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INVENTORY MANAGEMENT SYSTEM DESIGN ON ANGEL COLLECTION

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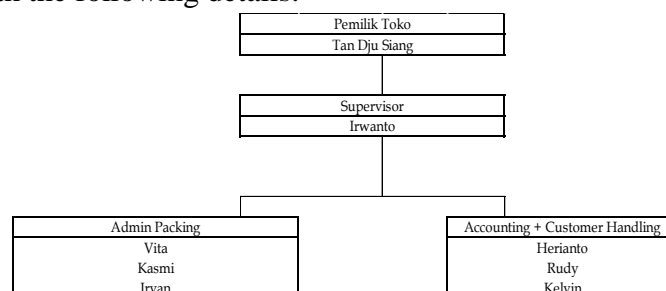
Abstract

This study aims to analyze the inventory management strategy implemented by Angel Collection SMEs in 2021 using the EOQ and ROP methods. The results of data analysis are used to determine the optimal number of orders with the aim of minimizing storage costs consisting of ordering costs and storage costs. The results showed that in September 2020 there were 13 product reorders, in January 2021 as many as 17 products, in June as many as 14 products which is not too much compared to January, and in December as many as 41 products which is the highest number of orders. for 12 months. In the eoq report listed, December 2021 is the most frequent month in which shop owners place orders for reorders due to high demand with a total of 41 products that will be reordered.

Keywords : *Economic Order Quantity, Reorder Point, Supply Chain Management*

Introduction

The establishment of a bag business called Angel Collection on February 23, 2008 by Mr. Tan Dju Siang. Angel Collection is engaged in selling bags, wallets, watches, souvenirs, and belts. The location of this bag shop is in the Nagoya Business Center Complex Block 6 No.4, Batam. Where this business is open from 08:30 in the morning to 17:00 every day. The number of employees in this company is 9 people with the following details:



Picture 1

Store Organizational Structure Source: Angel Collection 2021

The use of information technology that is developing as it is today can be utilized as well as possible such as buying and selling or business processing. In

business processes, information technology can be applied in various ways according to the company's needs (Darusalram et al., 2021). A company has the main goal of making a profit. One way for companies to be able to obtain optimal profits is to implement a management policy that takes into account optimal inventory (Han et al., 2016). The purpose of controlling raw material inventory is to keep operating costs to a minimum so that the company's performance and profits are more optimal. The operational costs referred to in this case are inventory costs consisting of ordering costs and storage costs (Sofiyannurriyanti, 2017). One of the factors that can affect the smooth running of the company is the production. Smooth production is very important for the company because it affects the profits earned by the company. Smooth or not the production process of a company is determined by the optimal supply of raw materials. Therefore, every company must be able to control the optimal supply of raw materials for the smooth production process. Through optimal inventory control the company can meet customer needs on time and minimize inventory costs so that company goals can be achieved (Lahu et al., 2017). Small Business in Indonesia have a wide variety, such as in the fields of clothing, culinary, household needs, and so on. One of the small business in Batam City which is located in the Nagoya Business Center Complex Block 6 no 4 is an Angel Collection store which is engaged in selling bags, perfumes, wallets, belts, children's clothing, men and women. According to the observations of the authors, it is assumed that the company has difficulty managing the stock of products in the store due to the large number of products that have excess stock and only use handwriting and the rest of the sales are not good so they experience losses, therefore the author is interested in conducting research with the title " **Inventory Management System Design on Angel Collection**".

The aim of the project is to help small business owners how to manage product availability using the website, if the availability of products in small business is always monitored, then these small business will certainly get a lot of income so the company will last longer. The benefits of activities for small business owners are as follows:

1. Assist small business owners in checking the availability of all products sold.
2. Provide small business owners with insight into accurate product availability settings.
3. Make it easier for small business owners to manage the overall product stock.
4. Minimizing inventory costs consisting of ordering costs and holding costs.
5. Determine the optimal number of orders to avoid overspending.

Methods

The data taken in the form of secondary data that comes from records and books from the Angel Collection store to produce a website-based inventory report.

The data were taken from product stock records from January 2021 to December 2021. The primary data used was to conduct interviews and observe the shop owner's location about the various products sold, the history of the store, and the store's organizational structure. One of the calculations that will be used in this practical work report is as follows:

1. Economic Order Quantity (EOQ)

EOQ is a method of calculation with the aim of minimizing expenses to a minimum (Mayang et al., 2021). EOQ itself has the following formula :

$$EOQ = \sqrt{\frac{2DS}{H}}$$

Description :

EOQ = Economic Order Quantity

D = Annual Demand

S = Ordering Cost

H = Holding Cost

2. Reorder Point (ROP)

ROP is the limit on the number of return orders. Time when reordering raw materials that have been used. The thing to note in this method is how much inventory has been used while waiting for the inventory that has been ordered to arrive (Ternando et al., 2018). With the formula rop as follows :

$$ROP = lead\ time + safety\ stock$$

3. Total Annual Cost (TAC)

Total Annual Cost is obtained from the addition of TOC with annual purchase costs. The annual purchase cost for each discount category is calculated by multiplying the price of each discount category by the amount needed for one year (Wulandari & Mulyati, 2021).

$$TAC = TOC + TCC$$

Description :

TOC = Total Ordering Cost

TCC = Total Carrying Cost

The design of the output activities carried out by the author is to invite the owner of the Angel Collection shop to cooperate with the author, namely the author will be the host in making the website. This design begins with applications that have been provided by the author such as inventory management reports, product stock reports and EOQ with a format that is entered into a website-based application at the Angel Collection store. Making this system requires an estimated time of 1 month and the time to input all data starting from product stock and EOQ by entering the formula takes approximately 1 month. The implementation stages of practical work from the Angel Collection shop are as follows:

1. Preparation phase

The preparatory stage is carried out before conducting the research. The estimated time in working on the application-based small business inventory management system is 50 working days with the time of recording stock, sales, and purchases taking 1 month. Reports made in the Angel Collection store are in the form of product stock reports, sales reports, purchase reports, and EOQ reports.

2. Implementation Stage

Through the implementation stage the author will implement this inventory management system by requiring the company owner's laptop by downloading several applications needed to design the website. This implementation will run when the owner of the company and employees in the store are ready to be taught and will proceed to the implementation stage and an inventory system will be created. Implementation will be carried out from September 2021 to January 2022.

3. Assessment Stage

The assessment stage is used for small business in determining the results of the inventory management application at the Angel Collection store, this assessment will make it easier for shop owners to see the results of the store inventory management report whether or not the store is running well or not.

4. Reporting Stage

The last stage is reporting. The data obtained is in the form of a book containing product stock and transaction evidence data from the Angel Collection store, then this data will be entered into the inventory management application program. The data analysis process can take quite a lot of time so that it can produce an inventory management report in the form of an application that is in accordance with the title of the research topic above, so that so it can be useful for shop owners.

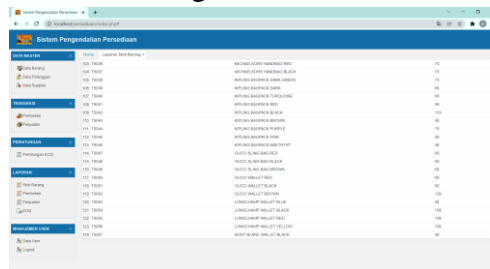
Practical work on the preparation of application-based financial reports at the Angel Collection store issued budgets, including :

No	Activity Plan	Budget Type	Volume	Units	Unit	Total
1	Observation and interview	Consumption Cost	18	time	Rp 50,000	Rp 900,000
		Transportation Cost	10	time	Rp 85,000	Rp 850,000
		Internet Connection Design	10 x 12 GB	GB	Rp 80,000	Rp 960,000
2	Output Design	Website Design	1	piece	Rp 330,000	Rp 330,000

No	Activity Plan	Budget Type	Volume	Units	Unit	Total
3	Outcome Implementation Assistance	Transportation Cost	10	Time	Rp 85,000	Rp 850,000
		Internet Connection Fee	10 x 12	GB	Rp 80,000	Rp 960,000
4	Report Generation	Consumable Shopping Costs (ATK)	1	Piece	Rp 700,000	Rp 700,000
TOTAL COST						Rp 5,550,000

Results and Discussion

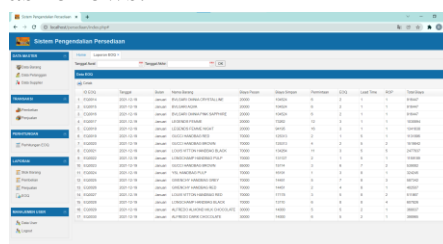
The design of activity outputs in the preparation of practical work reports in application-based inventory on Angel Collection is making EOQ data reports. The following is a report on the stock of goods available at the Angel Collection store:



Picture 2

Angel Collection Stock Report Source: Processed secondary data (2021)

Based on Picture 2 above, there are 124 product stocks available for 2021 with the total number of product stocks available in the store is 7066 products, and with several products labeled with the TS code, namely semi-original bags, TP premium bags, PA parfum, SR snacks and souvenirs. In addition, there are results of calculations using EOQ on the website with the aim of minimizing the costs incurred to add product stock in the store, one way is by looking at the number of products if they are running low then EOQ and reorder points will be displayed on the website Picture 3 is as follows:



Picture 3

EOQ Report January 2021 on Angel Collection Source: Processed secondary data (2021)

In Picture 3 there is an EOQ report listed in January where there are a number of 17 products that will be reordered with a certain number of products to minimize the costs that will be incurred by the shop owner. One of the products that will be reordered due to high demand is legends femme night with 16 requests so that the emergence of eoq 3 with rop 1 with a total cost of Rp.1,341,838. In addition to perfume products, there is a bag product with the name louis vitton handbag black with a product demand of 11 items so that eoq 3 appears with reorder points of 5 products with a total cost of Rp. 2,477,837 as well as other products. After doing the EOQ in January, there is June in Picture 4 :

Item Code	Item Name	Stock Price	Stock Order	Reorder Point	EOQ	Lead Time	ROP	Unit Price	
1. 121001	2021-02-28	Jan	BVL AQVA INTENSE D'AMAL	20000	10000	8	2	1	812447
1. 121002	2021-02-28	Jan	BVL AQVA INTENSE	20000	10000	8	2	1	100000
1. 121003	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121004	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121005	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121006	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121007	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121008	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121009	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121010	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121011	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121012	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121013	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121014	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000

Picture 4

EOQ Report June 2021 on Angel Collection Source :Processed secondary data (2021)

In Picture 4.3 above, there is an EOQ report in June where there are a total of 14 products that will be reordered using the EOQ and rop methods. There is a demand for the most products, namely perfume Bvlgari jasmine and legends femme with a demand for 8 products so that the emergence of eoq as much as 2 and rop 1 with a total cost of both products is Rp. 1,897,787 as well as for other products. There is an EOQ report in September 2021 which will be shown in Picture 5, which is as follows:

Item Code	Item Name	Stock Price	Stock Order	Reorder Point	EOQ	Lead Time	ROP	Unit Price	
1. 121015	2021-02-28	Jan	BVL AQVA INTENSE D'AMAL	20000	10000	8	2	1	812447
1. 121016	2021-02-28	Jan	BVL AQVA INTENSE	20000	10000	8	2	1	100000
1. 121017	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121018	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121019	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121020	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121021	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121022	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121023	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121024	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121025	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121026	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121027	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000
1. 121028	2021-02-28	Jan	LOVE IS ALL THAT COUNTS	20000	10000	8	2	1	100000

Picture 5

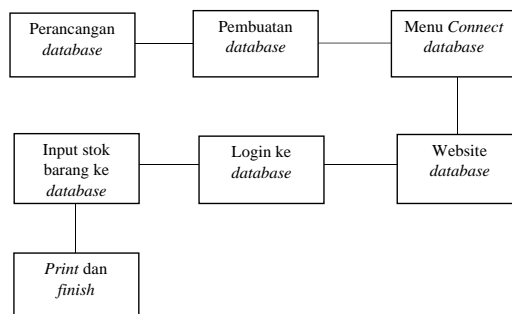
EOQ Report September 2021 on Angel Collection Source: Processed secondary data (2021)

In Picture 5 there is an EOQ report in September, where there are several products whose stock is running low and an EOQ will be carried out, so that several products such as Bvlgari Aqva perfume are listed, there are 6 requests so that EOQ becomes 3, Rop 1 with a total cost of Rp. 916,447 and as well as for other products.

Picture 6

EOQ Report December 2021 on Angel Collection Source: Processed secondary data (2021)

In Picture 6 above, there is an EOQ report in December 2021 with a total of 41 products that will be EOQ and reorder points. One product that has a high demand is the bag category, namely the longchamp black handbag with a total demand of 14 products so that the emergence of eoq as many as 12 by reordering as many as 9 products with a total cost of Rp.884,627. There is a category of souvenirs or snacks with Alfredo Milk & Chocolate products with a demand of 10 pieces so that there are 7 EOQs by reordering 2 products with a total cost of Rp. 502,258 as well as other products. The total cost according to angel collection in 2021 before conducting the EOQ is Rp. 86,450,200, while after doing an EOQ it became Rp. 76,599,461. So there is a savings of Rp. 9,850,739 in 2021. The process of implementing this output will be explained about how the process of recording product stock and using the EOQ calculation data in the website design system will be explained. These stages are carried out from the form of information system design to the formation of a website



Picture 7

Stages of Website-based Inventory Management System Implementation
Source :Processed secondary data (2021)

The results of the inventory management report application made for the Angel Collection store have a fairly good and effective impact on the store in managing product stock inventory, so that if there are products that are running low, EOQ can be done on the website and will minimize the costs to be incurred by the store owner. With this inventory management website, it is easier for shop owners to input stock items simply without using books or other types of records.

Conclusion

Every medium, small or large company needs to ensure that the overall availability of product stock is precise and accurate, because generally if the product stock is not accurate and if the customer wants to buy the product but there is no stock it will be fatal, with one of the goals being to gain company profits. Angel Collection stores focus on selling products with the aim of satisfying consumers by making transactions in cash or credit. But so far the recording of product stock is through books so that the authors design a website with the aim of making it safer and the book is at great risk of being lost. The website design created is in the form of stock reports and EOQ reports with the aim of store owners in minimizing costs for product stock entry. In the eoq report stated, December 2021 is the most frequent month in which shop owners make reorders due to high demand with a total of 41 products that will be reordered. There are suggestions based on the results of research that has been carried out with the aim of improving the process in conducting this report, namely the following:

1. For academics where every student learns about the use and function of a website-based inventory management system application for daily needs with the aim of checking every product available in a business.
2. For shop owners where in addition to the inventory management system, they can also use such a financial report system where to manage finances in daily activities such as profit and loss reports to find out the amount of losses, sales reports, purchase reports, accounts payable and receivable reports and so on.

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