

MANAGEMENT INVENTORY CONTROL KAIZEN OF USING CONTINUOUS REVIEW POLICY IN A PT XYZ COMMERCIAL VEHICLE AT JAKARTA CITY, INDONESIA

Muhammad Irfan Rizki¹, Yenny Maya Dora²

¹ Master of Management, Universitas Widyatama, Bandung, Indonesia

² Universitas Widyatama, Bandung, Indonesia

Abstract

This research aims to analyze the problem of excess spare parts inventory in commercial vehicle equipment units in the company's inventory and ordering times to avoid excess goods in the warehouse. Using the ABC classification inventory model and continuous monitoring policy, spare parts stock is calculated to compare ideal average inventory levels (AIL) and actual values. ABC analysis classification also has the advantage of identifying items that are feasible and have the potential to be reduced from inventory. From the analysis we conducted, we found that the company has the potential to reduce almost IDR 32,979 billion or 27.80% of excess inventory levels by using a continuous review policy as the basis of the inventory control calculation system.

Keyword: ABC Analysis; Commercial vehicle; Inventory

1. Introduction

The need for vehicles from year to year, especially cars in Indonesia, has increased, from 2012-2022 the number of passenger cars in Indonesia has increased by 6.74 million units or grew by around 65%. This is because Indonesia is a developing country and continues to increase development, especially in transportation facilities. The majority of vehicle categories are in demand, especially to support the community's business processes, namely the category of commercial vehicles that can be used to support one's personal needs (Mardianto, 2021). With the increasing demand for commercial vehicles resulting in high demand for spare parts for these vehicles, the spare part availability service needs to be considered because it affects the level of customer trust in the brand and customer decisions in buying cars, especially commercial vehicles (Ramadhan, 2021). In the process, spare part inventory is very important for automotive companies (Vanesa & Helma, 2023). Inventory is needed as a business step in creating customer satisfaction and to generate profits in perpetuity (Heizer & Render, 2013). Inventory is a current asset that has a high risk in company activities if not properly considered (Riani, 2016). Inventory has two important characteristics, namely that the inventory belongs to the company and the inventory is ready to be sold to end customers (Barchelino, 2016).

The problem that occurs in the company PT XYZ is the number of stock keeping units (SKU) of 16000 which makes a high variation in sales and management so that class categorization is needed as treatment in each category, besides that control related to stock still needs to be evaluated so that to facilitate the determination and process of controlling inventory products in each class based on value and needs, the company will be more efficient in controlling existing inventory needs, so researchers conducted an ABC analysis method to determine the availability of goods in the warehouse (Nurkholis et al., 2022).

The ABC method aims to determine the priority of each group of inventory items in order to implement an inventory management strategy that is in accordance with the characteristics of the inventory. ABC analysis is a method of classifying goods based on the ranking of values from the highest to the lowest value, and is divided into three groups, namely group A, group B, and group C (Prisanti et al., 2019). By knowing the criteria for each class, it can be seen which inventory items should receive special attention or just check occasionally. Therefore, it can be seen that the company's operational activities require inventory control in order to anticipate risks, so that the cessation of production process activities and also the loss of customers due to the lack of raw material supplies for that, this business activity can use the ABC method (Pratiwi & Saifudin, 2021).

2. Literature Review

2.1 Inventory

Inventory is any kind of goods or resources owned by the company. Inventory plays an important role for a company in being able to set a policy, control and monitor inventory levels, in addition to determining whether stock should be replenished and how large an order should be placed to keep inventory costs to a minimum to maintain a high level of customer service. (Jacobs, Chase, & Aquilano, 2011). The aim of inventory control management is to make inventory decisions that minimize total inventory costs (Hafnika et al., 2016). According to Bowersox and Helferich (2013) high inventory levels will have an impact on increasing costs, but reduce the possibility of lost sales due to running out of stock, which can be caused by

there being no stock in the company. Meanwhile, a minimum inventory level will result in low inventory costs, thereby increasing the possibility of lost sales if the requested stock is not available because the available inventory is small.

2.2 Inventory Type

According to Sinaga and Irawati (2018) according to their type, inventory can be divided into:

- a. Raw materials
- b. Work in process
- c. Finished goods
- d. Supplier

According to Handoko (1999) in deciding each decision step that will affect the amount of inventory, it is necessary to consider variable costs as follows:

- a. Storage costs
- b. Order or purchase costs
- c. Setup cost
- d. Cost of running out or shortage of materials

2.3 Inventory Control Planning

In the company industry, ABC inventory classification is used as an effort to control inventory levels. Classifying inventory on the basis of volume using the ABC method can be formed into three classes, namely high dollar volume (A); moderate dollar volume (B); low dollar volume (C) (Jacobs et al., 2011). ABC classification uses the Pareto class principle in inventory control prioritization (Hafnika et al., 2016). Goods belonging to group A must be controlled differently from group B or group C (Riani, 2016).

2.4 Analisis Activity Based Costing

Analysis of ABC analysis has the principle of a process in classifying the type of goods based on the level of investment on an annual basis that is maximized in a process of supplying supplies for each type of goods (Bahagia, 2006 in research (Suhara 2017)). Based on the principle of pareto value, goods can be classified into three categories, namely:

1. Category A, absorbs 80% of the total capital available and the number of items is around 20% of the items managed.
2. Category B, absorbing about 15% of the total capital available for inventory and the number of items reaching about 30% of all items managed.
3. Category C, absorbing only 5 percent of the total capital available for inventory and about 50 percent of all items under management.

2.5 Analysis Method Application Steps

The following steps in the inventory control application using the analysis method are as follows (Wahyuni, 2015):

- 1) Calculate the amount of inventory utilization for one year.
- 2) List the cost of inventory that has been used.
- 3) Multiplying each inventory usage by the price of each inventory.

- 4) Sort each inventory from the one with the highest IDR value of usage to the lowest IDR value.
- 5) Calculate the cumulative value for the total of all inventories.
- 6) Calculate the cumulative percentage result for each item with the following formula:

$$\%Cumulative = \frac{Cumulative\ Value}{\sum Cumulative\ Value} \times 100\% \quad (1)$$

- 7) Each inventory is grouped based on the cumulative percentage result.
- 8) If the cumulative percentage value of the item is 0 - 70%, it is listed as A. If the cumulative percentage value is between 71 - 90%, it is listed as B, and if the cumulative percentage value is between 91 - 100%, it is listed as C.
- 9) Next find the value of the Average Inventory Level (AIL) was calculated using:

$$AIL = \frac{Q}{2} + SS \quad (2)$$

Where SS (Safety stock) can be calculated by

$$SS = Z\sigma\sqrt{Ld} \quad (3)$$

With description :

Z = Service level

σ = Standard deviation

Ld = Lead Time Process

3. Method and Material

The approach in this research is based on a case study on the management problems of PT XYZ in the Inventory Planning Control department. The population in this study is the stock inventory available at PT XYZ. In the research the item used is 16000 Stock Keeping Units with stock data for January 2023 - December 2023.

3.1 Data Analysis

The following are the output results of the analysis carried out which are presented in tables 2 to 5 based on company condition.

Table 1. Average Inventory Level

Item	Desc	Price	AIL IDR	Actual	Safety Stock	LT	GAP	Remaks
225A	ENG	5.460.000	3.224.538	3.772.860	33	1	548.322	Overstock
1484A	NOZ	2.068.426	2.969.614	2.815.128	346	1	-154.486	Understock
472A	OIL	48.456	2.016.462	2.555.133	3.840	1	538.671	Overstock
2052A	DIS	973.232	2.160.092	1.593.181	674	1	- 566.912	Understock
2302A	PAK	882.336	2.072.443	920.276	783	1	-1.152.16	Understock
276A	FUE	17.284	1.254.409	1.601.812	6.982	1	347.403	Overstock
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮

:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:	:
65A	FUE	33.439	1.280.037	2.024.966	5.924	1	744.929	Overstock
946A	COV	313.652	1.203.215	1.583.943	438	1	380.728	Overstock
2125A	AIR	111.725	1.020.535	1.558.899	562	1	538.364	Overstock
560A	FUE	34.952	1.044.143	1.260.439	4.222	1	216.296	Overstock
1490A	DIS	308.779	963.655	1.148.040	379	1	184.385	Overstock
1912A	FUE	60.087	939.496	1.170.254	1.554	1	230.758	Overstock
1955A	FUE	52.387	966.135	1.237.171	2.424	1	271.037	Overstock
2169A	DIS	647.937	975.539	658.952	348	1	-316.588	Understock
16000A	COV	418.871	804.899	1.272.949	288	1	468.050	Overstock

Table 2. ABC Class Analysis

Class	Item	AIL Ideal (IDR)	Actual Amount (IDR)
A	1.471	118.617.687	151.597.039
B	1.781	19.640.545	21.615.990
C	12.240	20.240.783	24.263.379

4. Result and Discussion

The main step in the process of classifying an item is by sorting the actual AIL (Rp) list from largest to smallest. then classification using the ABC method will show which items consume the highest actual AIL value and the company has the potential to reduce the inventory budget by reducing the number of class 'A' inventory items in the company because they have the highest contribution. From the research, it can be seen that PT XYZ has the potential to save IDR 32,979,352 (27.80%) of inventory costs is too much, so the company needs to evaluate the value of a high amount as an effort to carry out lean inventory.

5. Conclusion, Implication, and Recommendation

This study aims to analyze the problem of excess inventory of spare parts in the commercial vehicle equipment unit within the company, as well as the ordering time to avoid excess goods in the warehouse. This research also uses ABC or (Always, Better, Control) classification to identify feasible and potential items to be reduced from inventory.

From the analysis conducted, it was found that the company has the potential to reduce excess inventory by almost IDR 32,979,352 billion or 27.80% by using the continuous review policy as the basis for the inventory control system. There are suggestions for the results of this study, namely

1. The company is advised to immediately adopt a continuous review policy in spare parts inventory management. This policy has proven to be effective in reducing excess inventory and can save significant costs.
2. Apply and update the ABC classification to identify parts that have a high priority and that have the potential to be reduced from inventory. Focus on category A items that have the highest value and highest volume for closer scrutiny.
3. Conduct regular monitoring and evaluation of inventory management policies and procedures. Regular evaluation helps to ensure the policies implemented are working and allows for quick adjustments if needed.

6. References

- Barchelino, R. (2016). Analisis penerapan PSAK No. 14 terhadap metode pencatatan dan penilaian persediaan barang dagangan pada PT. Surya Wenang Indah Manado. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 4(1).
- Bowersox, D. J. (2013). *Logistical excellence: it's not business as usual*. Elsevier.
- Hafnika, F., Farmaciawaty, D. A., Adhiutama, A., & Basri, M. H. (2016). Improvement of inventory control using continuous review policy in a local hospital at bandung city, Indonesia. *The Asian Journal of Technology Management*, 9(2), 109.
- Handoko, D., Kawahito, S., Tadokoro, Y., & Matsuzawa, A. (1999). On sensor motion vector estimation with iterative block matching and non-destructive image sensing. *IEICE transactions on electronics*, 82(9), 1755-1763.
- Heizer, Jay & Render, Barry. 2013. *Operations Management-Manajemen Operasi*. Edisi 11. Jakarta, Salemba Empat.
- Jacobs, F. R., Chase, R. B., & Aquilano, N. (2011). *Operations and supply chain management*. Vol. Global ed.
- Mardianto, T. (2021). Perhitungan Harga Pokok Produksi Sebagai Dasar Penentuan Harga Jual Pada Perusahaan Karoseri Kuda Terbang Malang. *JEA17: Jurnal Ekonomi Akuntansi*, 6(2), 263-278.
- Nurkholis, A., & Oktora, P. S. (2022). Sistem Persediaan Obat Menggunakan Metode Moving Average Dan Fixed Time Period With Safety Stock. *J-SAKTI (Jurnal Sains Komputer dan Informatika)*, 6(2), 1134-1145.
- Pratiwi, D. N., & Saifudin, S. (2021). Penerapan Metode Analisis Abc Dalam Pengendalian Persediaan Bahan Baku Pada Pt. Dyriana (Cabang Gatot Subroto). *Solusi*, 19(1).
- Prisanti, W., Arief Kurniawan, N. P., & SKM, M. (2019). *Analisis Perencanaan dan Pengadaan Obat dengan Metode Analisis ABC di Instalasi Farmasi RSIA Aisyiyah Klaten* (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- Ramadhan, D. I., & Santosa, B. (2021). Analisis Kinerja Peramalan dan Klasifikasi Permintaan Auto Parts Berbasis Data Mining. *Jurnal Teknik ITS*, 9(2), A162-A169.

Riani, L. P. (2016). Analisa ABC dalam Pengendalian Persediaan Spare Part Jenis Oil Sepeda Motor di Bengkel Piramida Motor Tulungagung. *Jurnal Nusantara Aplikasi Manajemen Bisnis*, 1(1).

Sinaga, H. D. E., & Irawati, N. (2018). Perbandingan double moving average dengan double exponential smoothing pada peramalan bahan medis habis pakai. *JURTEKSI (Jurnal Teknologi dan Sistem Informasi)*, 4(2), 197-204.

Suhara, A. (2017). Penerapan Metode Persediaan Probabilistik Untuk Menghitung Kebutuhan Bahan Baku (Studi Kasus Di Pt. Xzy). *Buana Ilmu*, 1(2).

Vanesa, L., & Helma, H. (2023). Analysis of Raw Material Inventory Control using the ABC Analysis Method and EOQ Method in the Fajar Onion Crackers Business. *Mathematical Journal of Modelling and Forecasting*, 1(1), 1-9.

Wahyuni, T. (2015). Penggunaan Analisis Abc Untuk Pengendalian Persediaan Barang Habis Pakai: Studi Kasus Di Program Vokasi UI. *Jurnal Vokasi Indonesia*, 3(2), 1–20. <http://dx.doi.org/10.7454/jvi.v3i2.30>