is possible to concentrate on any community enterprise involved in stock management or any industry associated with stock. For instance, one could examine case studies of small and medium-sized enterprises (SMEs) operating with modest-sized warehouses that implement the FIFO system.

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