Case Study

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FLOW THROUGH IMPLEMENTATIONS TO REDUCE THE INVENTORY- THE WAY OF MANAGING INVENTORY: A CASE STUDY IN INDONESIAN'S RETAIL COMPANY

Bonivasius P. Ichtiarto and Hendra Sunandar*

Department of Industrial Engineering, Mercu Buana University, Jakarta, Indonesia.

***Corresponding Author**
Hendra Sunandar
Department of Industrial Engineering, Mercu Buana University, Jakarta, Indonesia.

ABSTRACT

Flow Through distribution is a logistic method to distribute or supply goods from the suppliers directly to the consumer with almost no storage or minimize handling time, and that's a strategy of retail market to achieve an advantage in term of speed, ideal inventory, productivity and efficiency in a supply chain. It receives the products by bulky quantity through an inbound door and transfers them to the outbound staging of transportation dock. With this implementations the companies has been observes will take it benefits reducing inventory levels by 50% (no of items as storages). To be successfully of flow through implementations, it is necessary to ensure effective team work with strong participation by both vendors and retailers (representative by supply chain distribution center), means before adopting FT strategy in supply chain, DC retailers should critically analyze its applicability.

KEYWORDS: Flow through implementations, reduce inventory, supply chain management and replenishment.

1. INTRODUCTION

Inventory management is the one of main tasks in retail supply chain management. Retailers are always busy with lessening the risk of stock outs by carrying buffer inventory for items with high demand and now they are also realizing the cost of losing sales along with the costs of holding idle inventory. As retailers mostly deal with fast moving consumer goods, they

always need to adjust supply chain strategies as per market demand. Initiatives are being taken to increase the velocity of products through the supply chain and increase the accuracy of inventory management. Cross docking and distribution center (DC) bypass are two initiatives to increase product velocity.[9] A major focus of modern retail in logistic is on achieving a higher service level to market place demand, but with less of inventory. Reach the dual target of lower cost and simplify of business target to achieved better service level has implications for stage in the logistic supply chain.[4]

The Flow Though or Continuous Flow/ replenishment has the goal of accomplishing integration and collaboration between members of the supply chain management in order to cope with the ever decreasing time window for products and service fulfillment and the requirements for the improvements of operational efficiency. Benefits of adoption FT or CR system included inventories level, faster inventory turns, reduced ordering and administrative cost,[2] means on that backdrop this study to evaluate the effectiveness of FT system in retail supermarkets in Indonesia.

With many items and suppliers in retails company as the challenging of this implementation of Flow Through is happen. The geographical in Indonesia each the reason for synchronizing between Suppliers – DC – Customers of their place and business if there is of each other can't align specially of lead time and minimum qty to be supply this Flow Through implementation will be failed. Flow Through are process with the highest of commitment between supplier and retailer.[1]

2. LITERATURE REVIEW

Inventory components includes a company's raw materials, work in process – semi finished good, supplies used in operations, and finished goods.[20] Inventory management can be grouped into two categories, first is inventory management when demand is *independent* and the second is when demand is *dependent*.[23] The objective or purpose of inventory management goal is to strike a balance between supply and demand or inventory investment in hand and customer service or demand fulfillment.[16] In other comment by[8] The basic purpose of inventory analysis in manufacturing and stock keeping services is to specify when item should be ordered and how large the order should be. Inventory management and control is very critical activity in a company organization hence will face a significant loss if there is any failure of activity in inventory.[11,21] An efficient inventory management with a smooth

inventory activity, an organization will reduce the inventory lead time, accuracy and hence will improve the competitive advantage as gain the trustworthy from the customer.[10]

Flow through has been described as an inventory and supply chain management tool in which the company and suppliers take the responsibility to managed together of supplying as of inventory replenishment. In retail business we have found typical of distributions, flow through and cross docking, both inventory control almost the same just the ownership of inventory, Flow Through inventory when received in DC has been belong the company, but the cross docking after received in end of customers.[24] A key element in flow through implementations is that the supplier is in under control of the retailers, or DC as representative to retrieve the order consolidation from stores or customers become purchasing quantity ordering to suppliers as lead time agreed and align with stores or customers delivery.[15]

This tool has also been called a continuous replenishment process, continual replenishment or automatic replenishment.[6] The advantages of using continuous replenishment to the downstream member, usually a large retailer, have well been documented.[13,26] Noted that the main advantages of Flow through were reduced costs, and increasing productivity comparing for flow rack, there is no products will put as storage and after how many days will replenishments as order full fill to customers means no more double handling of this system implementing.[25] warehouse strategy involves movement of finish goods directly from receiving dock to staging in shipping area with a minimum dwell time in between called by Flow Through system. FT can effectively bring substantial reductions in activity of internal warehouse (means reduction of order cycle time) without increasing the inventories while align with maintaining the level of customer service satisfactions.[7]

Continuous replenishments greatly reduced inventory-carrying costs and inventory problems while, at the same time, it offered the ability to synchronize both inventory and transportation decisions, at this step for products coming will manage to be early to out means should be align with transport scheduling.[13] noted that CR's advantages included improved customer service, reduced demand uncertainty, reduced inventory requirements and reduced cost based on a case study at Johnson and Johnson. With the reduced stock-outs, suppliers not only saved, but they also received more information on the customers' demand patterns that aided the supplier in planning better on their own inventories. Flow Through is not only

commitment in each other but the information flow must be effective, on time information and quantity accurate as a basis the process flow will be smooth.[1]

The ability to plan better on inventories and deliveries are often cited as major advantages to the upstream member using Flow through implementing.[17] Developed an analytical model to calculate inventory levels and delivery rates to minimize costs for small suppliers forced to use CR by larger clients. One important finding of the study was that reducing variability in the amount and timing of the demand increased the benefits of lowered prices. In addition,[6] noted that CR was an excellent tool when ordering the policies of the downstream supply chain members were less sophisticated and erratic, or when the distributor was selling to a large number of buyers with erratic buying patterns. From data collection and analysis is a prove the company has adopt lean philosophy will be have significant improvement and can be modification as business culture company it self.[12]

Distribution by value (ABC) analysis, it is very important to be able determine those items or groups of items that deserve a maximum control effort. Separating critical items from common items that is the basis of ABC analysis, this activity will focusing of critical items to be maintain as good handling.[19] When continuous replenishment / FT implementing all activity to minimize waste has implemented also[18] such as operator become quality inspector and fix problem in every single work station, and the other side will impact to highest productivity (CR implementing will impact to simplify process–waste activity will eliminated). And in work place all work station is closed each other means will reducing number of Forklift which main cause of accident. In principal Lean Supply define the flow of process and eliminating of waste, lean / Just in Time (JIT) practices significantly contributes to reducing the executions.[22]

In a Flow Through partnership, the supplier, usually the manufacturer but a reseller or distributor are common, makes the main inventory replenishment decisions for the consuming organization. This means that the retailers or DC giving information stock on hand or inventory level to them and makes periodic re-supply decisions regarding order quantities, shipping and timing. Transactions that are customarily initiated by the buyer (if the product is repeated some retailer giving to re-buyer for re-ordering since the qty and demand will submit to suppliers are fixed in daily or weekly basis) , such as purchase orders, are initiated by the supplier. Indeed the purchase order acknowledgement from the vendor may be the first indication that a transaction is taking place; an advance shipping notice
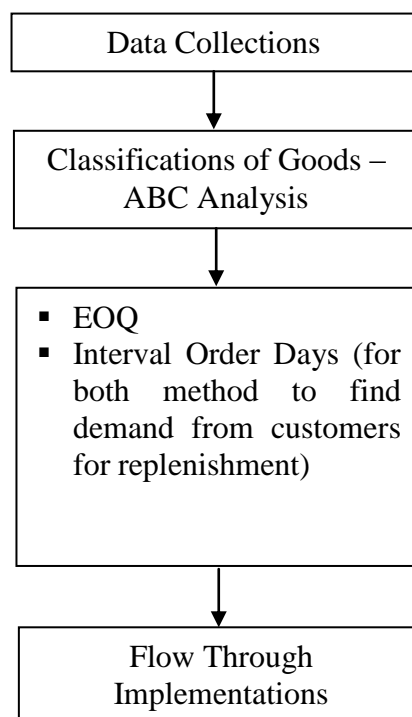
informs the buyer of materials in transit. In this relations hip, buyers relinquish control of key re-supply decisions and sometimes even transfer financial responsibility for the inventory to the suppliers.[5]

3. METHODOLOGY

The study adopted a descriptive research design to collect, measure, classify, analyze and interpret data. To determine which items to be implemented Flow through system, statistical method of ABC classification and Pareto terminology define for selection items on it (to know the fast moving and slow moving articles in the retail organizations). The analysis has given 4 classifications of article in which 'A' and 'B' as fast moving items categories are considered will keep as is with currents implementations. The classifications items 'C' and 'D' are slow moving items are considering for this study which contribute 80% of activity but contribution only 20%.

Slow moving items will taken for FT or CR process implementing. FT is used mainly to know the efficiency of the process ordering, from order to shipment activity.

Detailed methodology has been shown as flow chart and is as follows : The framework for *Supply Chain Management* process measurement with all relevant of data collection, analysis using ABC analysis, Define new process, re-layout Flow Through Shipping Point (FSP) and distributing to the customers by calculating the performance.[3]

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┌─────────────────────────────┐
│      Data Collections       │
└─────────────────────────────┘
               │
               ▼
┌─────────────────────────────┐
│  Classifications of Goods –  │
│         ABC Analysis         │
└─────────────────────────────┘
               │
               ▼
┌─────────────────────────────┐
│  ▪ EOQ                       │
│  ▪ Interval Order Days (for  │
│    both method to find       │
│    demand from customers     │
│    for replenishment)        │
│                              │
└─────────────────────────────┘
               │
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┌─────────────────────────────┐
│      Flow Through            │
│      Implementations         │
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Sample

The target populations (items) was all SKU registered in Indonesia's retail company. However, the source of supply have 2 (two) way of supplying it, by DSP (direct supply) and through DC (retail distribution center). The subjects of the study was limited to the supplying by DC. Then just slow moving items will implement for the new development process.

4. FINDING AND DISCUSSION

4.1 Material handling as Conventional Stock

Material / inventory management in DC retails currently is *conventional* mean all SKU's / items managing have stock, usually we call *Flow rack* inventory, from suppliers – stock – distribute to stores, as figure below:
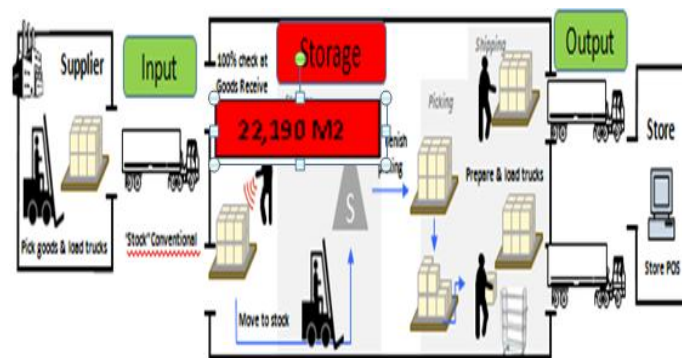

Figure 1: Flow Rack (storage) implementations – process goods in storage and distributes to stores (in study a subject FT system, implemented, 2015).

Above figure *Flow rack* implementations can describe as flow (i) **Input**, product coming from suppliers base on Purchase Order created by Warehouse team for replenishment – product coming checking – input to WMS – *Put way* in rack as stock (Stock on Hand available) (ii) **Storage,** Total space will utilize this system have 22,190 square meter (M2) to put products or article with 12,164 items or 1.8 M2 in average for one item. Product will keep in storage as SOH and with weekly activity inventory team will do stock accuracy – as cycle count process for those item in *pick slot* (iii) **Output,** form stores order DC / warehouse will release the order then generate Let down (before in *reserve rack* go to *pick slot*) – and base on pick list, picker will pick the products and put in to staging area for out bound) – checking product – loading to truck then shipment to stores.

Base on above process have 3 activity which have big contribution of waste (i), cycle count process in weekly basis and (ii) Put way after got the product (put as stock in storage area)

and, (iii) let down process for replenishment product in pick slot. Standard time for replenishment to stores in every single section as flow (i) **release order** – from stores order generate in system to be pick as basis pick slot have contributing 5 second per paper pick list, (ii) **Put way** – 1 instruction or task of put way contribute 6.9 second / shipping unit, (iii) **Let down** – 1 task replenishment to pick slot take it time 7 second / shipping unit, (iv) **Picking** – picker will pick base on pick list or assignment to pick products in pick slot and have 30 second / shipping unit from pick slot (point) to another pick slot (next point), (v) **Check and Load** – checking all finish picking in staging area and load to truck have 12 second to do these activity. With those activity have 60.9 second to finish 1 task or assignment, both activity (put way and let down) contributing 22.9% of process handling time (total time to be executing for one ordering = 60.9 second / shipping unit - 13.9 second).

4.2 Classification moving items

SKU's / items registered by DC supplied reach 12 thousand items, and categories become 3 (three) classifications.

Table 1: Classification moving items base on market demand (in study a subject FT system, implemented, 2018).

Classification	No of Item	Item	Contribution
A	2,441	20%	88%
B	3,663	30%	11%
C	6,103	50%	1%
Total	**12,207**	**100%**	**100%**

With Pareto terminology with 20% activity got result 80% contributions, B and C class will categories as slow moving and non moving items (80% number of items just contributions 12% of demand) and for A class have 20% number of items has contributions 88% customers demand).

5. CONCLUSIONS AND LIMITATION

5.1 Development of process material handling as FT

Define the new structure of process flow with the highest productive which CR or FT as the answer of this implementations to handling item C and D , this process will eliminate waste activity as figure 2. (i) **Input**, product coming from suppliers base on Purchase Order, which reference for purchasing base on sales generate from stores instead of stock replenishment in DC – means sales from all stores will collect and consolidate become 1 purchase order to

suppliers. In this step there is no *put way* activity after received the products from suppliers, once coming products and received by DC receiver, goods will define which stores order belong to who (stores order at beginning). (ii) **Picking**, at this activity picker just follow the instructions of pick list order stores, to Flow Through Shipping Point (FSP = base on stores point), at this step have difference way of picking model. In FT task of cumulative goods order will put it in stores point e.g Picker will turn around stores point to put it one by one good in stores point instead of take it one products to another product for one stores (flow rack system). In this activity also we can eliminated of Letdown process (as replenishment to pick slot). (iii) **Output,** the process is become the same way with flow rack start from checking and load to the trucks from staging area.
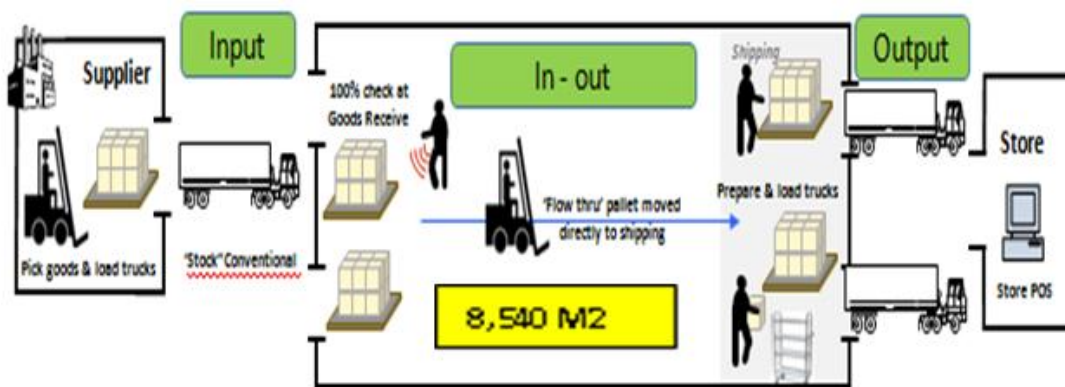

Figure 2: Flow through (no storage) implementations – process goods in and out directly to customers (in study a subject FT system, implemented, 2018).

5.2 Inventory Level

To minimize risk of market demand for classification of items A and B, in retail company asking to vendors to produce early (vendor can prepare base on estimation purchase order from retail company / forecasting) to make sure availability of products are in place. On that's way classification items A (2,441 items) and B (3,663 items) as fast moving and have demand items (50%) with contribution of demands 99% still keep as is in flow rack implementation as previously to be sure market fluctuated of highest demand will coverage easily. Base on this conclusion the inventory level will keep for 6,104 items only of 12,207 items previously. Means 50% of qty demand or inventory level will reduce as dramatically of this implementation.

At those describe of market risk and demand the finding of flow process, FT system will implementing for C class (6,103 items) which 50% number of items just contributions 1% of

customers demand, means the inventory level reducing 50% (in terms of number SKU will managed in storage). Then potential damage or expired of these goods will reduce.

5.3 Productive and Efficiency

With Flow through implementation or flow inventory, the handling process eliminate put way and letdown activity (22.8% of time consumption) mean the process has been simplify by doing this system. Flow through systems will generate all stores demand / order become one single purchase order to suppliers, after that's product will separate base on original stores demand with out put in storage (rack), direct distributions from suppliers after receiving and process. At this activity will reduce Forklift activity which contribute of accident.

Then base on FT system implementing company have 3 benefit of efficiency:

a. Reduce inventory level by dramatically by 50% and eliminated of shrinkage because of expired (due to non moving item in C classification) since product will *in-out* base on customers/retailers needed.

b. Manpower, there is have eliminating process or activity of *put way* and *let down* (means cost of this activity will disappear and speed of deliver to customer will increasing. And Machines, FT implementing will impact of the ways to do for delivery and material handling. There is no more investment and maintenance of *reach truck* (fork lift).

c. Space, products flow to customers will be in – out then no storage. DC will duplicate customers / stores demand space only (8,540 M2 of 22,190 M2 – have 61.5% of space can be utilize for other business).

5.3 Limitations

On this research of implementation for flow through must be link between suppliers schedule and customer schedule of delivery to make it product flow in-out. In this research just manage in DC with FSP and delivery to customer by every day (it will impact for transportation cost).

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