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Classification of the inventory according to the type of product in the micro-enterprises of raw materials in Irapuato Gto

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Abstract

Micro-enterprises usually lack a formal structure that gives them access to organizational strategies in all their areas, specifically in the Warehouse.

It was detected lack of organization and classification in the inventory of the warehouse, which estimated at 75% in disorder in relation to the accommodation of the inventory together with the handling of several types of merchantise causing the problem to spread.

The research was done in a descriptive way that provided a vision to establish the causes.
We analyzed two types of methods applied for the improvement of inventory control and reduce the financial impact, which allowed us to establish that the best alternative is the ABC method classification of merchandise by utilization and value reducing to 10% the bad organization in the warehouse, where A represents 20%, B 30%, and C 50%. In reference to the value and rotation of the merchandise.It should be noted that not applying a correct classification and adequate distribution within the warehouse, represents response times, losses in products with slow rotation and increase in maintenance costs.

The purpose of this work is to improve the operation inside the company by organizing the inventory.

Microenterprise, warehouse, inventory, classification

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Introduction

The word warehouse is a very popular term in our language, which has frequent use and is also applied in several contexts.

The location, space or physical place that is intended to house merchandise or in which wholesale products are sold is designated warehouse. For some industries and agents of the economy, the warehouse, turns out to be an elementary space for its satisfactory operation given that without it, it would be difficult to guarantee the sales wheel. In the warehouse you can store the raw materials used in the production process in question as well as semi-finished or fully finished products can be protected to be then destined to the corresponding sales or distribution channel.
In most cases these are really large spaces that have large shelves in which products or raw materials are organized and special machinery that makes the handling and movement of merchandise easier.

The good management of the warehouse facilitates the achievement of potential savings, as well as the increase of profits. Its strategic importance includes the integral participation along with the functions of marketing, sales, purchases, planning, production, etc. An organized warehouse facilitates the task, provides a neater environment and it is easier to find where each element of work is, thus gaining time and work efficiency the better the organization is.

This research is important to take better control over the inventory and avoid possible losses in the products and facilitate their management. On the other hand, it is very helpful for employees to locate the requested products quickly. In addition, when the merchandise is located by categories according to its typology, it facilitates the decision regarding the supply.

The present investigation focuses on the physical arrangement of the inventory within the warehouse, since it is a disadvantage to have messy merchandise causing time to be lost looking for a specific product, money, because sometimes unnecessary orders are made that were in existence but due to the bad location of this one, it is not detected, inventory that, due to not having a frequent exit cycle, is lost due to having a forgotten location inside the warehouse.

Justification

By not applying a correct classification and an adequate distribution within the warehouse, it is difficult to have an inventory control, causing long response times, losses in products with slow rotation and can't effectively manage the merchandise in the microenterprise, and impact on the financial situation by reducing liquidity and increasing obsolescence in raw materials.

Problem

It was detected that due to the bad accommodation and the lack of organization within the warehouse, the microenterprise is affected in the inventory costs because it does not have well-defined control strategies that result in the purchase of goods that are not necessary or due to the negligence of not knowing that they still had stock, and on the other hand, loss of efficiency over time when locating or looking for a product that is currently occupied due to bad organization, poor customer service is caused, causing losses in time and in atention.

If you do not correct these negative factors that the microenterprise has, they will continue to harm the performance and development of the same, so it is necessary to correct immediately the bad organization that is inside the warehouse.

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Objectives

General Objective

Establish a method of inventory classification in the warehouse by categories to facilitate its handling within it, trying to locate the products according to their type and frequency of output.

Specific Objectives

- Identify the type of merchandise according to its nature (plastics, edible products, etc.)
- Determine the appropriate technique for the classification and arrangement of the goods.
- Designate a specific area for each merchandise.

Background

The microenterprise first started with a local only, because it handled very little inventory and therefore did not have a fixed store within the business. With the passage of time, the microenterprise was incorporating more merchandise lines because people made demands for more specific products according to their needs, they began to market a large part of the raw material destined for confectionery and that is where a warehouse was created to supply the orders of the clients.

Currently, there are several types of warehouses according to the need or the circumstances in which the company is, adapting it or designing it according to the inventory that they manage in their disposition.

Warehouses are designed according to their stock, for example, those that keep tools, products in process, raw material.

According to the flow of production as intermediate and finished products, depending on their location, whether it is indoor or outdoor storage, also because of their location that represents a strategic point for companies where they consider it a central or regional warehouse. Companies are aware nowadays that a warehouse the better the organization, cost and execution times, the better the inventory management will be and the improved performance of any company in the market.

Theoretical framework

- **Inventories:** An inventory consists of the stocks of physical products that are conserved in a certain place and at a specific time. Each item other than the inventory, which is located somewhere, is called a stock storage unit.

Inventories exist because, for reasons of physical and economic nature, it is impossible for supply and demand to coincide. (Narasimhan, 2010.)

• **Importance of inventories:** Some inventories are unavoidable. All or at least a part of the manufacturing inventory in process is inevitable. At the time of carrying out the inventory count, part of it will be in the machines, another part will be in the phase of transfer from one machine to another, or in transit from the raw materials warehouse to the production line of the same, finished goods store.

The rest of the inventory that is held in accessories, raw materials, items in process and finished items is simply maintained for a basic reason.

We mainly have inventories because it allows us to perform the functions of purchasing, production and sales at different levels.

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- **Types of inventories:** Claudio Soriano mentions in his book of purchases and inventories that fundamentally, in a company there are the following types of inventories:
  - **Raw materials:** composed of simple and elementary elements that require a certain degree of transformation before it can be considered as a product.
  - **Semi-finished products:** manufactured articles that are incorporated in a larger article to constitute the final product; they are also called components.
  - **Packaging:** items that are used to package the finished products before their sale; It also includes the items that are intended for protective packaging, both to proceed with its sale and to better preserve the materials during the period in which they remain in inventory.
  - **Consumables:** goods that are not incorporated in the finished product, but that, in one way or another, are necessary for its preparation.
  - **Finished products:** complete items, working and ready for sale.

Inventory classification method

- **Method:** According to Fernando Hernández, "method is the way to conduct an investigation, which can include a series of procedures."

ABC method: The ABC method establishes that, when reviewing inventory, a company should "classify items from A to C", basing its classification on the following rules. Articles A are goods whose annual consumption value is "the highest". The main 70-80% of the company's annual consumption value generally represents only between 10 and 20% of the total inventory items.

The articles C are, on the contrary, articles with the lowest consumption value. The lowest 5% of the annual consumption value generally represents 50% of the total inventory items.

Articles B are articles of an intermediate class, with an average consumption value. That 15-25% annual consumption value generally represents 30% of the total inventory items.

Through this categorization, the supply manager can identify key inventory points and separate them from the rest of the items, especially those that are numerous but not profitable.

With this method, the items with the greatest impact on the total cost of inventories can be identified. To observe the cost of inventory, it is convenient to do it according to the articles of group A, determining a careful analysis about the decisions of quantities to be requested, when to request them and thus be able to make forecasts.

There will be more attention in articles of more importance but lesser number (A) and lesser in the less significant ones, although many things may be overlooked.

Different points can be observed to take into account in addition to the costs, some of them are: availability, obsolescence, degree of substitution and urgency to acquire the item.

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The latter is perhaps one of the most important since this can influence the increase in costs, since the rush in the delivery of an order can lead to buy it from any supplier regardless of other factors.

Methodology

Based on the techniques used for the collection of information, such as observation, unstructured interview and survey application, we learned about the conditions and problems in which the microenterprise was present, they made known this information that the warehouse lacked a correct organization of the inventory and that affected the lack of precision in an effective management control in the goods.

With the help of information provided by the person in charge of the supply of goods, the unit costs of the inventory per month and per year were established.

Through the ABC method, and based on the costs obtained, the percentage of use for the products was determined. For type A products, both plastics and foodstuffs, a percentage of 20% was obtained, while class B, 30%, and the rest is 50%, respectively, are class C.

With the percentages obtained through the ABC method, an equitable distribution was proposed for the improvement of inventory management and control.

Suggestions were defined according to the proposal obtained through this research to improve the functioning of its activities such as the storage of materials, inventory management and control, among others.

Type of Research

The present work is of descriptive and explanatory type, which consists of "seeking to specify properties, characteristics and important features of any phenomenon that is analyzed.

Describe trends of a group or population, will establish the causes of events, events or phenomena being studied.

The type of research will be explanatory because it will explain how a phenomenon occurs and under what conditions it occurs.

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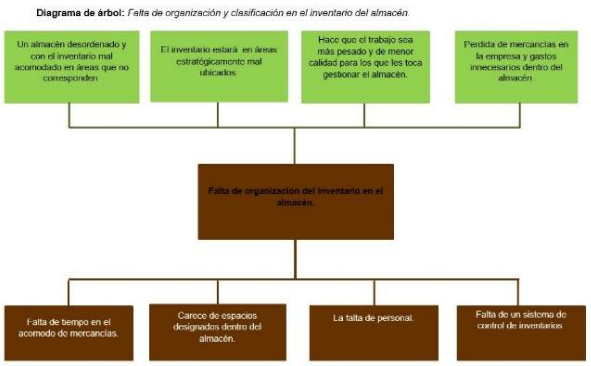

Figure 1 Tree diagram for the determination of the problem.

Results

Obtained from the simulation with Promodel

To obtain the results from the analysis of the simulations that represent the operations in the microenterprise warehouse with the original conditions and to achieve the comparison with the proposal, we considered times of an 8-hour working day in each simulation, in order to obtain comparable and objective results.

An operation was considered for each simulation with respect to a single product type in relation to its original position in the warehouse and to compare the results with the proposed location according to the analysis of the ABC method performed, as shown in Figure 2 y Figura 3

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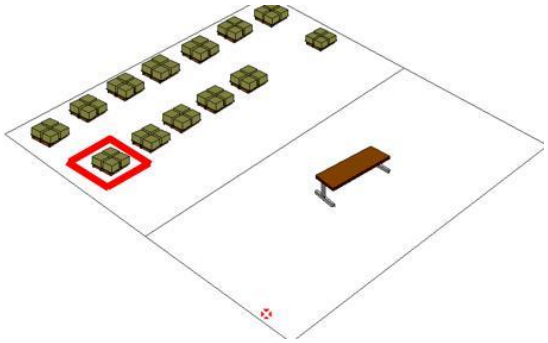

Figure 2 Original position of the product in the warehouse

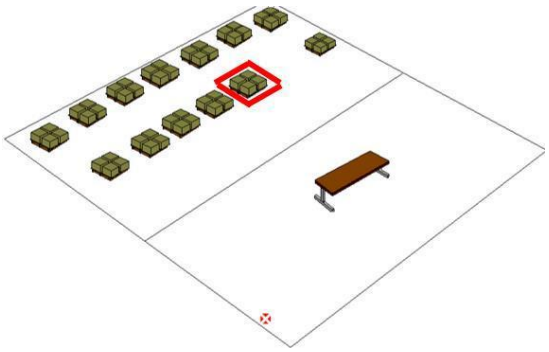

Figura 3 Proposed position of the product in the warehouse

The following tables represent the general results of the simulations performed for the locations that are involved in the process.

That includes from the entry of the client, the order of his merchandise, the search of this in the warehouse and his dispatch to the client.

Below is a description of each column of the tables, as well as their contrast and results obtained.

The first column describes the name of the participating entity in the system which are:

- Raw material Class A, which refers to the space where the raw material object of study is located in the warehouse.
- Counter, which is the place where the order is placed by the customer and the merchandise is dispatched by the employees.
- Entry, refers to the place where system clients enter and leave.

In the second column the working time that has been the object of study is indicated, in this case 8 hours are represented in total, the third column represents the capacity of each of the elements of the system, for this study the capacity was taken of only one product per customer input to the system in each simulation, in order to obtain comparable results.

In the fourth column the total number of entries is represented, it is in this section that the main optimization of times in the location of the products can be noted, since while in the first table that indicates the data of the original operations, one can observe a total of 96 entries, while in the proposed system, due to the reduction of search times for goods and distances in the warehouse according to the location determined by the implementation of the ABC method, a total of 129 entries are obtained, which indicates that it obtains an increase in the capacity of order attention in 33 units, that is, 33 more customers are served.

In the fifth column the average time per entry is shown, that is, per client, where it is possible to observe that there is a decrease in the time the client is served for 3 seconds; as well as a decrease of the time of search of merchandise in the warehouse of 1.38 minutes per product, which gives a total time optimization of 1.41 minutes for each product that the client requires.

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In the sixth column represents the percentage of use of each of the locations of the system, in this case the entry remains with a value of zero because it does not carry out any process of product search or dispatch thereof, but it is possible to notice a decrease in the percentage of use of the area where the merchandise is located, of 13.3% and an increase of 23.3% of use in the dispatch area, the first percentage represents a time saving of searching for merchandise, is therefore, the use of this area decreases, the second percentage represents the increase in the service capacity for a greater number of customers, that is why the increase in this area is registered, corresponding to the dispatch and taking of orders.

Name	Scheduled Time (HR)	Capacity	Total Entries	AVG Time Per Enty (MIN)	% Utilization
Raw material Class A	8.01	1.00	96.00	5.00	99.79
Counter	8.01	1.00	95.00	3.40	67.19
Entry	8.01	1.00	95.00	0.00	0.00

Table 1 Analysis of the original operating situation in the company

Name	Scheduled Time (HR)	Capacity	Total Entries	AVG Time Per Enty (MIN)	% Utilization
Raw material Class A	8.02	1.00	129.00	3.22	86.49
Counter	8.02	1.00	129.00	3.37	90.52
Entry	8.02	1.00	129.00	0.00	0.00

Table 2 Analysis of the operational situation proposed in the company (obtained from the promodel)

Conclusions

The classification method proposed based on the results obtained allows us to:

Determine in a more efficient way the quantities to order of each product and keep a strict control of the demand, and analysis of its variability, in order to maintain the levels of existence of adequate products in the warehouse. (Economic amount of order).

And determination of purchase frequency by product, as part of a control strategy is recommended:

Carry out internal audits in order to detect inconvenient or possible problems in the warehouse in time, and thus, be able to establish measures that counteract these defects on time (monthly) weekly stratified and at random.

Establish and renew annually the ABC control with the purpose of readjusting the changes that the demand may experience according to the products managed by the microenterprise.

Respect the assigned distribution for each merchandise proposed in said investigation. (Warehouse policy.)

Establish a clear and precise control of the goods receipts to the warehouse, reception reports for the goods purchased. The goods will leave the warehouse only if they are backed by clearance notes or requisitions which must be duly authorized to guarantee that they will have the desired destination.

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