

ECOLE DES HAUTES ETUDES COMMERCIALES

EHEC

**Thesis Submitted in partial Fulfillment
Of the Requirements for Master's Degree in Commercial
Sciences**

Major: Supply Chain Management

**Improving inventory
management in a
Wholesale Company
Case Study: ABC Distribution**

Submitted by:

Ms. Meriem CHIKHI

Supervised by:

Dr. Mustapha BOUKHATEM

(a senior lecturer at EHEC)

5th Promotion

June 2018

ECOLE DES HAUTES ETUDES COMMERCIALES

EHEC

**Thesis Submitted in partial Fulfillment
Of the Requirements for Master's Degree in Commercial
Sciences**

Major: Supply Chain Management

**Improving inventory
management in a
Wholesale Company
Case Study: ABC Distribution**

Submitted by:

Ms. Meriem CHIKHI

Supervised by:

Dr. Mustapha BOUKHATEM

(a senior lecturer at EHEC)

5th Promotion

June 2018

Dedication

To everyone who wants to be mentioned here

Acknowledgements

First of all, I would like to show my deepest gratitude to my supervisor Dr. Mustapha BOUKHATEM for his constant support, commitment and feedback toward this study, and for guiding me throughout the entire journey.

I owe a special thanks to Ms. Imen Naila N HASSANI for her support, cooperation and patience, and for helping me with converting the company's data into information that added great value to my research.

I also would like to thank ABC's staff for their considerate contributions and for their honest and cooperative response to all the questions solicited in this study.

My gratitude and appreciation also go to my parents and friends who have been supporting me all along this journey.

Abstract :

Any company aims to achieve its objectives. Defining and achieving these objectives are missions that require considerable efforts by this company.

Reaching the main goal in an industrial or wholesale business is depending on how the company is managing its supply chain as a whole which requires a total control on the activities and the usual missions such as inventory control which is an important and critical part in supply chain and logistics. In order to assure a good inventory management, the company has to follow a bunch of procedures and techniques that have to be chosen according to its situation, and to strive for improving it as much as it can to maximize the profit.

For this reason, our research topic aims to investigate ABC's inventory management system and try to find a way of improvement.

After various observation and interactions with ABC staff, and with the use of different documents, we will offer a number of recommendations that will allow the improvement of ABC's inventory management and thus its logistic' performance which will positively affect its profitability.

Key words: Supply chain, inventory management, logistics, improvement, profit, objectives.

Résumé

Chaque entreprise essaye d'atteindre ces objectifs, la sélection et la réalisation de ces objectifs dépendent de tâches données qui demandent des efforts colossaux de la part de l'entreprise.

La réalisation du but principal de la société de la production ou de la distribution dépend sur la méthode de la logistique et la supply chain, tout cela demande un suivi minutieux aux activités et aux tâches quotidiennes comme la gestion de stocke. Il faut que la société suive un ensemble des procédures et des techniques bien choisies et qui correspondent et marchent avec la société. Ajoutant qu'elle cherche toujours à augmenter ces profits. C'est pour cette raison notre étude vise le système de la gestion de stocke de la société ABC, ainsi la tentation de trouver et de proposer de nouvelles méthodes dans le but de les améliorer vers la perfection industrielle de stockage.

Prenant en considération les observations et les réactions des employeurs de la ABC, Nous essayons de donner un ensemble de suggestions qui permettent d'améliorer la gestion de stocke au niveau de la ABC et de développer le système logistique qui affecte positivement le rendement de l'entreprise.

Mots clés : supply chain, logistique, gestion des stocks, amélioration, objectifs.

ملخص

أي مؤسسة تسعى للوصول إلى أهدافها، حيث تحديد و تحقيق هذه الأهداف هما عبارة عن مهام و التي تتطلب مجهود ضخم من طرف المؤسسة.

تحقيق الهدف الرئيسي في مؤسسة صناعية أو مؤسسة توزيع يعتمد على طريقة تسيير هذه الأخيرة لسلاسل الإمداد ككل و التي تتطلب متابعة دقيقة لكل النشاطات و المهام اليومية كعمليات تسيير المخزون و التي تعتبر جزء جد مهم و حساس في سلاسل الإمداد و اللوجيستيك. من أجل التأكد من حسن جودة تسيير المخزون، يجب على المؤسسة إتباع مجموعة من الإجراءات و التقنيات و التي يجب اختيارها بعناية مطابقة مع حالة المؤسسة، كما عليها السعي لتحسينها قدر الإمكان من أجل تعظيم الربح.

و لهذا، موضوع دراستنا يهدف للبحث في نظام تسيير المخزون لمؤسسة ABC. و محاولة إيجاد طريقة لتحسينها.

بعد عدة ملاحظات و تفاعلات مع موظفي ABC ، و مع الاستعمال لمختلف الوثائق، سنقدم مجموعة من المقترحات التي ستسمح بتحسين تسيير المخزون في ABC و نتيجة لذلك، تحسين أداء نظامها اللوجيستي و الذي يؤثر بدوره ايجابيا على مرد وديتها.

List of figures :

Figure N°	Title	Page
Chapter 01		
1.1	principle of stock regulation	06
1.2	different types of stock	08
1.3	a typical use of stock	11
1.4	the minimum stock	19
1.5	The maximum stock	21
Chapter 02		
2.1	ABC analysis	27
2.2	features of one stock cycle	28
2.3	summarized operation of JIT	29
2.4	summary of MRP calculations	31
2.5	Process with technology	38
2.6	Alternatives for customers when their demand cannot be met with stock	39
2.7	suggested forecasting framework	41
Chapter 03		
3.1	Organizational Diagram	49
3.2	Distribution canal of ABC	50
3.3	Diagram of logistic department	51

Liste of tables

Table N°	Title	Page
3.1	employees' education level	49
3.2	sale sectors of ABC	49

List of acronyms abbreviations

CEO	Chief Executive Officer
D Avg	Demand Average
E-POS	Electronic Point Of Sale
EOQ	Economic Order Quantity
ERP	Entreprise Resource Planning
FIFO	First In First Out
FSN	Fast moving, Slow moving, Non moving
HML	High, Medium, Low
JIT	Just In Time
LIFO	Last In First Out
LT	Lead Time
MRP	Material Requirement Planning
SDE	Scarce, Difficult, Easily available
SKU	Stock Keeping Unit
t	Time
VED	Vital, Essential, Desirable
VMI	Vendor Managed Inventory
WMS	Warehouse Management System
Z	Desired service level

Summary

General introduction.....	01
I. Chapter 01: Basic concepts in inventory management....	03
1. Section 01: Basic concepts in inventory.....	05
2. Section 02: Inventory management.....	12
II. Chapter 02 : Inventory management techniques and improvement.....	24
1. Section 01: Inventory Management Techniques.....	26
2. Section 02: Inventory management improvement.....	36
III. Chapter 03 : Improving inventory management at ABC case study.....	43
1. Section 01: Nivea company background.....	45
2. Section 02: ABC Company's Background.....	46
3. Section 03: Inventory Management Procedures at ABC.....	53
4. Section 04: Findings and recommendations.....	57
General Conclusion.....	63

Introduction

Materials and inventory management is one of the most important disciplines in almost every company. And it's considered as the key component in the logistical behavior of essentially all business systems. For this reason, inventory management is considered as one of the crucial duties that concern supply chain management.

Inventory can provide the capability to fulfill the customer need. However, it is found that in most companies inventory is the largest, or among the largest, asset on the balance sheet of the financial statements. This means that for most retail and wholesale businesses, higher than 50% of their assets are tied up in inventory. 'DONALD (W), 2003'.

Authors and inventory managers from different eras have been seeking to improve this discipline and that's why we objectively chose the improvement of inventory management in a wholesale company as a topic of our study.

The aim of our research is to bridge the substantial gap between the theory and the practice of inventory management and to help the host company to achieve an effective and successful inventory management.

ABC Distribution Company has been taken as a case of focus. Which is the exclusive distributor of Nivea in Algeria, its activity is to import cosmetics products and distribute them to nine sale sectors around the country.

The study was guided by a main research question which is: how to improve inventory management in a wholesale Company? Simplified by two sub questions, the first one is: what are the reasons behind inventory management inefficiency? And the second one is: what are the managerial solutions we can propose in order to deal with the issues?

The purpose of this study is to improve inventory management in ABC Company and that's through investigating the reasons behind inventory management inefficiency and coming up with some suggestions that can enhance inventory management in this organization.

The study is considered as qualitative case study, based on a descriptive method. Data collection is mainly through observation and interviews with the managers and other staff involved in inventory control operations, as well as consulting internal documents in order to get more accurate data.

General Introduction

This project started with a theoretical overview of inventory management which consisted of two chapters, the first chapter is about fundamentals in inventory as a concept and inventory management as a discipline, the second chapter is mainly about the different techniques and methods, as well as usual problems and advices given by experts in the domain. The third and last chapter is concerned about practical framework which included the enterprise background, the findings regarding its inventory management, and lastly the interpreted results associated with suggested solutions.

Chapter 01:
Basic concepts in
Inventory Management

Introduction

This first chapter consists of the fundamentals of inventory as a concept and inventory management as a discipline.

In the first section, we will focus on inventory, starting with the definitions and the different types of inventory, thereafter, we will see the different costs that are related to inventory, as well as the importance of holding stock in a company.

We will start the second section with inventory control methods, and then the most used computerized systems, and lastly, we will talk about inventory optimization through mentioning the usually mistakes and problems with proposed solutions from experts.

Section 01: basic concepts in inventory

In this section we will see the basics of inventory as a concept, such as definition, types, role, next, and we will move forward to the costs related to it, the purpose behind holding stock, and the inconvenient of holding it as well.

1-1- Definition:

Definition 01: Inventory is a current asset. In particular, inventory represents “tangible personal property which is held for sale in the ordinary course of business; in process of production for such sale; or, to be currently consumed in the production.” In other words, inventory (in the form of “work-in-process,” “raw materials,” or “finished goods”) is an asset because it represents property that is likely to be converted to revenue, as the ultimate goal of inventory is to facilitate sales for an organization. Thus, Accounting 101 would indicate that inventory is properly accounted for on financial statements by being reported in dollar value terms as a current asset on the balance sheet.¹

Definition 02:

Inventories are materials and supplies that a business or institution carries either for sale or to provide inputs or supplies to the production process. All businesses and institutions require inventories. Often they are a substantial part of total assets. Financially, inventories are very important to manufacturing companies. On the balance sheet, they usually represent from 20% to 60% of total assets. As inventories are used, their value is converted into cash, which improves cash flow and returns on investment. There is a cost for carrying inventories, which increases operating costs and decreases profits. Good inventory management is essential.²

Definition 03:

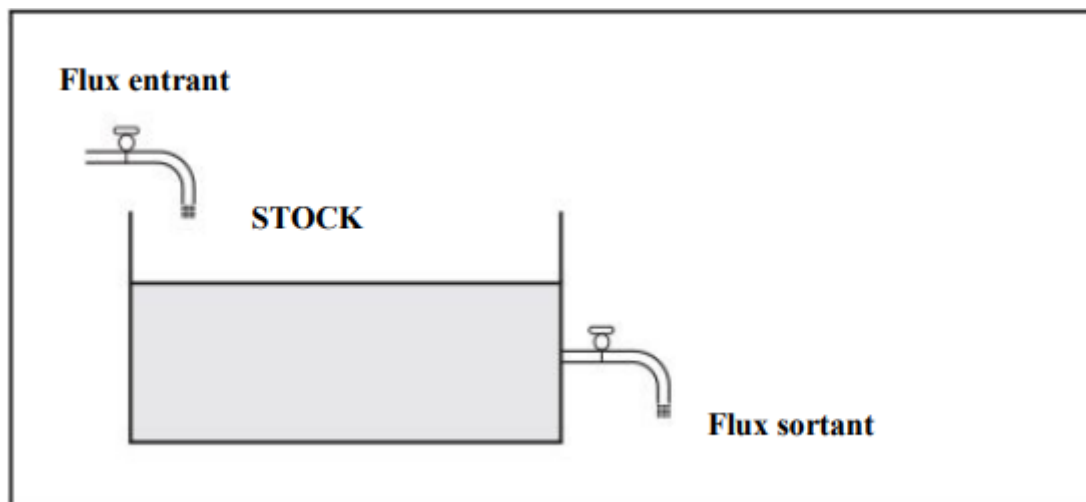
Inventory is the stock of any item held in an organization. The aim is, naturally, to have the right amount, in the right place, at the right time and the right cost.³

¹ Matthew (A) & Terry (L), *the definitive guide to inventory management: principles and strategies for the efficient flow of inventory across the supply chain*, CSCMP, New Jersey, 2014, p. 2.

² Tony (A), Stephen (N) & Lloyd (M), *introduction to materials management 6th edition*, Pearson education, New Jersey, 2008, p.254.

³ Geoff (R) & Catherine (M), *inventory management: advanced methods for managing inventory within business systems*, Kogan Page, US, 2015, p.7.

- **Figure 1.1: principle of stock regulation**



Source : LASNIER (G), *Gestion des approvisionnements et des stocks dans la chaîne logistique*, édition HERMES SCIENCE, paris, 2004, p.23.

1-2- The role of inventory:

- Inventories have many vital functions such as:
- The desynchronization of production and sale.
- The desynchronization of transportation and sale.
- The guarantee against unforeseen situations, production is the same as transportation are at risk of breakdown, strike, bad weather, ... etc, the customers have to keep getting delivered.
- The amortization of demand fluctuation. Unfortunately, sale forecasting is not an exact science.
- The reception of opportunity purchases. Some markets stay speculative; the relevant purchases must be sheltered.⁴

1-3- Types of inventory:

The three main types of inventories are raw materials, work-in-progress, and finished Goods.

Raw Materials: Raw Materials are an unprocessed natural substances or products used in Manufacturing Process and that are converted by a manufacturer into a finished product. There are the goods which have not yet been committed to

⁴ ROUX (M) & LIU (T) : *Optimiser votre plateforme logistique*, Edition d'organisation, 4^{ème} édition, Paris, 2010, p. 14.

production in a manufacturing Firm. They consist of raw materials or finished components. They may consist of raw materials or finished components. They are the resources purchased as inputs to the transformation process that have not yet been transformed. A material suitable for manufacture or use or finishing is raw material. Raw material is the original material as taken from its source, usually the ground.

Work-in-Progress: Work-in progress, also called stock-in-progress, refers to goods in the intermediate stages of production. This includes those materials which have not yet been completed. It refers to the raw materials engaged in various phases of a production schedule. The degree of completion may be varying for units. Some units might have been just introduced and some others may be 40% complete or others may be 90% complete. The work-in-progress refers to partially produced goods. The value of work-in-progress refers to raw materials costs, direct wages, and expenses already incurred and the overhead if any. So work-in-progress inventory contains partially produced/completed goods. The purpose of work-in progress inventory is to uncouple the various operations in the production process so that machine failures and stoppages in one operation will not affect other operations.

Finished Goods: Inventory that is in a saleable or shippable form based upon its location within the supply chain. Finished goods are completed products awaiting sale. They are the final output of the production process in a manufacturing firm. An item considered a finished good in a supplying plant might be considered a component or raw material in a receiving plant. Commodities that will not undergo further processing and ready for sale to the final demand user either an individual consumer or business firm. In case of wholesalers and retailers, they are generally referred to as merchandise inventory. This includes durable goods such as automobiles, household furniture and appliances, And Nondurable goods such as apparel and home heating oil. ⁵

Consumables: Light bulbs, hand towels, computer and photocopying paper, brochures, tape, envelopes, cleaning materials, lubricants, fertilizer, paint, dunnage (packing materials), and so on are used in many operations. These are often treated like raw materials.

Service, repair, replacement, and spare items (S&R Items): These are after-market items used to “keep things going.” As long as a machine or device of some type is

⁵ https://www.ijirset.com/upload/2014/january/13_INVENTORY%20MANAGEMENT_new.pdf (published on January 14th, 2014, consulted on March 1st, 2018 at 15:15).

being used (in the market) and will need service and repair in the future, it will never be obsolete. S&R Items should not be treated like finished goods for purposes of forecasting the quantity level of your normal stock.⁶

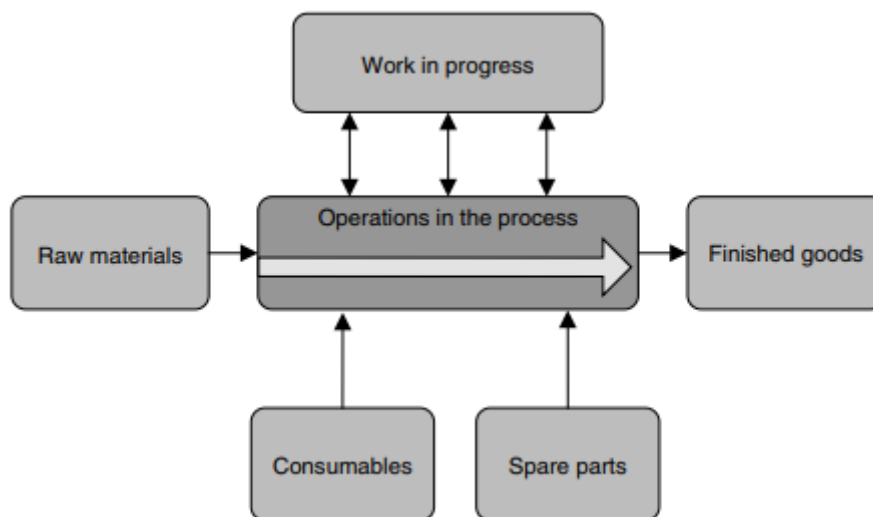
Cycle stock: is the normal stock used during operations.

Safety stock: is a reserve of materials that is held for emergencies.⁷

Maximum stock level: is the highest stock, its level is behind what it's supposed to be.

Recovery stock: are materials that are already used but they will probably be put again in process.⁸

- **Figure 1.2: different types of stock**



- DONALD (W), *Inventory control and management*, Wiley, England, 2003, p.10.

1-4- Costs related to inventory:

Carrying Cost: This is the cost incurred in keeping or sustaining an inventory per unit of raw materials, work-in-process or finished goods. Here there are two basic cost involved.

Total carrying cost = (carrying cost per unit) X (Average inventory).

a) **Cost of Storage:** It includes cost of storing per unit of raw materials by the firm. This cost includes the storage of materials like spaces for rent occupied by stock,

⁶ MAX (M), *Essentials of inventory management*, AMACOM, NY, 2003, p 5.

⁷ DONALD (W), *inventory control and management*, Wiley, England, 2003, p 9.

⁸ MBAMBU (S), *problématique de la gestion des stocks des médicaments essentiels en période post conflits armés*, TFC inédit-ULPGL/Goma, FGA, 2004-2005, p 6.

security of stock, cost of infrastructure, cost of insurance, warehousing costs, handling cost etc.

b) **Cost of Financing:** The cost includes the cost of funds that is invested in the inventories. It includes the required rate of return for the investments in inventory also including the storage cost. The carrying cost involves both real cost and opportunity cost related to the funds. The total carrying cost is entirely inconstant and rise indirectly proportional to the level of inventories carried.

Cost of Ordering: The cost of ordering includes the cost of asset i.e. inventories. It is the cost of producing and executing of an order including cost for paperwork and contacting with the supplier. The ordering cost is inversely proportional to annual inventory of a firm. The ordering cost may have a fixed element, which is not affected by the order size and an inconstant elements, which changes according to the order size.

Total Ordering Cost = (Nbr of orders) X (cost per order).

Cost of Stock out: It is also known as hidden cost. The stock out is the situation where the firm does not have units of an item in stores but there is a demand for that item either by the customers or by the production department. The stock out introduce to zero level inventories so, there is a cost of stock out that the firm faces for a situation of lost sales or back orders. The stock outs are quite often expensive. In case of finished goods, even the goodwill of the firm can be affected due to customers' dissatisfaction they may lose business, whereas in raw materials or work in process the production process can be stopped because it is expensive as employees will be paid for the time they haven't worked in producing goods. The carrying cost and the ordering cost are reverse forces so they determine the level of inventories in a firm.

Total Cost = (Cost of items purchased) + (Total Carrying and ordering cost)⁹

1-5- The Purpose of Inventory:

Some of the more important reasons for obtaining and holding inventory are:

Predictability: In order to engage in capacity planning and production scheduling, you need to control how much raw material, parts, and subassemblies you process at a given time. Inventory buffers what you need from what you process.

Fluctuations in demand: A supply of inventory on hand is protection: You don't always know how much you are likely to need at any given time, but you still need to

⁹ SHARMA (A) & ARYA (V), *Study of inventory management in manufacturing inventory*, IJAEGT, India, 2016, p 7.

satisfy customer or production demand on time. If you can see how customers are acting in the supply chain, surprises in fluctuations in demand are held to a minimum.

Unreliability of supply: Inventory protects you from unreliable suppliers or when an item is scarce and it is difficult to ensure a steady supply. Whenever possible unreliable suppliers should be rehabilitated through discussions or they should be replaced. Rehabilitation can be accomplished through master purchase orders with timed product releases, price or term penalties for nonperformance, better verbal and electronic communications between the parties, etc. This will result in a lowering of your on-hand inventory needs.

Price protection: Buying quantities of inventory at appropriate times helps avoid the impact of cost inflation. Note that contracting to assure a price does not require actually taking delivery at the time of purchase. Many suppliers prefer to deliver periodically rather than to ship an entire year's supply of a particular stock keeping unit (SKU) at one time.

Quantity discounts: Often bulk discounts are available if you buy in large rather than in small quantities.

Lower ordering costs: If you buy a larger quantity of an item less frequently, the ordering costs are less than buying smaller quantities over and over again. (The costs of holding the item for a longer period of time, however, will be greater.)¹⁰

1-6- Inventory's inconvenient:

There are some inconveniences as a result of having a current stock:

- The insurance of stocked items and this phenomenon can make them inappropriate before they get to their destination (damaged foodstuff, tarnish colors, oxidation...).
- Unsold items by the end of their life cycle that they must be removed from the stock without taking any benefit from them.
- Lastly, these stocked items must be manipulated, they need storage surface, stock keeper, protection from any outside threat (theft, fire, flood...) and those are expenses on the company.¹¹

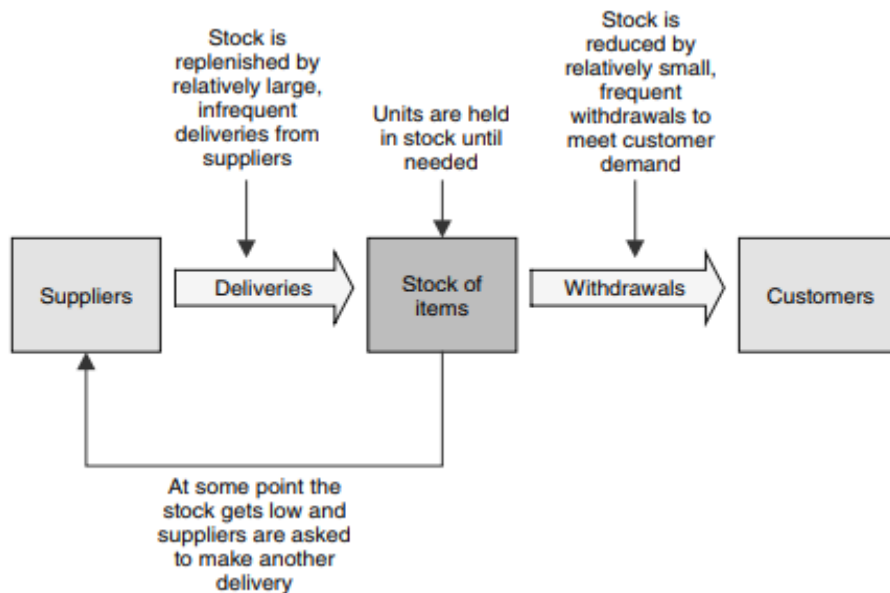
¹⁰ MAX (M), Op.cit, p 3-4.

¹¹ BLONDEL (F), *Aide-mémoire gestion industrielle*, édition DUNOD, 2eme édition, paris, 2006, p 155.

1-7- Inventory life cycle:

Stocks are formed whenever an organization acquires materials that it does not use immediately. A common practice has a delivery of material arriving from a supplier, and this is kept in stock until needed. Sometimes it is easier to picture a specific operation like in a supermarket. Goods are delivered by lorry at night; these are checked, sorted and put onto shelves. Then they stay on the shelves until customers buy them. At some point stocks get low, and the supermarket arranges another delivery.¹²

- **Figure 1.3: a typical use of stock**



- **Source:** Donald (W), *Inventory control and management*, Wiley, England, 2003, p.05.

1-8- Documents related to inventory:

Stock movement: the stock movements transiting through public domain have to lead to a slip institution indicating the sender and the recipient.

A summary document for the movement of a period of time (registration document) has to explain the variation of movement regarding quantity more than quality.

¹² DONALD (W), Op.cit, p.5.

Inventory status: the inventory status is used for valuation; it has to be established retroactively. Hence, every inventory status on time t has to be explained by an inventory status on time $t-x$ and a logbook of movement between $t-x$ and t .¹³

The deliver order: it's called also the receiving slip; in this document we find the characteristics, date of entrance, the quantities and the unit price of each item.

The exit do

The release order: it's a document when you find date, characteristics, quantities and unit price.¹⁴

Section 02: Inventory management

2-1- Definition:

Definition 01: Inventory management is the function responsible for all decisions about stock in an organization. It makes decisions for policies, activities and procedures to make sure the right amount of each item is held in stock at any time.¹⁵

Definition 02: Inventory Management is the activity that ensures the availability of inventory items in order to be able to service internal and/or external customers. In an operational environment, the customer will be the maintenance and production departments; in a finished goods environment, the customer is the external customer. Inventory management involves the coordination of purchasing, manufacturing, and demand to ensure the required availability.¹⁶

2-2- The objectives of inventory management:

Like all other activities in the company, inventory management has to contribute to the welfare of the whole organization. So the main purpose of this function in supporting the business activities is to optimize customer service, inventory costs, and operating cost.

¹³ BLONDEL (F), Op.cit, p 179

¹⁴ NAKHLA (M), *l'essentiel du management industriel*, édition DUNOD, Paris, p 312.

¹⁵ DONALD (W), Op.cit, p 7.

¹⁶ PHILLIP (S), *smart inventory solutions: improving the management of engineering materials and spare parts* 2nd edition, industrial press Inc edition, New York, 2010, p 5.

Customer service: the service will normally be taken as 'availability ex stock', whereas in a supply to customer specification, the service expected would be delivery on time against customer requested date.

Inventory cost: this target has to be considered carefully, since there is often the feeling that having any stock in stores for a few months is bad practice. In reality, minimizing the stock usually means attending to the major costs: very low-value items are not considered a significant problem. Low inventory can also be considered in terms of space, or other critical resource. Where the item is voluminous, or the stores space restricted, the size of the items will also be a major consideration.

Operating costs: avoiding operating costs has become more of an issue as focus has been placed on inventory management. The prime operating costs are the stores operations, inventory control, purchasing and the associated services.¹⁷

Optimizing the balance of these three objectives is the focus of stock control. The better the balance the greater the profits provided for the company.¹⁸

2-3- The role of inventory management:

- It provides a continuity of supply (goods and/or services) to customers or users and remains financially viable.
- It organizes the availability of items to the customers: It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs. This role includes the supply of current sales items, new products, consumables, spare parts, obsolescent items and all other supplies.
- It ensure the correct level of stock being held
- It provides the opportunity for goods to be purchased so that optimum prices can be obtained.
- Some managers consider that they should be able to use stock control to give an immediate supply of information, statistics and forecasts.¹⁹

¹⁸ TONY (W), *Best practice in inventory management* 2nd edition, Butterworth-Heinemann, OXFORD, 2002, p4 – p6.

¹⁹ TONY (W), *Ibid.* p7 – p8.

2-4- The link between inventory management and the other functions:

The link to purchasing function and procurement: it informs the inventory management about all the details concerning suppliers (delivery time, promotional sales etc ...) and organizes order execution that is issued by the inventory management.

The link to commercial function: the commercial function has to provide for the inventory management information about demand according to market development and marketing strategy of the commercial service to consider it in storage policy.

The link to the production: inventory management has to work according to the manufacturing function; it needs to predict stock availability, in accordance with production program.

The link to executive management: the executive management is a responsibility center that insures the coordination between the different functions to make a smooth progress in the company.

Regarding inventory management, it takes action in implementing an adequate management system that provides a breadth of information (quantity stored, inventory value etc...) in order to take tactical and strategic decisions.²⁰

The link to finance: Inventories have an important impact on the usual aggregate scorecards of management performance namely, on the balance sheet and the income statement.

First, inventories are classified as one of the current assets of an organization. Thus, all other things being equal, a reduction in inventories lowers assets relative to liabilities. However, the funds freed by a reduction in inventories normally would be used to acquire other types of assets or to reduce liabilities.

The link to Marketing: The most common complaint we hear from operations managers about marketing is that marketing managers simply do not understand how difficult it is to manufacture and distribute a wide variety of products. Because of low-volume production of many products, productive capacity is lost to setups, and product demand is more difficult to forecast. Workers and equipment must be more flexible, and inventories must be higher. Marketing managers prefer a wide variety of

²⁰ HEFIED (K) : *Essai d'optimisation de la fonction gestion des stocks, mémoire de master en distribution et Supply Chain management*, Ecole des hautes études commerciales, 2015, p 13.

products because they are listening to customers and trying to respond to their needs and desires.

High inventories are desirable because demand can be met without delay.²¹

2-5- Inventory management constraints:

Many constraints can appear when the company manages different products in inventory; these constraints are basically budgetary constraints or constraints related to storage capacity or to the restriction of the workforce:

- Constraints related to storage: it appears when the storage space is limited. So, inventory management has to optimize the space of storage.
- Constraints related to budgeting: inventory management must manage the costs related to the stock while respecting the budget; it is possible that the fund invested in inventory is limited during a period of time.
- Constraints related to the workforce: the operators cannot exceed a limited number of orders during a specific period, and they can be incapable of servicing the procurement tasks.²²

2-6- Inventory management and supply chain:

The implication of inventory management should be considered not just within a single organization but across the whole supply chain. Managing the steps in the journey of inventory throughout the supply chain is the responsibility of many different organizations, (i.e. the sequence of steps from initial raw material via a series of value-adding processes to end customer and beyond).

The supply chain, logistics and operations management are all linked. Logistics is the placement of inventory throughout the supply chain at the right time and in the right place: transporting and warehousing of stock has to be managed both within an organization and between organizations.²³

2-7- Inventory management interaction with logistic functions:

Procurement or purchasing: which is usually initiates the flow of materials through an organization by sending a purchase order to a supplier. This means that procurement has to do everything needed to get materials into the organization.

²¹ EDWARD (A), DAVID (F) & DOUGLAS (J), *Inventory and production management in supply chain* 4th edition, CSC press, NW, 2017, p.11-12.

²² BERTHIER (P) & SPALANZANI (A) : *La gestion des stocks*, éditions SIREY, Paris, 1979, p.99.

²³ GEOFF (R), CATHERINE (M), *Op.cit*, p.23 – p.24.

Inward transport or traffic: which actually moves materials from suppliers to the organization's receiving area. Important decisions concern the mode of transport (road, rail, air, etc.), policies for outsourcing, choice of transport operator, route, safety and legal requirements, timing of deliveries, costs, etc.

Receiving: makes sure that materials delivered correspond to the order, acknowledges receipt, unloads delivery vehicles, inspects materials for damage, and sorts them.

Material handling moves materials from receiving and puts them into stores. It is responsible for all movements of materials within an organization, so it also removes materials from stores, takes them to the place they are needed, and generally moves materials between operations. Its aim is to provide efficient movements with short journeys using appropriate equipment with little damage, and using special packaging and handling where needed.

Warehousing or stores: takes care of materials held in stock until they are needed. Warehousing makes sure that materials have the right conditions, treatment and packaging to keep them in good condition, and are available quickly when needed.

Stock or inventory control sets the overall policies for stock, considering the materials to store, investment, customer service, stock levels, order sizes, order timing and so on.

Order picking: finds and removes materials from stores. Typically materials for a customer order are located, identified, checked, removed from racks, consolidated into a single load, wrapped and moved to a departure area for loading onto delivery vehicles.

Outward transport: takes materials from the departure area and delivers them to customers (with concerns that are similar to inward transport).

Physical distribution: is a general term for the activities that deliver finished goods to customers. It is often aligned with marketing and forms an important link with downstream activities.

Recycling, returns and waste disposal: There are sometimes problems with delivered materials – perhaps faults, the wrong materials or too much delivered – and logistics has to collect them and bring them back to the supplier. This reverse logistics also collects associated materials such as pallets, delivery boxes, cable reels and containers (the standard 20-foot-long metal boxes that are used to move goods). Some materials are brought back for recycling (such as metals, glass, paper, plastics and oils) while others are brought back for safe disposal (such as dangerous chemicals).

Location: finds the best site for those activities that can be in different places. Stocks of finished goods, for example, can be held at the end of production, moved to nearby warehouses, sent to large centralized facilities, put into stores near to customers, passed on to be managed by other organizations, or a range of alternatives.

Communication: Alongside the physical flow of materials is the associated flow of information. This links all parts of the supply chain, passing information about products, customer demand, materials moved, timing, stock levels, availability, problems, costs, service levels, and so on.²⁴

2-8- Inventory management activities:

Although small-business inventories are less extensive than those of larger businesses, the inventory activities each performs are often quite similar. Warehouse organization, receiving, storage and control activities are just as important in a small business as in a large corporation. An activities list describing the wide variety of tasks inventory personnel routinely complete can be helpful in creating job descriptions, responsibilities assignments and annual performance reviews.

Warehouse Organization:

A small-business warehouse might not be a warehouse at all, but rather a backroom or other location containing a variety of shelves, boxes and bins. How the area is organized can have a significant impact on operational efficiency and employee productivity, making good organization and a warehouse floor plan two essential inventory activities. Organization activities include procedures for identifying and labeling locations for storing specific items on a general floor plan, as well as identifying and labeling storage shelves and bins for specific inventory items.

Receiving Activities:

Checking orders for completeness, signing delivery receipts and accepting inventory deliveries are all considered receiving activities. In total, receiving activities set the stage for effectively managing the flow of inventory items. Order-checking activities verify the quality of items and ensure the items on the order are items the business received. Signing transfers responsibility for the order to the business, at which point the order can be officially accepted and transferred from the delivery truck to the warehouse staging area.

²⁴ DONALD (W), Op.cit, p.32 – p.33.

Storage Activities:

Inventory storage activities follow the inventory costing method -- most often either “last in, first out” or “first in, first out” chosen by the business owner. While the needs of the business determine which costing method is used, activities for either include storing items in their proper location and turning them so their labels and expiration dates, if present, are visible and can be easily read. Storage activities can also include adjusting or inspecting temperature settings in freezers or coolers for frozen or perishable items.

Security activities:

Security activities are essential to good inventory management and control. Security activities are mainly established to deter or detect inventory discrepancies due to employee or customer theft. Because of this, the business owner or inventory manager is most often in charge of creating security policies and completing security activities. Activities include an annual physical inventory count and random, partial inventory counts at various times throughout the year. Activities can also include reviewing video surveillance footage and checking sign-in and sign-out logs. Security activities can also include checking employees as they leave the building. This activity, however, is most often only undertaken if or when the business feels it’s necessary, and a written security policy should include a clause requiring employees to submit to searches and another giving employees a specific right to refuse.²⁵

2-9- Inventory management indicators:

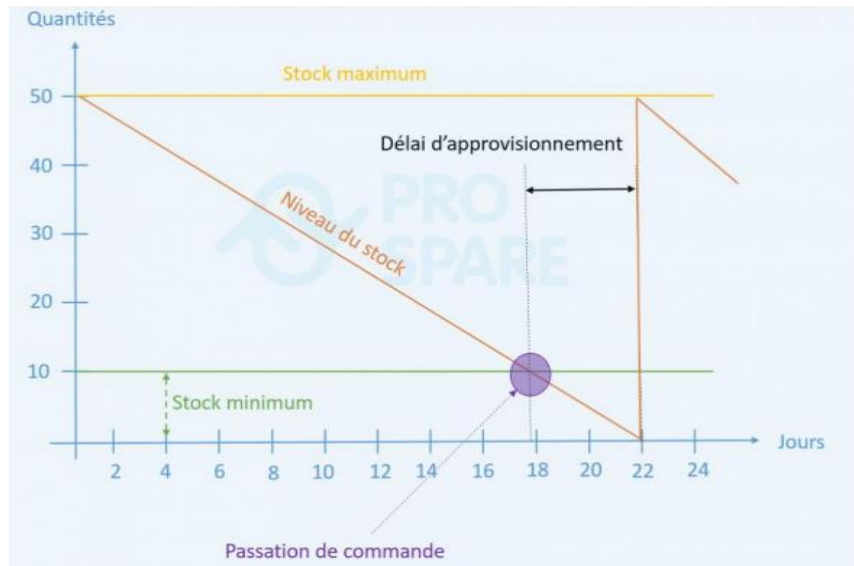
In order to master its inventory, the company needs to use different inventory management indicators:

- **Safety stock:** is the quantity established in order to face the risk that may appear until replenishment.
- **Alert stock:** the quantity of inventory in which the company has a launched order placement. This inventory has to cover the replenishment (minimum stock) and absorb the eventual incident (safety stock) in the meanwhile.

²⁵ <http://smallbusiness.chron.com/inventory-activities-list-75726.html> (consulted on 15th May, 2018)

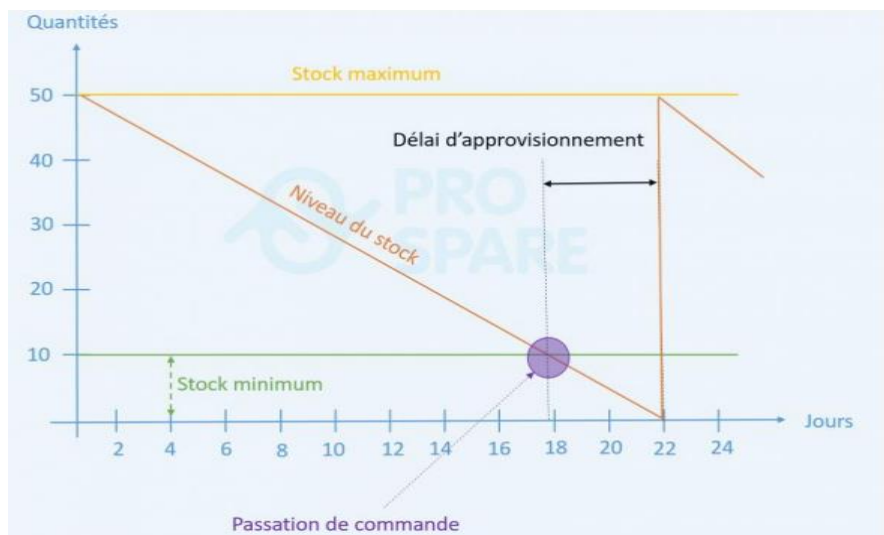
- **Minimum stock:** it's the quantity relevant to the consumption during the replenishment period. **The minimum stock = alert stock - safety stock.**

- **Figure 1.4: the minimum stock**



- **Source :** «Les différents types de stocks» published by Pierre RUPIN on September 3rd 2015
- **Maximum stock:** it's the available storage space, but also it represents purchasing through stock advance.²⁶

- **Figure 1.5: the maximum stock**



- **Source :** «Les différents types de stocks» published by Pierre RUPIN on September 3rd, 2015.

²⁶ NAKHLA (M), Op.cit, p.311- p.312.

2-10- The administrative tasks:

They aim to track the flow of inventory inputs and outputs, these tasks include:

- **The inputs:** the items should be accompanied by a movement form, except the items that are known quantitatively and qualitatively can get in.
- **The outputs:** release vouchers preparation.
- **Keeping files:** it's the file that aims to show the state of inmate inventory.
- **Inventory reports:** by the end of each year when the financial year end comes, inventory has to be written.
- **The procurement triggering:** after checking the balance of physical inventory or potential and the stock that reach the order point level, the supervisor must launch an order according to the replenishment system.²⁷

Codification system:

For GEORGE J.: ‘codification is a technique that transfers manual language to symbolic language, when the interpretation is richer. It allows complex expressions to be represented by a group of alphanumeric characters more shaped called code’.

The codification of items must be:

- **Talkie:** in order to facilitate the search of standardization.
- **Stable:** the code must not get edited for some reasons such as changing the warehouse location.
- **Concise:** precise, in order to reduce the error risk.²⁸

2-11- Inventory accounting methods:

It is important to have a consistent costing system which values all items. There are several ways of updating inventory cost when new items are purchased by changing the unit cost.

First in first out (FIFO):

Stock is valued at its purchase value. The oldest stock is assumed to be used first (as is required by good inventory practice) and the stock value is therefore the total of the most recent purchases. First in first out is best used as an accounting procedure, but not for identifying which items in stores to pick. Stores stock rotation should be arranged through the warehousing control system.

²⁷ CHELHI (A) : *la gestion des stocks*, édition Office des Publications Universitaires, Ben-Aknoun Alger, 2005, p.43 – p.47.

²⁸ GEORGE (J) : *Organisation et gestion de la production*, Edition DUNOD, 2^{ème} édition, 1996, p.104

Last in first out (LIFO):

The issues are valued at the most recent purchase price, leaving the remaining inventory valued at a previous (generally lower) value. The effect is to minimize the profit on the stock being sold and to minimize the value of the remaining inventory. This method of valuation can be used to reduce the profit reported by a company and decrease the valuation of the stock. It is, however, only a valuation technique and not appropriate for organizing stock movements.²⁹

Average value:

A running average is the safest stock valuation method. This method assumes an average of all prices paid for the article. The problem with this method in changing prices (rising or falling) is that the cost used is not related to the actual cost.³⁰

Most expensive first out:

The most expensive unit that entered has the priority to exit; it's the method of the lot's price that's the most fiscally advantageous, since it will be just the cheapest lots by the end of the term.³¹

2-12- Inventory record methods:

Inventory items are valuable business assets, whether the inventory consists of products in development, final products or simply raw materials. Business managers seek to control the inventory, so raw materials and products do not expire and become financial waste for the company. While some inventory methods are suited for small businesses, others are ideal for larger business inventories.

Manual Counts:

Businesses that have small inventories use manual counts to ensure that all expected inventory is readily available. During these counts, managers check the expiration dates on the relevant products to ensure that they are still within a legal sales period. Expired products serve as a health threat to the public and must be removed as inventory waste – a business expense. The control aspect of manual counts include identifying and removing broken items, as well as determine if any internal theft has occurred.

²⁹ TONY (W), Op.cit, p 87.

³⁰ TONY (A), STEPHEN (N), LLOYD (M), Op.cit, p 270.

³¹ BLONDEL (F), Op.cit, p 178.

Perpetual Methods:

Companies that have active inventories due to sales or frequent production may use a scanning system to track all items going in and out of the inventory on a daily basis. The perpetual method tracks all traffic using a scanning system on a daily basis. At the end of the day, the manager has exact figures of the incoming and outgoing traffic, so he knows what is available in the inventory at any given time.

Periodic Methods:

Small businesses that may not use the inventory on a daily basis may benefit from using the periodic method. Also known as the periodic inventory method, this control procedure simply calculates how the inventory has changed over a fiscal period by comparing the starting inventory with the fiscal-end inventory. The comparison considers all incoming traffic, including large shipments of raw materials.³²

³² <http://smallbusiness.chron.com/different-types-inventory-methods-20680.html> (consulted on April 29th, 2018 at 15:58)

Conclusion

In this chapter we defined the main concepts concerning inventory and inventory management, and illustrated as well the critical place this discipline is taking in the supply chain as a whole.

Inventory management is something that should be front-of-mind for anyone in the wholesale distribution business. As we mentioned in this chapter, inventory represents a big portion of a company's asset and that's why it should be taken care of thorough giving it big importance especially to the costs related to it, which they have to be controlled in order to maximize a company profit.

Chapter 02 :
Inventory Management
techniques and
optimization

Introduction

In this chapter we will go further to see inventory management as a practice.

The first section will include the analysis methods of inventory management and the utility of each one of them, as well as the safety stock formula with illustrating its necessity and the way to calculate it.

In the second section we will see how much the automation is important for inventory control efficiency and the most used computerized systems, with taking a look on the usual mistakes and problems that have been studied by experts before.

Section 01: Inventory management techniques:

In this section we will see what managers use mostly as analysis methods in order to control the inventory management.

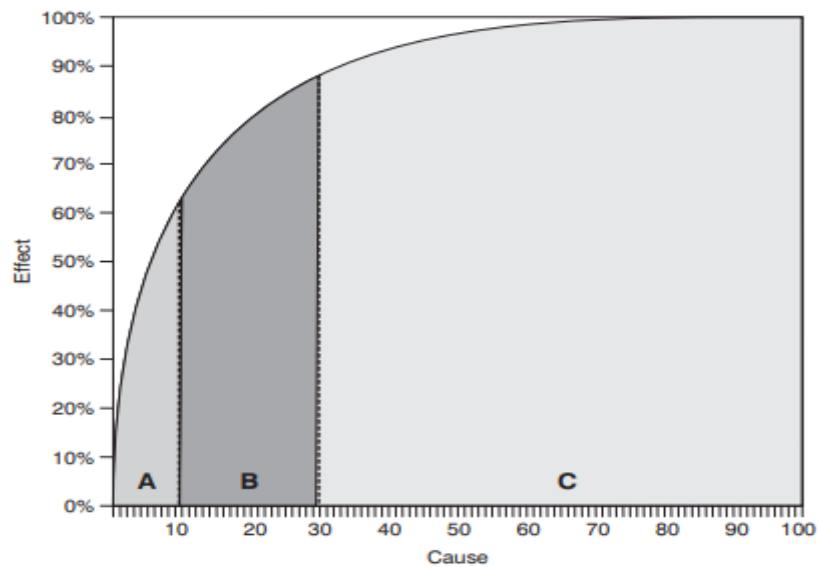
1-1- ABC analysis:

The ABC method is an analytical method of stock control which aims at concentrating efforts on those items where attention is needed most. It is based on the premise that a small number of the items in inventory may typically represent the built money value of the total materials used in production process, while a relatively large number of items may represent a small portion of the money value of stores used and that small number of items should be subject to the greater degree of continuous control. Under this system, the materials stocked may be classified into a number of categories according to their importance, i.e., their value and frequency or replenishment during a period.

1. The first category, we may call it the group of A items may consist of only a small percentage of total items handled but its combined value may be a large portion of the total stock value.
2. The second category, naming it as group of B items may be relatively less important.
3. In this third category, consisting of C items, all the remaining items of stock may be included which are quite large in number but their value is not high.¹

¹ TERSINE (R), *Principles of inventory and material management*, 2nd edition, North Holland, p 143.

• **Figure 2.1: ABC analysis**



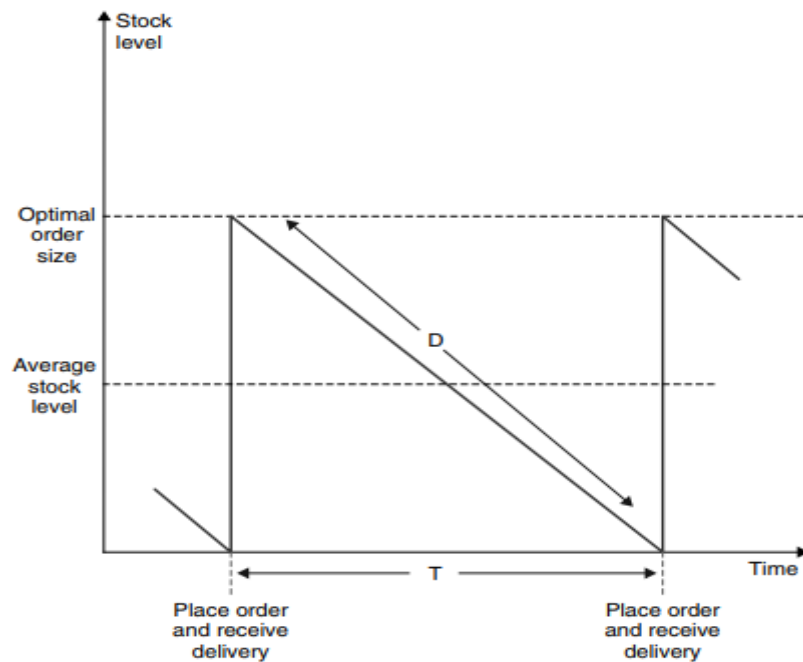
- **Source:** TONY (W), Best practice in inventory management 2nd edition, Elsevier Science Ltd, OXFORD, 2002, p 37.

1-2 Economic order quantity:

The economic order quantity refers to the quantity ordered to be purchased at the lowest total cost. This is the most economical purchase quantity which maintains a balance between two opposing costs of procurement and carrying. The economic order quantity is also known as economic lot size. So, the quantity to be ordered at a time is determined by the cost of procurement and the cost of carrying the inventories. The EOQ will be the one where the costs of procurement and the cost of carrying are equal. At this point the total cost is minimal.²

²GRAVES (S) & ZIPKIN (P), *Logistics of production and inventory*, ORSA edition, North Holland, 1993, p 09.

- **Figure 2.2: features of one stock cycle**



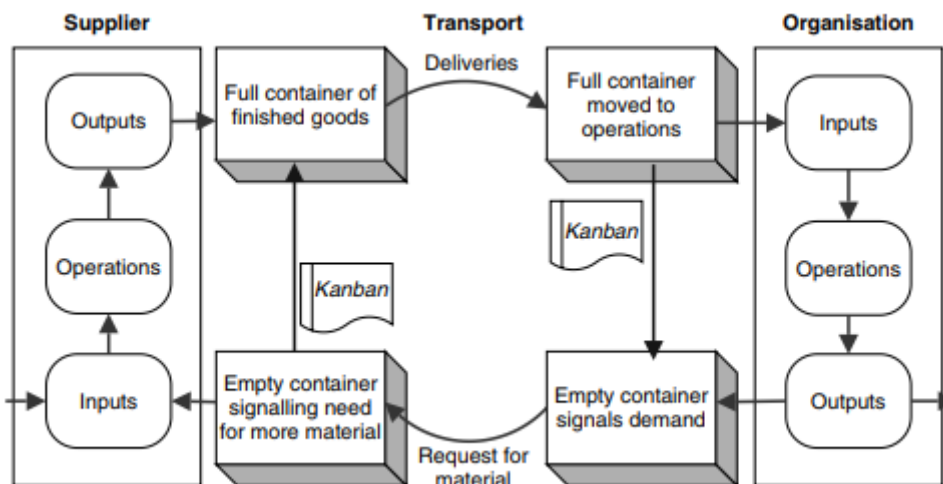
- **Source:** EDWARD (A), DAVID (F) & DOUGLAS (J), *Inventory and production management in supply chain* 4th edition, CSC press, NW, 2017

1-3 Just-in-Time or Zero-Inventory:

JIT or zero-inventory system is an idealized concept of inventory management wherein we are able to supply whatever material is required and whenever required just in time with 100 % supply assurances without keeping any inventory on hand. Obviously, from the resource management point of view, nothing can be better than this, as there are no inventories, no shortages, and no replenishment orders placed. However, this concept necessitates that the suppliers (vendors) are local and are 100 % dependable; orders splitting with small orders without additional transportation costs is feasible. This also calls for a single vendor base and having long-term relationship with the vendor who has to be a quality vendor. This also requires that the vendor has sufficient capacity to supply anytime without passing on the costs of overcapacity to the buyer.³

³ VRAT (P), *Materials management: an integrated system approach*, Springer edition, New Delhi, 2014, p 23.

• **Figure 2.3: summarized operation of JIT**



• **Source:** DONALD (W), *inventory control and management*, Wiley, England, 2003, 365 p.

1-4 FSN Analysis:

In any manufacturing industry, not all items are required with the same frequency. Some materials are quite regularly required, yet some others are required very occasionally and some materials may have become obsolete and might not have been demanded for years together. FSN analysis groups them into three categories as Fast-moving, Slow-moving and Non-moving (dead stock) respectively. Inventory policies and models for the three categories have to be different. While performing this particular analysis the turnover ratio of each item has to be calculated because the items are sorted and analyzed according to the turnover ratio it possesses.⁴

1-5 VED ANALYSIS:

VED is called as Vital, Essential and Desirable analysis which is done mainly for the controlling of spare parts and keeping in view of the criticality to the production of materials. Vital spares are the spares that are stock out for which even for a short time it will stop the production. Essential spares are the spares in which the absence of any component cannot be tolerated for more than a few hours a day. Desirable spares are those, which are needed, but their absence for even a week is agreeable but it will also lead to stoppage of production.⁵

⁴ HOPAL (P), PARISON (L), *Material Management: An integrated Approach*, Prentice Hall edition, New Delhi, 1984, p 67.

⁵SHARMA (A), ARYA (V), *Op.cit*, p 202.

1-6 HML Analysis:

This analysis analyses the material according to their prices and then classifies them as H-items or M-items or L-items. H stands for high price, M stands for medium price. L stands for low price. And since price is more concerned of purchase department mostly purchase department people analyze the material according to HML analysis.

HML analysis must be carried out from any one of the following objectives or some of the objective as the case may be.

- When it is desired that purchasing responsibility should be delegated to right level of people.
- When the objective is to keep control over consumption at the department level then authorization to draw materials from the stores will be given to high level H item, low level for L items and medium level for M item.
- When it is desired to decide frequency of stock, taking then very frequently H category, very rarely L category, and averagely M category.
- When it is desired to arrange security for the items, then H item under lock and key, L items keep open on the shop floor, and under supervision for M items.⁶

1-7 SDE Analysis:

This analysis classifies inventory based on how freely available an item or scarce an item is, or the length of its lead time. This is how inventory is classified:

- Scarce (S) = Items which are imported and require longer lead time.
- Difficult (D) = Items which require more than a fortnight to be available, but less than 6 months' lead time.
- Easily available (E) = Items which are easily available⁷

1-8 Material Replenishment Planning:

“Materials requirement planning is a technique for determining the quantity and timing for the acquisition of dependent demand items needed to satisfy master production schedule requirements”. Materials requirement planning is a scientific

⁶<http://www.bms.co.in/explain-sde-analysis/> (Published June 9th, 2012, consulted on April 10th, 2018).

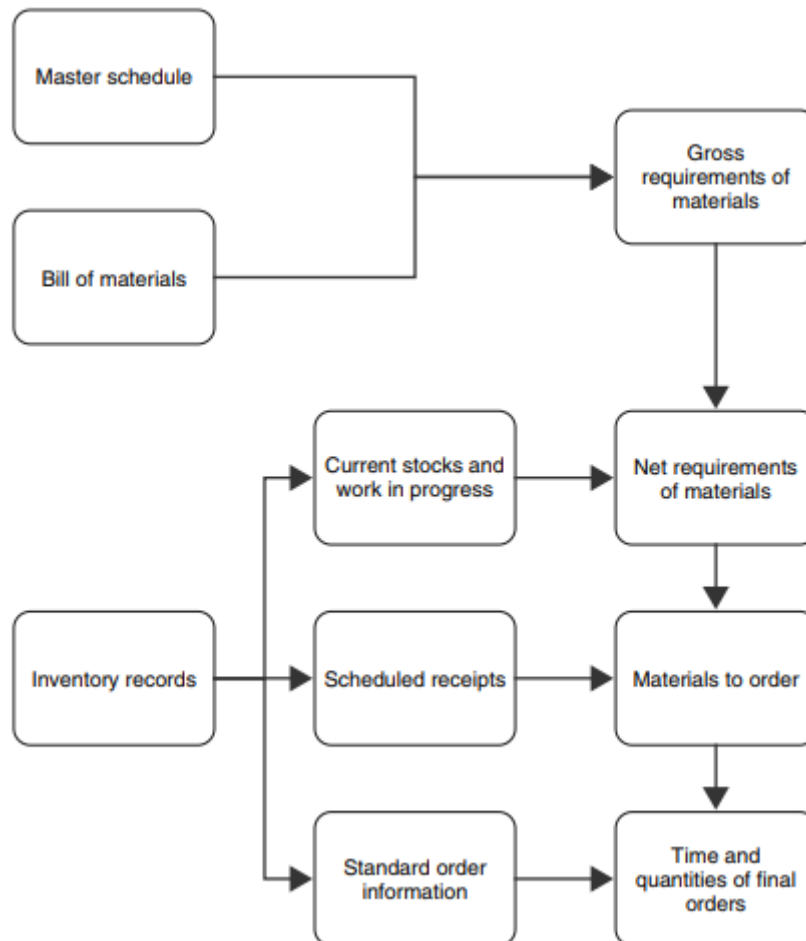
⁷ SANJAY (S), *Inventory parameters*, Springer, Mumbai, 2017, p 97.

Chapter 02: Inventory Management techniques and optimization

technique of planning for ordering and usage of materials at various levels of production and for monitoring inventories during these activities.

MRP, therefore, is both an inventory control and a scheduling technique. It utilizes the master schedule for the end products, for determining requirements of sub assemblies, components and raw materials, procurement/manufacturing lead times, inventory status of products, and by utilizing database, in series of steps, it draws up the timings of procurement/manufacturing of all the subassemblies. . The technique determines what components are needed, how many are needed, when they are needed and when they should be ordered so that they are likely to be available when needed.⁸

- **Figure 2.4 : summary of MRP calculations**



Source: PHILLIP (S), *smart inventory solutions: improving the management of engineering materials and spare parts* 2nd edition, industrial press Inc edition, New York, 2010, p 115.

⁸ TONY (A), STEPHEN (N), LLOYD (M), Op.cit, p 38.

1-9 Safety stock:

Too much inventory incurs extra holding and capital cost (money tied up in inventory that cannot be used for anything else). Not having enough inventory impacts the ability to manufacture goods or provide customers with product. In order to successfully manage inventory levels, it's essential to learn how to use the safety stock formula.

Safety stock' definition:

Safety stock is simply extra inventory beyond expected demand.

Entrepreneurs and Operations Managers carry safety stock to prevent stockout, caused by:

- Changes in Customer demand.
- Incorrect forecast
- Variability in lead times for raw materials

The purpose of safety stock formula:

Factoring the cost of inventory stockout (or out-of-stock-OOS) is important for understanding the role safety stock plays in the ordering process.

It's not uncommon for managers to rely on gut instinct or an educated guess to determine how much extra inventory to keep. Without properly calculating safety stock, the likelihood of a stockout drastically increases.

Stockout results in loss of:

- Revenue
- Gross profit
- Customer
- Market share

Chapter 02: Inventory Management techniques and optimization

Taking the time to use the safety stock formula not only saves you from these costs, but also increases the efficiency of your storage space. **The result: increased revenue and higher service level.**

Service level is the probability that the amount of inventory on hand during the lead time is sufficient to meet expected demand - that is, the probability that a stockout will not occur. The uncertainty of supply and demand makes it difficult to calculate the amount of stock needed to satisfy customers needs while avoiding stockout.

Calculating safety stock: the formula for calculating safety stock is given by the equation: $z * \sigma_{LT} + D_{avg}$

Z is the desired service level, σ_{LT} is the standard deviation of the lead time, and D_{avg} is demand average.

1- Lead time: is the time between initiation and completion of a production process, or the time it takes in total to replenish stock.

Standard deviation: is a quantity calculated to indicate the extent of deviation for a group as a whole.

Calculating the standard deviation of lead time: $\sqrt{\frac{\sum (\text{actual time} - \text{expected time})^2}{n}} + \text{expected time}$

- The **expected time** is the expected lead time of a product.
- **Actual time** is the real time it took to replenish each order in the sample portion provided.

Demand average calculation: $\frac{\text{sum of total sales volume}}{\text{number of buying days}}$

Service level (z): Deciding the correct service level for a certain product is basically balancing inventory costs vs. the cost of a stock out. Therefore, the service level is an

important variable for calculating the appropriate amount of safety stock. The higher the desired service level, the more safety stock needs to be held

Increasing a products service level will increase the amount of inventory held as safety stock, which will increase cost associated with this product. So, the company has to make sure that the service level is realistic and meets business model needs.

In order to convert the desired service level into a more concise value, it will need to use a normal distribution chart. Looking at the normal distribution chart we can determine what our *service factor* is according to the service level we want to reach.⁹

1-10- Automation:

Inventory control can be done manually, of course but you can almost certainly do it faster, cheaper, and better by automating some or all of the inventory control process.

The four aspects of inventory control:

1. Counting and monitoring the items actually in inventory
2. Recording and retrieving the precise locations of items in inventory.
3. Recording changes to inventory frequently and precisely enough.
4. Anticipating inventory needs well enough to re-order just in time and to plan for inventory handling requirements.

Advantages:

It brings the potential for improving sales and profits through better analysis of inventory trends, including patterns of delivery and demand.

It's a key for inventory reduction.

It provides data availability and visibility.¹⁰

Most implemented systems:

Vendor-Managed Inventory (VMI):

Under the VMI technique, significant gains can be made through transparent collaboration with credible vendors of critical inventories, especially in large-sized production management. VMI enables the vendor in a vendor/customer relationship to plan, monitor, and control inventory for their customers, with the vendor taking

⁹<https://www.skuvault.com/blog/safety-stock-formula> (published on September 6th, 2016, consulted on April 15th, 2018)

¹⁰ PHILIP (S), Op.cit, p. 87.

responsibility for managing the inventory within specific levels previously agreed upon, while the customer concentrates on improving demand accuracy).¹¹

Bar coding:

It is an optical method of achieving automatic identification. It relies on visible or invisible light being reflected off of a printed pattern. The dark bars or dark areas within the pattern absorb light, and the intervening spaces or areas reflect light. The contrasting absorption and reflection is sent by a device that reads this reflected pattern and decodes the information.

Bar code systems generally consist of three components: the code itself, the reading device (s), and the printer (s). A bar code symbology or language is very similar because it has a fixed alphabet made up of various patterns of dark bars and intervening light spaces coupled with rules for how it is presented.¹²

E. Electronic Point of Sale (E-POS):

The point of sale (POS) system connects scanning equipment and the retailer's inventory management systems. Goods marked with a barcode are scanned by a reader, which in turn recognizes the goods. It notes the item, tallies the price and records the transaction. POS provides an instant record of transactions at the POS.

Thus, replenishment of products can be coordinated in real time to ensure that stock-outs in the retail store are avoided. With EPOS technology, companies can be able to settle bills, use electronic printouts and smart sense coupons, respond to online alerts and information, and take a more customer focused approach.¹³

WMS:

Using warehouse management systems allows operators to answer many questions such as:

- Are there enough dock doors in the warehouse?
- How many lift trucks are needed?
- How many order pickers are needed?
- Where products should be slotted?
- How should workloads be balanced?

¹¹ Chopra (A), *Innovative state: How new technologies can transform government*, Atlantic Monthly Press, New York, 2015, p.116.

¹² MAX (M), *Op.cit*, p.90 - p93.

¹³ EMMETT (S), *Resource management: Computer Press*, Brno, 2008, p 83.

Every WMS uses a unit of measure method which analyzes and defines specific cubic volumes per unit. It uses a bin locator system to tell the receiving worker where to store each inbound pallet. It compares optional travel paths for picking, put-away, and replenishment, and then indicates the best path for filling an order.¹⁴

Section 02: inventory management improvement:

In this section we will talk about the main problems of inventory management and what expert managers find as solutions and way of improvement.

2-1- Inventory management optimization:

An efficient inventory management allows the company to be reactive towards the demand and avoids customer's dissatisfaction. In contrast, a bad inventory management has a negative impact on the company's profitability.

2-1-1- Definition 01: optimize inventory management means achieving the ideal settlement between the lowest storage cost and the highest service rate level.¹⁵

2-1-2- The importance of inventory management optimization:

Inventory management optimization is considered as one of the key success factors in the company, especially that almost all the companies no matter what their business line is, the customer loyalty has always been the ultimate goal for them.¹⁶

The costs related to inventory management represent an important percentage of the total cost of the company. So, the reduction of these costs leads to a significant reduction in the total cost, thus, a realization of an important growth in the profit.

Inventory management optimization assures the continuity and sustainability for the company.¹⁷

2-2- Common problems of inventory management:

2-2-1- Spoilage:

If the company handles items with expiration dates, like food or even cosmetics, they can become rotten or unusable if not sold in time. And spoiled products mean that the investments go down the drain, along with the potential profits.

¹⁴ BOB (D), *logistics and inventory management*, Willey & sons edition, NY, 2002, p.283 - p284.

¹⁵ <http://www.cat-logistique.com/stocks.htm> (consulted on 29 /04 / 2018 at 18 : 51)

¹⁶ JEAN (M), *Stratégie de fidélisation*, Organisation Edition, 1999, 2003.p 34

¹⁷ HURBERT, *Analyse financière : information financière diagnostique et évaluation*, Dunod, Paris, 2010, p 16.

2-2-2- Dead stock:

An expiration date isn't the only way the products "go bad." Dead stock is items that can't be sold for a number of other reasons: they've gone out of style, out of season, or the products become otherwise irrelevant. Often an item is declared "dead" after sitting on a shelf for 12 months.¹⁸

2-2-3- Less internal communication:

When a company is achieving for good profitable goals, it needs all functions to support planned inventory management targets. Managers in every field are required to gather up-to-date information for forecast administration and inventory scheduling. If, however, the organization's employees do not communicate directly and have no bond to discuss their inventory management strategies, the company will likely face a downfall. Basic internal communication between an organization's staff is very important.

2-2-4- Unqualified inventory management staff:

Many companies have a good production and cost scale but unfortunately, their staff and workers are not very familiar with inventory management skills. When a firm's managers, office workers and other staffs make inventory management decisions without any specific inventory management training, then it is clear that the company will have wasteful inventory all through its system.¹⁹

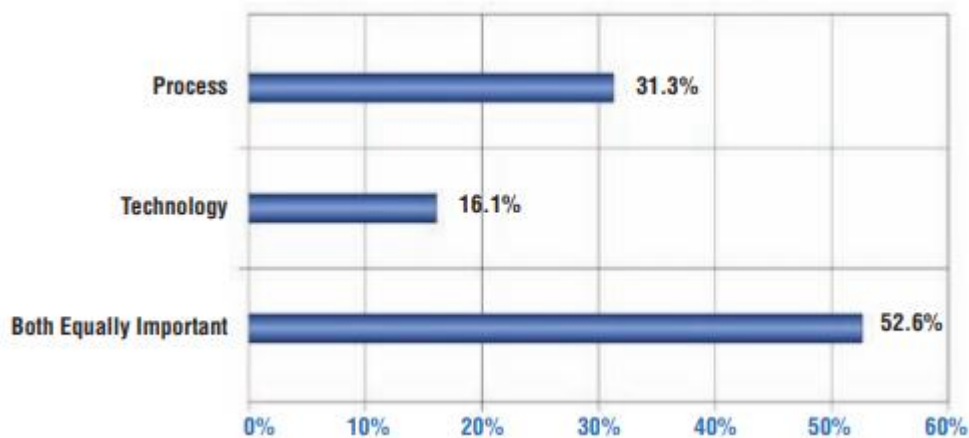
2-2-5- Not being automated:

Without using computerized systems, the company wastes precious time and money by sifting through paper and fixing errors one by one. Besides that, it would have so many mistakes in its system.

¹⁸ <https://www.thebalancesmb.com/dead-stock-2890366> (published on April 11th, 2018, consulted on April 29th, 2018)

¹⁹ <http://basisinventory.com/threebiggestproblems/> (published on May 15th, 2016, consulted on April 22nd, 2018).

• **Figure 2.5 : Process with technology**



- **Source:** TONY (W), *Best practice in inventory management* 2nd edition, Butterworth-Heinemann, OXFORD, 2002, 122 p.

2-2-6- Inventory counts are ignored:

When the company stops warehouse operations for days to physically counts items and makes sure that count matches the data stored in the software, this is an absolutely unnecessary, costly and outdated mindset.²⁰

2-2-7- Obsolete inventory:

Obsolete inventory is the worst kind of inventory the company can have (next to no inventory, of course). It increases the cost of inventory and is hard to get rid of.

Obsolete inventory is often referred to as “obsolete stock,” “dead inventory,” or “excess inventory.” These terms all apply to any items that have reached the end of its “product lifecycle,” which means there is no market demand for the product anymore. Most businesses determine that its inventory is obsolete once there are no sales after a set amount of time.²¹

2-2-8- Stockout :

Stockout (or out-of-stock-OOS) is commonly reported as the biggest single concern to businesses that supply costumers with stock.

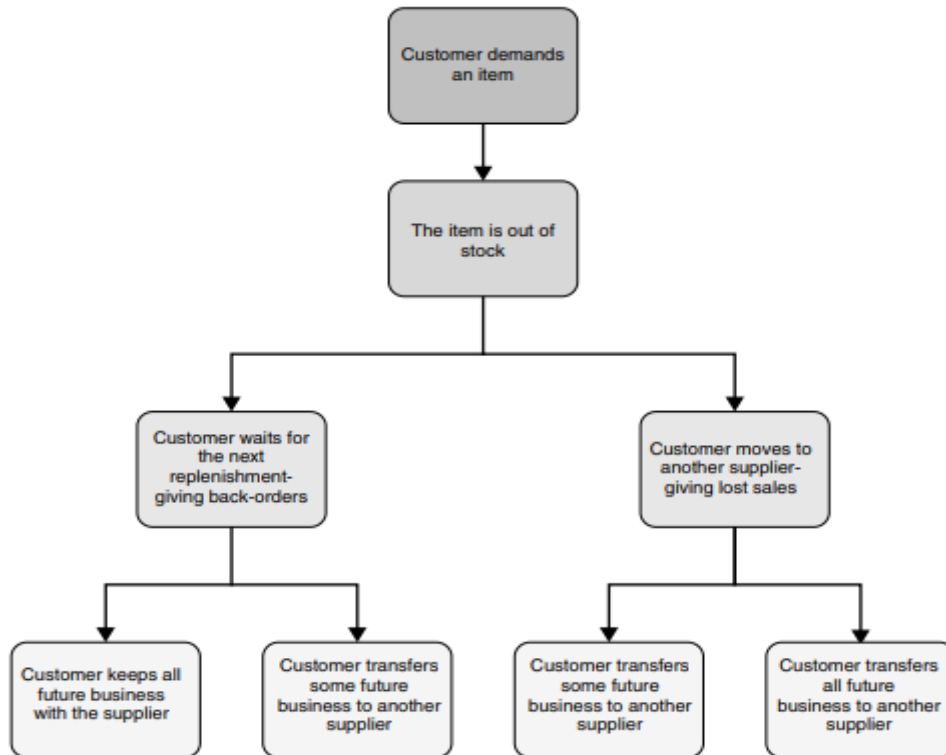
Every time a customer requests to buy a product that’s stocked-out, there’s a good chance they’ll end up unhappy due to the stocking issue.²²

²⁰ <https://www.entrepreneur.com/article/252704> (published on November 20th, 2015, consulted on April 20th, 2018).

²¹ <http://dearsystems.com/inventory-software/blog/obsolete-inventory/> (published on December 30th, 2017, consulted on April 25th, 2018).

²² <https://www.netstock.co/what-is-a-stock-out/> (published on October 18th, 2016, consulted on May 15th, 2018)

- **Figure 2.6: Alternatives for customers when their demand cannot be met with stock.**



- **Source:** DONALD (W), *inventory control and management*, Wiley, England, 2003, p 121.

2-3- Solutions found by authors to improve inventory management:

2-3-1- Par Levels:

Par levels are the minimum amount of products that should be on the warehouse shelves at all times. When inventory level drops below these predetermined levels, the manager knows it's time to order more. These levels are based on how fast items sell and how long it takes to get it them back in stock.

2-3-2- Relationships:

Inventory management isn't only about technology or in-stock products on the shelves. It's also about the people along the supply chain. From quick returns of slow-selling items to restocking popular products or manufacturing issues...it's important to maintain good working relationships with suppliers. That relationship could come

in handy someday when the company has a problem to solve. So, this makes the process so much smoother.²³

2-3-3- Arranging meetings:

The organization should arrange for its inventory staff to have regular monthly meetings with a goal of reaching a planned scale both on the demand side (sales section) and the supply side (production section).

2-3-4- Solutions for unqualified staff:

- **Hiring the right people:** the company potentially has hundreds of thousands of dollars tied up in inventory. It should hire professional inventory managers or people who have a solid background with inventory in the first place.
- **Holding inventory managers accountable:** the manager should have the right idea of who is in charge of inventory in warehouse. It's important to have a trusted person in place that know and fully support your strategic goals. If that isn't the case at the company, its goals may never be fulfilled.
- **Emphasizing training from the start:** Many vendors who offer inventory management software and solutions will conduct on-site training for the company's employees. The manager should Jump on this opportunity. The training is usually customized for his company, and everyone should be learning best practices from the very beginning.²⁴

2-3-5- Write-Off Obsolete Inventory:

Obsolete inventory write-offs are a common practice for reducing excess stock.

Companies often charge obsolete inventory to their cost of goods sold at the end of the year – taking the loss and moving forward.

2-3-6- Remarketing Items:

If the company needs to unload its growing inventory more quickly, then it should try remarketing the item.

²³ <https://midlands.score.org/blog/3-inventory-management-problems-and-how-avoid-them> (published on July 13th, 2017, consulted on April 29th, 2018)

²⁴ <https://www.entrepreneur.com/article/252704> (published on November 20th, 2015, consulted on April 20th, 2018).

If it's a retailer, it repositions the item in store. Switches up the shelf arrangements, and freshens its displays.

It can sell the items on different social networks.

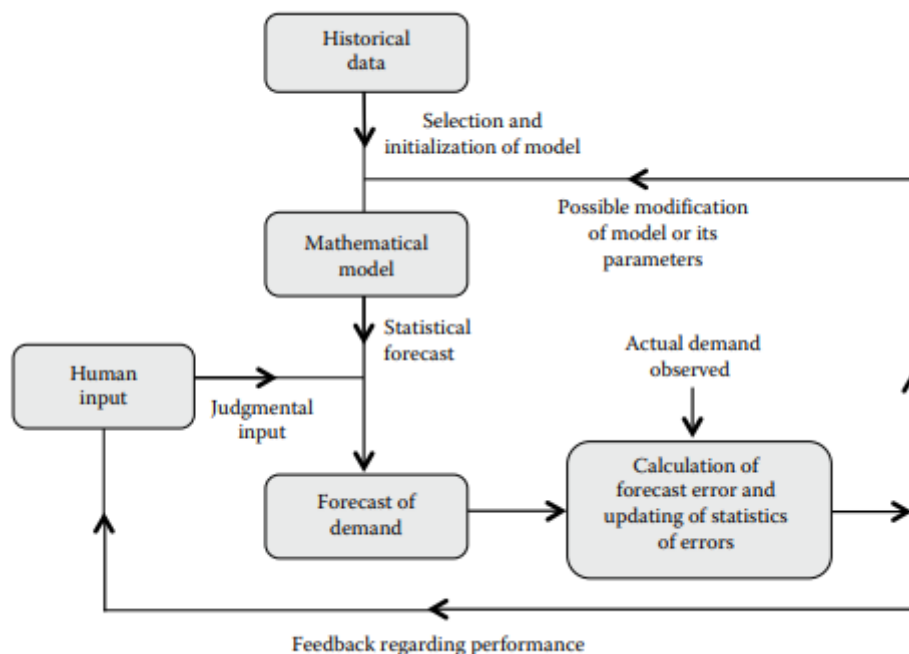
2-3-7- Forecast Demand:

Forecasting demand is a major factor in whether you'll have obsolete inventory or not.

It might be the biggest factor.

Best practices are to pay attention to sales trends from past years, mostly buy products that have a proven track record for selling consistently well, and pay attention to what the competitors are selling and how well they're selling it.²⁵

- **Figure 2.7 : suggested forecasting framework**



- **Source:** EDWARD (A), DAVID (F) & DOUGLAS (J), *Inventory and production management in supply chain* 4th edition, CSC press, NW, 2017, p 74.

²⁵ <http://dearsystems.com/inventory-software/blog/obsolete-inventory/> (published on December 30th, 2017, consulted on April 25th, 2018).

Conclusion:

This chapter consisted of the inventory management techniques and methods such as ABC analysis, as well as the safety stock formula which as we said are very important to avoid stockout and overstock and to ensure inventory management efficiency. Those techniques are not enough to well control inventory, the company also needs computerized systems in order to facilitate the work and save more time and energy to reorient it to another tasks. We finished the chapter with some common issues that usually happen and suggested solutions in order to deal with them.

Chapter 03:
**Improving inventory
management in ABC
Company**
Case study

Introduction

In order to bridge the gap between the theory and the practice of inventory management we chose the wholesale company, ABC, to investigate its inventory control system.

As a start of this chapter we will introduce the background of the host company including the structure, the market and the distribution system before we go further to present its logistic department.

After that, we will orient our research to its inventory management procedures in order to find the inefficiencies and try to give recommendations by the end of this chapter.

Since ABC is the exclusive distributor of Nivea, we would like to take a look on Nivea's background before we move forward to the company's profile.

1- Nivea Company's background:

1-1- Nivea's Profile:

Skin care brand Nivea was originally founded in 1882 by the German pharmacist Carl Paul Beiersdorf. Beiersdorf has risen to become a global skincare company with brands that include Elastoplasts, Eucerin, Labello, La Prairie and Tesa SE. In the 1930s, Nivea began selling skin-lightening products across Asia such as Whitening Paste, which proved an instant success. Even now, NIVEA products containing whitening ingredients remain the brand's biggest sellers. Nivea is known for using perfume in their products. It is available in over 200 countries.

Brand Value: 6,565 (US \$ millions).

1-2- NIVEA history:

- Was launched in 1911, when the pharmacist and visionary entrepreneur Dr. Oscar Troplowitz recognized the potential in Eucerit, an emulsifier developed by the chemist Dr. Isaac Lifschütz.
- Just three years after, NIVEA Creme made its debut in Hamburg, it was available on every continent, and nearly half of NIVEA's sales came from overseas. By 1914, Nivea products were produced not only in Hamburg, but also in Buenos Aires, Copenhagen, Mexico, Moscow, New York, Paris and Sydney.
- In 1924, NIVEA launched the first boy brand.
- In 1925, they launched Nivea Girls.
- In 1980, they set another trend by releasing their alcohol-free After Shave Balm.
- In 1986, they launched Nivea men.
- In 1998, the first NIVEA cream with Q10 hit the market.
- In 2011/2014 Nivea invisible.
- Today and tomorrow: the search for better skin care.

2- ABC Company's background:

2-1- ABC profile:

ABC is a commercial company, belongs to AB group which is the exclusive distributor of Nivea company, It was founded in 2013, and It has 102 employees so far.

Its value is the Respect of Algerian government policies in accordance with the laws, honoring its commitments and fulfills the terms of their partnerships, Ethics and Morality in the management of its business, and positive thinking.

The key success of ABC: Sourcing and forecast accuracy and logistic efficiency, Distribution coverage, Quality of execution, Improve trade promotion and increase notoriety via marketing, Share seamlessly with partner teams, Have management support from the partner.

Its vision is to become the leading distributor in Algeria

- **Mission:**

Go to the heart and eye level of the Algerian consumers every day by supplying them the best products.

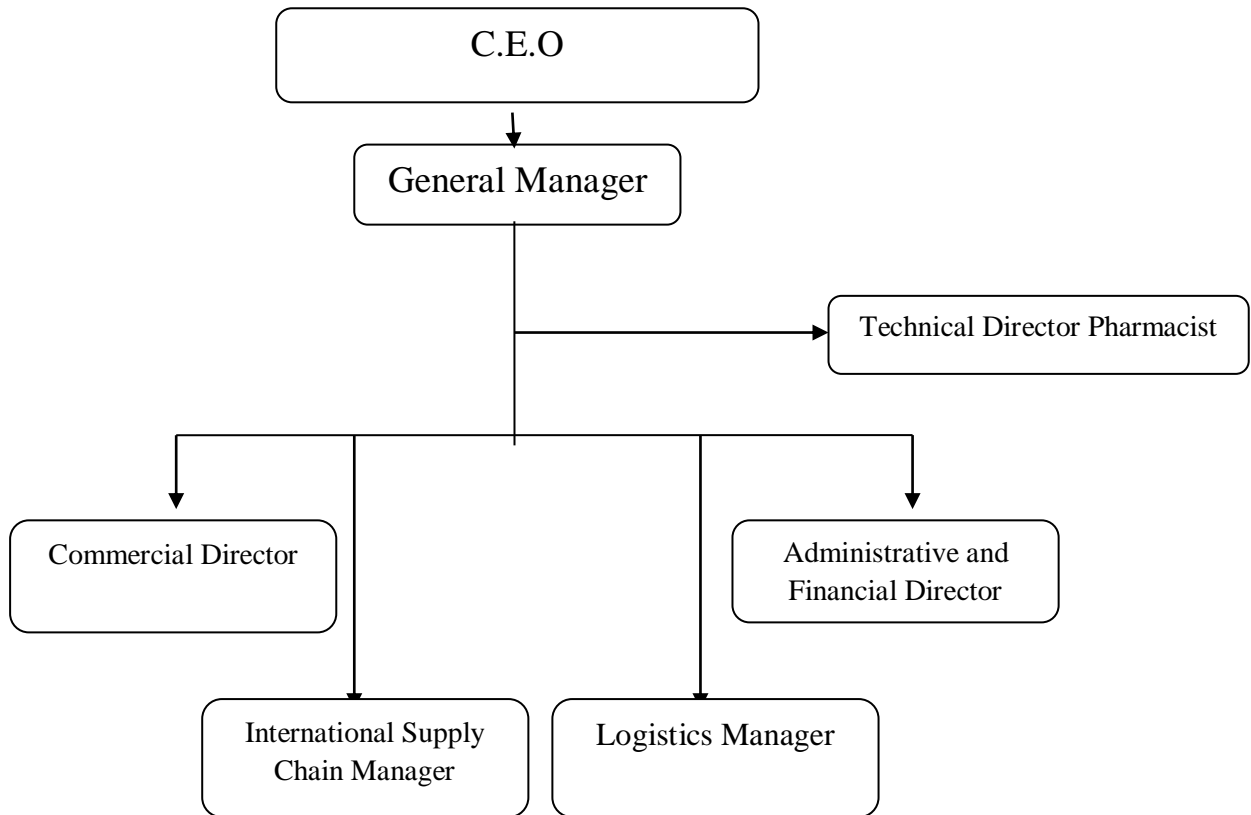
Become the stander and the leader in the Market

2-2- ABC history:

Since ABC Company is not a very old organism which was created in 2013, so there wasn't a big change in term of policies, or sale points but the number of employees has been getting bigger each year.

2-3- Organizational structure:

Figure 3.1: Organizational Diagram



- **Source:** document given by the company

As we may notice, the adopted structure is on hierarchical aspect, managed by a chief executive officer who has to observe and examine all the other departments, as well as participating in their management by motivating the staff through periodic meetings and unexpected control.

2-4- The main responsibilities of each department:

General Manager:

- He develops strategic plans.
- He Increases management's effectiveness by recruiting, training, communicating values...
- He Builds company image by collaborating with customers, government, community organizations, and employees

- He maintains professional and technical knowledge by attending educational workshops; reviewing professional publications; establishing personal networks.

Commercial department:

It's led by its general manager who optimizes the resource development, while maintaining faithful to the law and the rules, and that's in order to achieve the results and the obligations contained in his performance contract. His mission is to enliven and motivate the staff in order to realize the objectives in term of sales, quality, and profit and customer service.

Administrative and Financial department: it's in charge of establishing the treasury that represents the flows of other budgets such as suppliers' payment and other debts, payroll processing and tax debts' regulation. It also schedules and executes periodic financial analysis.

International supply chain manager:

His mission is to keep Inventory maintenance, shipment and delivery, and returns on product.

- To keep detailed records and to generate reports.
- To build relationships within the company and with external parties, such as suppliers and distributors.
- To Read and comprehend legal documents, such as contracts or import/export agreements.

We will get to define the logistic department missions later with more details.

- **Other functions:**

Assistance: it's for a reason to aid the CEO to accomplish his missions, to assure his action in case of an absence, and to coordinate the secretariat activities with other functions.

Communication: it sets up advertisement actions in order to enhance the brand image of the company. It also handles the internal and external communication.

Internal auditing: it's like prerogatives in financial and operational auditing that extends to all the company's functions.

Human resources: they define the different workstations, take care of the recruitment process when new employees are needed, manage the senior staff' career, the settlement of wages within the time frame established in the agreement.

2-5- Human resources of ABC Company:

ABC Company has 102 Employee, which 42% women with an average age of 30 Years and an average seniority of 6 Years.

The education level of workers:

- **Table 3.1: employees' education level**

Education level	Number of employees	% of the total number
High school level	47	46%
Bac + 3	23	22,5%
Bac + 4 and Bac + 5	32	31,5%
Total	102	100%

- **Source:** document provided by the company.

According to this table we can say that the level of education of ABC' employees is good which > 50% of the employees have license and master degrees.

2-6- ABC's Market:

- **Table 3.2 : sale sectors of ABC**

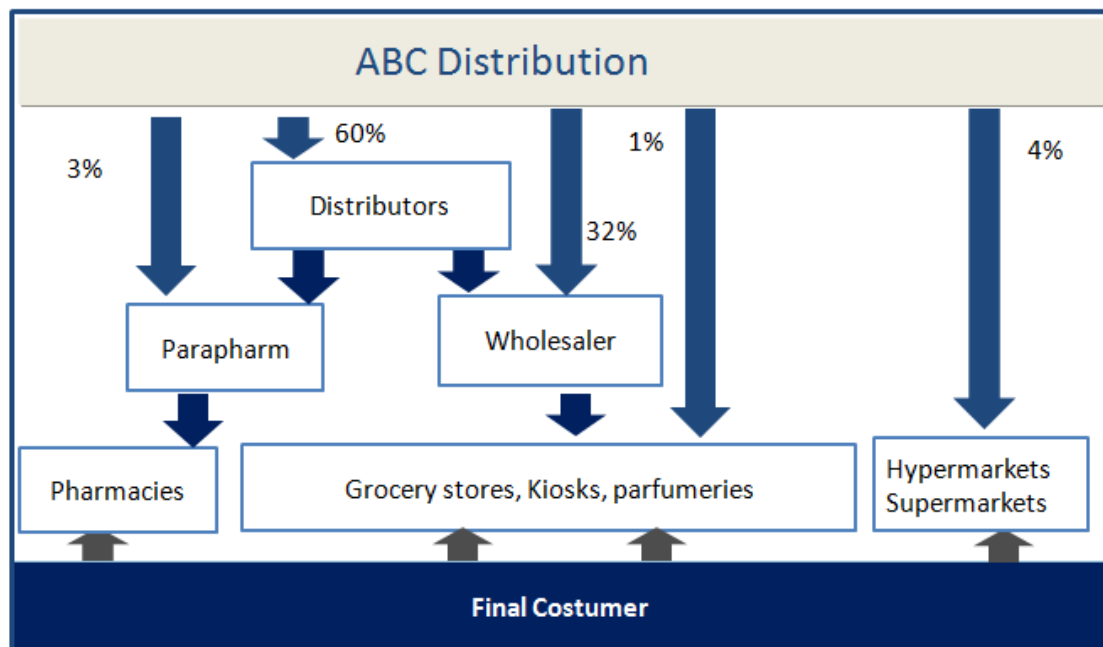
Immatriculation	Sector	Sales volume (DA)
1	Tizi ousou	1, 711, 82,582.53
2	Bejaia	244, 546,546.47
3	Blida	317, 910,510.32
4	Algiers	391, 274,474.34
5	Sétif	464,638,438.28

6	Oran	489,093,092.8
7	El Oued	97,818,618.586
8	Annaba	122,273,273.23
9	Chlef	146,727,927
Total		2, 445, 465,464.65

- **Source:** document provided by the company

The table above represents the different sale sectors of the company and the distribution shares related to each one for the previous year.

• **Figure 3.2: Distribution canal of ABC**

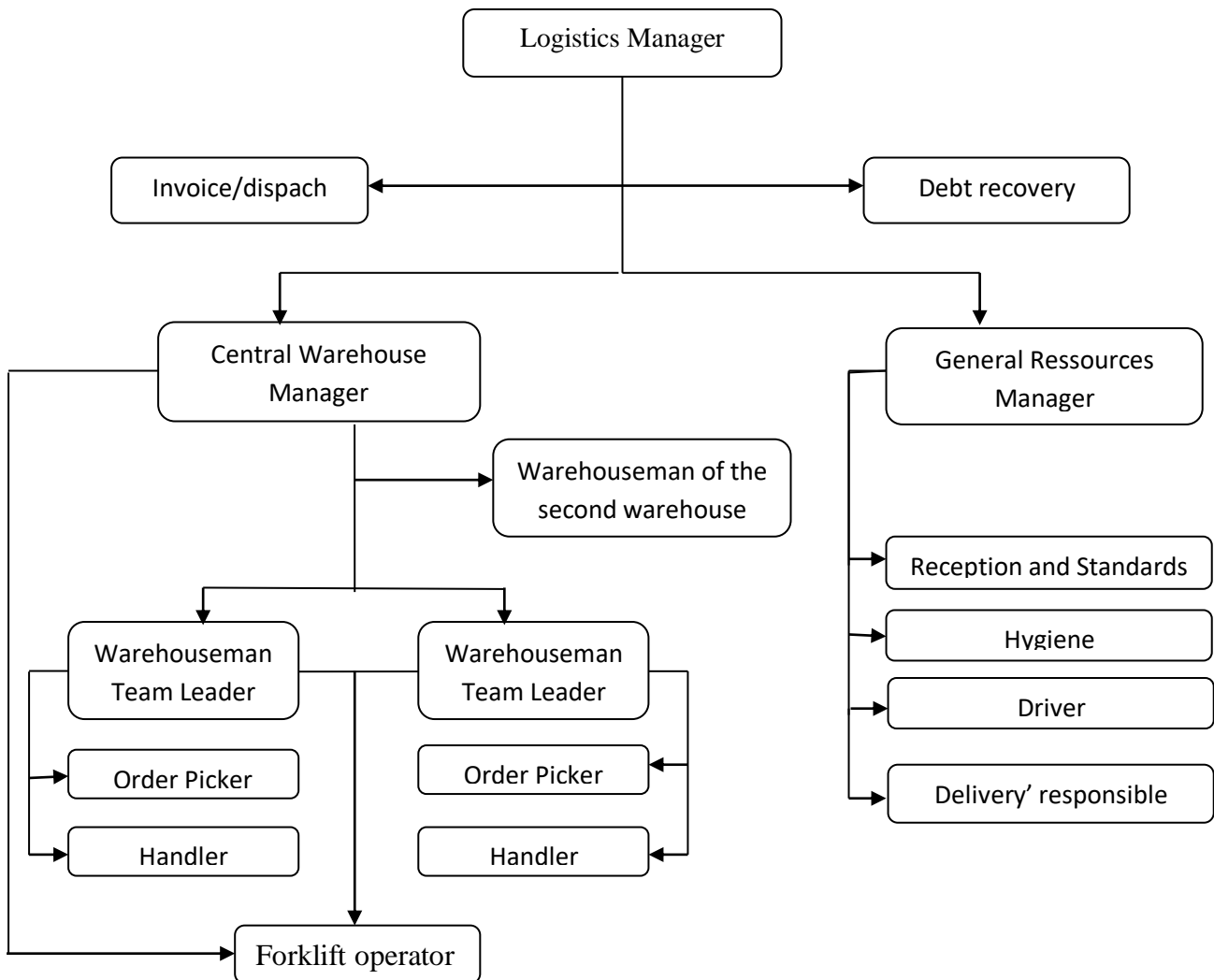


- **Source :** document given by the company

The figure above illustrates the different distribution canals and the different sale points the company has. And as we may notice an important percentage of its products get delivered through a long canal which pass by distributor of the region, then to wholesaler who deliver them to the stores and parfumeries who sell it directly to final consumer.

2-7- Logistic department of ABC:

• **Figure 3.3: Diagram of logistic department:**



• **Source:** document provided by the company.

The logistic department is in charge of several missions such as:

Logistic Manager:

- Planning and managing logistics, warehouse, transportation and customer services.
- Directing, optimizing and coordinating full order cycle

Debt recovery: it has one responsible who collects the unpaid sales from the clients through contacting them and giving them deadlines, she also takes care of the customer service in case the clients have sort of complaining about the products.

Invoicing/ dispatch:

Two employees, who receive the order forms, make sure of the availability of the ordered quantity, execute and print out the preparatory delivery bills, the exit and delivery forms, bills, and they prepare the order acknowledgement for the client.

The central warehouse manager:

He is in charge of managing warehouse in compliance with company's policies and vision, overseeing receiving, warehousing, distribution and maintenance operations, setting up layout and ensure efficient space utilization

Warehouseman Team Leader:

There are two team leaders for the warehouse whom their responsibility is to divide the different tasks on the other workers, and keep tracking the work.

Order pickers:

Two workers who prepare the ordered quantity and load it on trucks

The handlers: Six workers who are responsible for material handling as whole.

Forklift operator:

unloading materials and merchandise from incoming vehicles and stacking them to assigned places, locating and moving stock of products to pallets or crates for storage or shipment, identifying damages and report shortages or quality deficiencies

Head of general services:

- Carries out various activities related to such areas as shipping and receiving, materials handling, as well as, warehousing and inventory control.
- Performs routine customer service-related activities, as appropriate to the position, such as security escort, providing directions to locations and services, and courtesy transport.

Reception and standards operator:

He is the one who receives the imported products and controls them in term of quantity and quality.

Hygiene:

Two workers who take care of the warehouse regarding health and maintaining cleanliness and service ability of facilities

Driver: the person who drives the trucks during the delivery process.

- We notice that the total number of logistics department is 25 which represents 24, 5% of the total number of employees in the company.

3- Inventory management procedures at ABC:

Inventory management is set up within the logistic department, and managed by the same department.

3-1- Warehousing:

The inventory is managed with an integrated management system; the warehouse manager and the warehousemen are in charge of a consistence control over inventory maintenance in the warehouse in order to avoid stockout and overstock.

ABC manages the warehouse by itself. It has two warehouses, which are leased. The warehouse function is to store the inventory, consolidate items according to customer orders. Into-warehouse and out-of-warehouse inventory are handled manually, and since manual error is inevitable, the company executes in-warehouse inventory examination for all items twice a year to rectify the actual inventory figure in the system.

The surface of the central warehouse is 2.400m², while the surface of the second warehouse is 1.800m².

The storage capacity is 2.300 pallets.

3-2- Replenishment:

Logistic department of ABC takes into consideration general rules of procurement and replenishment. The followed procedure is to have 12 shipments per year.

Respecting the procedures might have created a possibility of having stockout or/and overstock.

3-3- Customer's need:

Hypermarkets and supermarkets send directly their orders to the company.

Stores, kiosks and perfumeries order the quantity they need from a wholesaler who orders it from the distributor of the region in case he doesn't have it in stock which makes the distributor send an order to the company.

The clients express their needs by a purchase order from which contains the following details:

- Date
- Name of the client
- Name and designation of the products
- The ordered quantity

In case when the ordered products are available in the warehouse, the warehousemen prepare the ordered quantity and get it ready for the delivery, otherwise, the warehouse manager prepares a purchase order form to be sent to the supplier.

3-4- Order process:

The international supply chain manager is the one in charge of order process, whenever the replenishment time comes.

3-5- Reception process:

The reception process in ABC is done through two steps:

- Quantitative reception: the responsible of this function check the received quantity (batch control and control by unit) and compare between the ordered quantity mentioned in the purchase order and
- Qualitative reception: After checking the received quantity, they check if the products are in line with what has been demanded in terms of quality.

If they are compliant, they sign up the received quantity and quality in the delivery document.

Otherwise, they elaborate a claim document and they mention: the received items are not compliant for the following reasons and they sign it.

After receiving the items the warehouseman sends the delivery receipt form to the warehouse manager who enters the data in the system. The data includes:

- The references of the received items.
- The designations and names.
- The quantity.
- The bill's amount.
- The number of the delivery receipt form.
- The reception date.

After the data entry process, warehouse manager sends the bill to the accounting unit in order to check the prices and do the accounting process.

3-6- The delivery process:

After receiving purchase orders from the clients, the warehousemen get to prepare the ordered quantity and load it on the trucks.

The exit form is all what they need to allow the product to leave the warehouse.

They own four trucks for transportation. And they use lift trucks, forklifts, stacker to handle materials besides manual handling.

3-7- Stock holding:

The stock ranking in ABC happens according to the different categories, sorted on Shelves, there is a letter associated to each shelve and each stage has a specific number.

Card item: it contains all the details about the item.

- The reference of the item.
- The designation.
- The movement of each item.
- Input, output in term of quantity and value.
- Number of reception receipt form, exit from, and the bill.

- The stock level.

3-8- Inventory flow inside the warehouse:

Holding stock in the warehouse usually creates 3 types of flow:

- Physical flows: they are represented by different movements of items between the warehouse and customer service area, as well as the movement from warehouse to the hub where they get prepared to be delivered. This kind of flow starts from receiving the items and ends by them leaving the warehouse.

These physical flows create informational and financial flows.

- The informational flows are about all the information related to these items such as the stock level, inputs, and outputs, the order process situation...
- The financial flows: they are cash flow related to the suppliers and clients' payments.

3-9- Stock valuation:

The inputs: are evaluated by the purchase price increased by all the associated costs.

The outputs: the company uses FIFO method to evaluate the stock because cosmetic products are more likely to be expired.

3-10- Inventory record method:

The adopted method in ABC is the periodic method beside the annual inventory; ABC does a periodic inventory once each month.

3-11- Information system:

The information system that ABC has been using is called "Intelix", developed by Microsoft. The information system integrates financial management, inventory management, and sales management in ABC. The investment in "Intelix" system is about 400.000 DA, plus the additional maintenance fee which is 80.000 DA per year, to get the information system upgraded.

- **Perceived problems:**

Inventory stock-out and overstock often occur despite the heavy investment in inventory.

The lead-time of the supplier has been further extended from previous two months to two and a half months due to the production delay. ABC requires the lead-time to be 60 days, or 70 days at most.

4- Findings and Recommendations:

4-1- Inventory Control Systems:

After several interviews with the manager and staff in ABC, we realized that there was not a formalized inventory control system. Normally, the manager placed new orders from his intuition and experience, or when inventory happened to be found few left in the information system or as the result of visual check by the staff working in the warehouse. Such practice has two opposite results. The first one is stock-out, where the customers have to wait for a period of time. The second one is overstock, where unnecessary inventory accumulates and sits in the warehouse, costly but useless. Therefore, a formalized and standardized inventory control system should be established to solve the problems.

4-2- ABC analysis method:

Actually, we found that the company doesn't use any analysis techniques, not even ABC method. And in order to improve its inventory management, I suppose it has to apply the ABC technique that aids the managers to classify the products and take decisions depending on them.

4-3- EOQ:

When we tried applying the EOQ formula, we found ABC cannot provide the necessary input data like order cost and holding cost. Therefore we cannot use EOQ formula to calculate the to-order quantity.

4-4- Inventory Carrying Cost

For ABC, there are no inventory carrying costs concerned with inventory taxes, damage, pilferage and relocation. Even though the two warehouses are rented, the rent is not calculated in inventory carrying cost as storage space costs because it is fixed costs per year, which do not change with the volume of inventory maintained.

Then what are left in inventory carrying costs are capital costs, insurance premiums, and obsolescence costs. The insurance premium is around 5.000.000 DA per year. The obsolescence costs are small probably because the products are not fashion merchandise, they represented only 0.3 %. The capital cost forms the single weight factor that affects inventory carrying costs for ABC. If average inventory value decreases, the insurance premium and obsolescence costs may decrease as well, but not much. The biggest decrease will come from capital cost.

In order to decrease the carrying cost we recommend for the company:

- To maintain accurate inventory levels. This helps to reduce costly out-of-stock scenarios.
- To implement cross docking which reduces cycle stock periods.
- To focus on inventory forecasting in order to eliminate overstock and lower safety stock level.

4-5- Warehouse:

From our findings, we got to know that ABC uses two warehouses for their inventory storage, and both of them are contract warehouses. As ABC belongs to small business, the company is unable to build their own warehouse; it would take too much investment and have high risk. Contract warehouse must be the better choice to decrease related spending on finance.

- **Warehouse layout:**

Warehouse visibility is very important to improve the efficiency on warehousing operations. There are several ways to strengthen the visibility inside the warehouse:

Location labeling on the warehouse floor:

Distinct floor mark in warehouse can help forklift drivers to find the correct zones, regions or aisles easily. Usually, the bright yellow will be used for the floor mark color. At the same time, the grid of columns is one popular way for workers to identify the areas. We observed that ABC's warehouses are lack of this kind of identification labels.

Zone identification:

There is one common solution for zone identification is to hang a “name card” above every specific zone. Maybe the flat “name card” cannot be seen from every direction, especially in the large rooms. Then we can use the triangular signs above the racks. This kind of shingle is visible from all directions. Unfortunately, we did not find this zone identification signs in two warehouses of ABC.

Rack identification:

Rack identification is the most useful and effective method for identify locations in pallet racks by three coordinates for aisle, column within the aisle, and level within the column. When we worked in ABC’s warehouse, we encounter some problems about the rack identification.

- There is no item location guide. Some items’ number was shown on the label on the side of the rack, but some items cannot be found in the appointed rack.
- Location addressing is inconsistent or not adequately displayed. In some racks, we can find the item number that’s shown on the label, but after checking the goods on the pallet, it is not the same Item.

Warehouse Management System (WMS):

Basing on the practical situation of ABC’s warehouses, which store approximate 2 thousand different kinds of items, we got surprised why they did not use the barcode scanning system which can make the inventory control operation efficiently and accurately. The general manager said that the supplier usually put different items into one wooden box when it was shipped. It is hard for them to consolidate them into one barcode label. Even the same item in one wooden box but they are in different colors. If every independent small box has one barcode label, it takes time for workers to scan all of them.

4-6- Information System:

To evaluate the information system ‘Intelix’, we will focus our attention on its performance in inventory management for ABC. The biggest aid ‘Intelix’ is providing to the management is to update the inventory records for all the items every day so that they can capture the right data to support their decisions regarding inventory.

Without the support from 'Intelix', the management can face great difficulty in managing inventory effectively and efficiently. However, 'Intelix' cannot make right decisions about inventory for the management. Data are kept in the information system. But how to use and analyze data to establish an effective and efficient inventory control system is still placed on the management. If they are unable to do it in the right way, the information system will reap fewer benefits.

'Intelix' now has a disadvantage. The historical inventory record is replaced by new updates and cannot be retrieved any longer. We suggest these historical inventory records of each day should be kept in the database, which will be used to draw a graph for each item over the course of a whole year. The graph becomes a vivid measurement to demonstrate the inventory management performance. The management can easily identify whether there are overstock and stock-out for specific item, the occurrence frequency and degree. Through the reviews the management will get more experience about the inventory control system, hence further improve inventory management for the near future.

4-7- Stockout:

The company has been facing out-of-stock situation concerning some specific products and in a certain period of time. This stockout is due to the delay in delivery, procurement policy, not mastering the safety stock, the clients orders are not regularly stable and the quantity stored of items doesn't satisfy the costumer' needs.

This stockout creates enormous cost on the company and affects the efficiency of its management.

In order to overcome this situation we have the following advices to suggest:

- Rethinking of the procurement and replenishment policies.
- The company must establish a point order quantity system that allows determining the economic quantity once the safety stock is achieved.
- The company must determine the safety stock that minimizes the inventory costs and stockout.
- Implementing resource planning systems in order to get closer to ideal inventory level and build-in the lead time needed to replenish your inventory without risking stock-outs.

4-8- Overstock:

The storage space in ABC is not so big to meet the needs of storage; the company has to work on optimization of this space. And in order to find solutions for overstock we have to first define the reasons. We can mention:

- Not being aware of the existing stock
- Warehouse knowledge and skills are not mastered.

The overstock reduces the space in the warehouse, the more we store, the higher inventory cost we have and that's due to the fees related such as security, insurance and maintenance.

As solutions for overstock we suggest:

- The company must focus on creating forecasting scenarios which can identify trends in inventory and make strategic stocking decisions.
- Training the warehouse employees to make them more aware of stocking techniques.
- The company should identify first which products it has to take an action for in inventory.
- Offering customers a discount on overstock.
- Selling items to employees at a discount.
- Donating it to charity and non-for-profit organizations which makes the company get a tax advantages.

Conclusion:

Inventory management is critical for most companies, but it is particularly crucial for small businesses because when compared with large companies, they usually have limited resources and bargaining power, which have negative effects on the way inventory can be managed. Many small businesses face great challenges in managing inventory when they seek developments. This thesis is trying to connect theories with a real case and propose managerial solutions that the small business firm, ABC, can implement to improve its inventory management.

General Conclusion

General Conclusion

General Conclusion:

Many wholesale businesses face great challenges in managing inventory when they seek developments. This thesis is trying to connect theories with a real case and propose managerial solutions that the wholesale business company, ABC, can implement to improve its inventory management.

As we explained in the literature review Inventory management is a simple concept don't have too much stock and don't have too little, because in a literal sense, inventory represents a large portion of the business investment and must be well managed in order to maximize profits. In fact, many wholesale businesses cannot absorb the types of losses arising from poor inventory management. Unless inventories are controlled, they are unreliable, inefficient and costly.

In the last chapter we have studied the inventory management situation from different side in the company and we ended up discussing the issues it has been facing.

According to the data we collected and the results we interpreted, the recommend for the host company:

- To apply ABC technique.
- To use EOQ formula to calculate the to-order quantity.
- To implement cross docking in order to reduce cycle stock period.
- To focus on inventory forecasting and safety stock level in order to eliminate stockout and overstock
- To provide the warehouse layout with location labeling to facilitate the warehouseman's operations.
- To use the barcode scanning system in order to save time.
- To focus on keeping the historical inventory record updated for each item in order to help them with the accurate measurement and the decision making.
- Rethinking of new procurement and replenishment policy according to the customers' behavior.
- Implementing ERP system.
- To create demand forecasting scenarios in order to make strategic stocking decisions.

As a limitation for this study, the biggest difficulty we faced is duration since we started a little bit later than we planned, as well as the data collection tools were not enough to make an outstanding research.

General Conclusion

We got to enlighten the main points related to the inventory management in ABC Company. Starting from its structure to defining the work procedures related to its inventory and stock, and through checking multiple document and interacting with some employees, we get to understand the different dysfunctions in the general process, those woes must be handled by making organizational changes for better management.

Lastly, both positive and negative criticism in this study is just a first step we took in order to improve inventory management in ABC Company.

Bibliography :

1. Books :

- BERTHIER (P) & SPALANZANI (A) : *La gestion des stocks*, éditions SIREY, Paris, 1979.
- BLONDEL (F), *Aide-mémoire gestion industrielle*, édition DUNOD, 2ème édition, paris, 2006.
- BOB (D), *logistics and inventory management*, willey & sons' edition, NY, 2002.
- CHELHI (A) : *la gestion des stocks*, édition office des publications universitaires, Ben-Aknoun Alger, 2005.
- Chopra (A), *Innovative state: How new technologies can transform government*, Atlantic Monthly Press, New York, 2015.
- DONALD (W), *inventory control and management*, Wiley, England, 2003.
- EDWARD (A), DAVID (F) & DOUGLAS (J), *Inventory and production management in supply chain* 4th edition, CSC press, NW, 2017.
- EMMETT (S), *Resource management: Computer Press*, Brno 2008.
- GEOFF(R) & CATHERINE (M), *inventory management: advanced methods for managing inventory within business systems*, Koganpage, US, 2015.
- GEORGE (J) : *Organisation et gestion de la production*, édition DUNOD, 2ème édition, 1996.
- GRAVES (S) & ZIPKIN (P), *Logistics of production and inventory*, ORSA edition, North Holland, 1993.
- HOPAL (P), PARISON (L), *Material Management: An integrated Approach*, Prentice Hall edition, New Delhi, 1984.
- HUBERT, *Analyse financière : information financière diagnostique et évaluation*, Dunod, Paris, 2010.
- JEAN (M), *Stratégie de fidélisation*, organisation edition, 1999, 2003.
- LASNIER (G), *Gestion des approvisionnements et des stocks dans la chaîne logistique*, edition HERMÈS SCIENCE, paris, 2004.
- Matthew (A) & Terry (L), *the definitive guide to inventory management: principles and strategies for the efficient flow of inventory across the supply chain*, CSCMP, New Jersey, 2014.

- MAX (M), *Essentials of inventory management*, AMACOM, NY, 2003.
- MBAMBU (S), *problématique de la gestion des stocks des médicaments essentiels en période post conflits armés*, TFC inédit-ULPGL/Goma, FGA, 2004-2005.
- NAKHLA (M), *l'essentiel du management industriel*, édition DUNOD, Paris.
- PHILLIP (S), *smart inventory solutions: improving the management of engineering materials and spare parts* 2nd edition, industrial press Inc edition, New York, 2010.
- ROUX (M) & LIU (T) : *Optimiser votre plateforme logistique*, édition d'organisation, 4eme édition, Paris, 2010
- SANJAY (S), *Inventory parameters*, Springer, Mumbai, 2017.
- TERSINE (R), *Principles of inventory and material management*, 2nd edition, North Holland.
- TONY (A), STEPHEN (N) & LLYOD (M), *introduction to materials management 6th edition*, Pearson education, New Jersey, 2008.
- TONY (W), *Best practice in inventory management* 2nd edition, Butterworth-Heinemann, OXFORD, 2002.
- VRAT (P), *Materials management: an integrated system approach*, Springer edition, New Delhi, 2014.

2. Academic research:

- SHARMA (A) & ARYA (V), *Study of inventory management in manufacturing inventory*, IJAEGT, India, 2016.

3. Links:

- <http://smallbusiness.chron.com/inventory-activities-list-75726.html>
- <http://www.cat-logistique.com/stocks.htm>
- <https://www.thebalancesmb.com/dead-stock-2890366>
- <http://smallbusiness.chron.com/different-types-inventory-methods-20680.html>
- <http://basisinventory.com/threebiggestproblems/>
- <http://www.bms.co.in/explain-sde-analysis/>
- <https://www.skuvault.com/blog/safety-stock-formula>
- <https://www.entrepreneur.com/article/252704>
- <http://dearsystems.com/inventory-software/blog/obsolete-inventory/>
- <https://midlands.score.org/blog/3-inventory-management-problems-and-how-avoid-them>

- <https://www.netstock.co/what-is-a-stock-out/>
https://www.ijirset.com/upload/2014/january/13_INVENTORY%20MANAGEMENT_new.pdf

Appendices

List of appendices

appendix N°	Title
01	Delivery Note
02	Order Form
03	Invoice

Appendix 01 : SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

Site web :

NIS : 0 013 1642 00106 62

Livraison H/BL18/00053

Alger, le : 01-04-2018

Mode de Paiement :

DOIT 0015

H/F18/00053

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

Commande N° :416860

PINS MARITIMES - MOHAMMADIA - Alger 16000

par :

REPORT HT : 0.00

IF :000216001974393 AI: 16295206021 RC :16/00-0019743

B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT
1	80464-05400-13	NIVEA SUN Lait Après Solaire Hydratant 200ML	1	12	923.53	11 082.36
2	80431-05100-17	NIVEA SUN SPRAY HUILE PROTECTRICE INTENSE 200 ML	1	12	1 050.42	12 605.04
3	80403-05400-17	NIVEA SUN HUILE PROTECTRICE SPRAY DORE SPF6 200ML	1	12	1 050.42	12 605.04
4	86244-09900-23	NIVEA BABY Lingettes Soft&Care, 63 pièces	10	120	218.49	26 218.80
5	86247-09900-23	NIVEA BABY Lingettes Pure, 63 pièces	10	120	218.49	26 218.80
6	86144-09900-23	NIVEA BABY Lingettes Sensitive, 63 pièces	10	120	218.49	26 218.80
7	80500-05400-95	NIVEA BABY Savon Crème 100gr	3	108	96.64	10 437.12
8	80522-05400-95	NIVEA BABY Crème Protectrice pour le Change Tube 100ML	5	60	462.19	27 731.40
9	86263-03200-26	NBABY SHAMPOOING & BAIN 500ML	4	48	756.30	36 302.40
10	86150-05400-23	Nivea BABY Shampoing 200 ML	5	60	306.72	18 403.20
11	84620-05400-84	NIVEA HAND Soins Intensifs Nourissants Tube 100ML	5	60	407.56	24 453.60
12	84624-05400-90	NIVEA HAND Soins Q10 Anti-Age Tube 100ML	5	60	462.19	27 731.40
13	80608-02000-30	SAVON Crème soft 100g	3	108	100.84	10 890.72
14	82408-02000-50	SAVON CREME CARE 100 G	3	108	100.84	10 890.72
15	80800-06100-40	Shampooing Douche Vitaly&Fresh NFM 250ML	3	36	184.87	6 655.32
16	80803-05400-40	Shampooing Douche Energy NFM 250ML	2	24	184.87	4 436.88
17	84043-06100-60	CREME DE DOUCHE CACAO BUTTER 250 ML	1	24	184.87	4 436.88
18	81060-01000-60	Crème De Douche Care Et Cashmere 250ML	1	24	184.87	4 436.88
19	83627-05400-44	NIVEA BATH CARE CREME DOUCHE NOURISSANTE 500 ML	2	24	286.55	6 877.20
20	86934-06100-50	NIVEA HAIR CARE STYLING GEL CREME 150 ML	3	36	546.22	19 663.92
21	82266-06100-23	NDEO ROLL-ON Stress Protect - Masculin 50ML	3	36	231.09	8 319.24
22	83763-06100-23	NDEO ROLL-ON Double Effect Féminin 50 ML	3	36	231.09	8 319.24
23	82280-05400-24	NDEO ROLL-ON Women Sensation Satinée 50ml	5	60	231.09	13 865.40
24	81610-09940-23	NDEO ROLL-ON Dry Masculin 50 ML	2	60	231.09	13 865.40
25	85950-04500-26	NDEO STICK Protect &care M 40 GR	3	36	285.71	10 285.56
26	85911-09940-26	NDEO STICK Protect &care F 40G	2	36	285.71	10 285.56
27	82892-01000-23	NDEO STICK Fresh Féminin 40 ML	2	36	285.71	10 285.56

TOTAL A REPORTER HT: 403 522.44

NB colis sur cette page :

0

SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

NIS : 0 013 1642 00106 62

Site web :

Livraison H/BL18/00053

Alger, le : 01-04-2018

Mode de Paiement :

H/F18/00053

Commande N° :416860

par :

REPORT HT : 403 522.44

DOIT 0015

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

PINS MARITIMES - MOHAMMADIA - Alger 16000

IF :000216001974393 AI: 16295206021 RC :16/00-0019743

B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT
28	82891-01000-23	NDEO STICK Fresh Masculin 40ML	2	36	285.72	10 285.92
29	82261-06100-23	NDEO STICK STRESS PROTECT FML 40ML	3	36	285.71	10 285.56
30	82272-06100-23	NDEO STICK STRESS PROTECT ML 40 ML	3	36	285.71	10 285.56
31	82887-01000-23	NDEO STICK Cool Kick Masculin 40ML	2	36	285.71	10 285.56
32	85941-05900-26	NDEO SPRAY Protect &care M 200ML	5	60	268.91	16 134.60
33	82242-05400-24	NDEO SPRAY For Black & White Power Invisible Masculin200ML	5	60	268.91	16 134.60
34	82238-05400-23	NDEO SPRAY Invisible For Black&White Clear Féminin 200ML	10	120	268.91	32 269.20
35	82231-05400-25	NDEO SPRAY Invisible Black & White Féminin PURE 200 ML	10	120	268.91	32 269.20
36	85975-05900-27	Invisible For Black&White Fresh masculin 200ML	5	60	268.91	16 134.60
37	82269-05400-24	NDEO SPRAY Stress Protect - Masculin 200ML	5	60	268.91	16 134.60
38	82257-05400-23	NDEO SPRAY Stress Protect - Féminin 200ML	10	120	268.91	32 269.20
39	81605-05400-23	NDEO SPRAY Dry Masculin 200ML	5	60	268.91	16 134.60
40	81619-05400-23	NDEO SPRAY Fresh Féminin 200ML	10	120	268.91	32 269.20
41	81618-05400-23	NDEO SPRAY Fresh Masculin 200ML	5	60	268.91	16 134.60
42	83732-05400-23	NDEO SPRAY Pearl & Beauty Féminin 200ML	20	240	268.91	64 538.40
43	83768-05400-19	NDEO SPRAY Double Effect Violet Senses Féminin 200ML	10	120	268.91	32 269.20
44	82913-05900-24	NDEO SPRAY FRESH AND POWER MASCULIN 200 ML	5	60	268.91	16 134.60
45	82922-05900-25	NIVEA DEO SPRAY FRESH BOOST MASCULIN 200ML	5	60	268.91	16 134.60
46	82884-05400-23	NDEO SPRAY Cool Kick Masculin 200 ML	5	60	268.91	16 134.60
47	85903-05400-26	NDEO SPRAY PROTECT & CAIRE AP 100ML FML	10	120	184.87	22 184.40
48	81103-05400-60	NIVEA VISAGE Lait de Toilette Douceur PSS 200ML	3	36	462.18	16 638.48
49	81104-05400-60	NIVEA VISAGE Lait Démaquillant Visage & Yeux 200ML	3	36	462.18	16 638.48
50	81700-05400-22	NFM Mousse à Raser Hydratante 200ML	3	36	369.75	13 311.00
51	81720-05400-22	NFM Mousse à Raser Sensitive 200ML	3	36	369.75	13 311.00
52	81740-05400-22	NFM Gel à Raser Sensitive 200ML	3	36	504.20	18 151.20
53	81730-04500-07	Gel à Raser Cool Kick 200ML	2	48	504.20	24 201.60

TOTAL A REPORTER HT: 940 197.00

NB colis sur cette page :

0

SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

NIS : 0 013 1642 00106 62

Site web :

Livraison H/BL18/00053

Alger, le : 01-04-2018

Mode de Paiement :

H/F18/00053

Commande N° :416860

par :

REPORT HT : 940 197.00

DOIT 0015

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

PINS MARITIMES - MOHAMMADIA - Alger 16000

IF :000216001974393 AI: 16295206021 RC :16/00-0019743
B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT

NB COLIS GLOBALE : 250

TOTAL POIDS : 9 000.30

Arrêté le présent bon de livraison à la somme de : UN MILLION CENT DIX-HUIT MILLE HUIT CENT TRENTE-QUATRE DINARS ET QUARANTE-TROIS CENTIMES

TOTAL HT	940 197.00
TVA	178 637.43
TIMBRE	0.00
NET A PAYER	1 118 834.43

Toute anomalie lors de la livraison doit être signaler au SAV dans les 24H00
Tel : 025 49 08 35/36 FAX : 025 49 08 37

HASSANI IMENE NAILA

Date	Chèque ou pièce N°	Mode	Montant	TVA	Base HT	Montant TVA
				TVA 19%	940 197.00	178 637.43
			Montant Régulé	Total	940 197.00	178 637.43
			Reste à régler			

NB colis sur cette page : 0



Appendix 02 Bon de commande

Lieu de livraison	Destinataire	Facturation
ARDIS SPA CENTRE COMMERCIAL ET DE LOISIR PINS MARITIMES - MOHAMMADIA - 16000 ALGER Téléphone 021891340 Fax 021891776 Email contact.ardis@ardis.dz Site 10 ARDIS SPA	14001390 SARL ABC DISTRIBUTION (NIVEA) 3 RESI VILLA N° 10 ROUBA 160000 Téléphone 0770326298 Email R.DADDI-HAMMOU@ABGROUPE-DZ.COM Règlement 30 JOURS Par CHEQUE	ARDIS SPA CENTRE COMMERCIAL ET DE LOISIR PINS MARITIMES - MOHAMMADIA - 16000 ALGER Téléphone 021891340 Fax 021891776 Email contact.ardis@ardis.dz RC 16/00-0019743 B02 NIF 000216001974393

N° commande **420362** Date de commande **09/05/2018** Date de livraison impérative **10/05/2018**
 Rayon **12** PARFUMERIE HYGIENE Acheteur **A** Ardis
 Etablissement **141**

N° article	EAN principal	Libellé	Nb colis	PCB	Qté	Prix achat en DA	TVA
12009362	4005808862443	NIVEABABY LINGETTES SOFT CREAM	10	12	120Ar	218.49	19.00
12009363	4005808862474	NIVEA BABY LINGETTES FRESHPURE	10	12	120Ar	218.49	19.00
12010279	4005808247165	NIVEA LAIT NOURRISSANT DOUCEUR	3	12	36Ar	462.18	19.00
12010281	4005808701568	NIVEA LAIT FLUIDE EXPRESS 250	3	12	36Ar	462.18	19.00
12010316	40058153	NIVEA CREME BOITE 30 ML	1	300	300Ar	100.84	19.00
12010331	4005808222520	NIVEA RASAGE MOUSSE HYDRATANTE	3	12	36Ar	369.75	19.00
12010332	4005808222704	NIVEA FOR MEN RASAGE MOUSSE P	3	12	36Ar	369.75	19.00
12010333	4005808222919	NIVEA FOR MEN GEL A RASER PEAU	3	12	36Ar	504.20	19.00
12010337	4005808228737	NIVEA FOR MEN LOTION APRES RAS	3	12	36Ar	504.20	19.00
12010339	4005808173457	NIVEA CREME BOITE60 ML	1	144	144Ar	159.66	19.00
12010340	4005800001192	NIVEA CREME BOITE 150 ML	2	24	48Ar	260.50	19.00
12010352	4005808846207	NIVEA CREME MAINS SOIN INTENSI	5	12	60Ar	407.56	19.00
12010353	4005900016607	NIVEA CREME MAINS SOIN Q10 PLU	5	12	60Ar	462.18	19.00
12010729	4005808135318	SAVON NIVEA CREM SOFT	108	1	108Ar	100.84	19.00
12011136	4005808265251	NFM BAUME APRES RASAGE COOL KI	3	12	36Ar	504.20	19.00
12011434	4005808890590	NIVEASOFTPOTPLASTIQUE100ML	3	24	72Ar	310.92	19.00
12011435	4005808745289	VISAGEBBCREMEDETEINT6,150MTUBE	2	12	24Ar	663.87	19.00
12011439	4005808827220	VISAGANTI AGSTIMULATEURJEUN40M	3	12	36Ar	1247.90	19.00
12011641	4005808194919	NIVEA BABY SHAMPOOING 200ML	4	12	48Ar	306.72	19.00
12011645	42204121	NIVEA SOFT POT PLASTIQUE 50ML	1	60	60Ar	210.08	19.00



Bon de commande

Fournisseur **SARL ABC DISTRIBUTION (NIVEA)**N° commande **420362**Date de commande **09/05/2018**Date de livraison **10/05/2018**

N° article	EAN principal	Libellé	Nb colis	PCB	Qté	Prix achat en DA	TVA
12014576	4005808904693	NIVEA VISAGE CC CREAM Q10+	2	12	24Ar	663.87	19.00
12014579	5659400622	NFM LOTION APRES RASAGE ORIGIN	3	12	36Ar	504.20	19.00
12014712	40063690	NIVEA CREME TUBE 100ML	2	24	48Ar	231.09	19.00
12014719	4005900105479	NIVEA MEN CREME 75ML	1	120	120Ar	390.76	19.00
12015633	4005808938421	NIVEA BABY SOFT CREM 200ML	1	24	24Ar	478.99	19.00
12017232	4005808379828	NBABY SHAMPOOING & BAIN 500ML	3	12	36Ar	756.30	19.00
12018986	4005900217936	SAVON CREME SOIN 100G	3	36	108Ar	100.84	19.00
12019621	6001051000890	NFM LOTION AFTER SHAVE 100ML	3	12	36Ar	504.20	19.00
12019622	4005900080400	NFM GEL A RASER SCHERGEL 100ML	4	12	48Ar	504.20	19.00
12020915	4005808196531	SHAMP COOL KICK MEN250ML	3	12	36Ar	184.87	19.00
12020924	5025970023236	GELA RASER COOL KICK 200ML	1	24	24Ar	504.20	19.00
12021677	42269670	CREME CARE 50 ML	1	24	24Ar	231.09	19.00
12021678	42269915	CREME CARE 200 ML	1	24	24Ar	462.18	19.00
12021679	4005900491909	SOFT POT PLASTIQUE 300ML	3	12	36Ar	420.17	19.00
12021680	42316053	SOIN REPAIR & CARE 75ML	5	12	60Ar	327.73	19.00

Nb de lignes : 35

Nb colis : 212

Volume : 0 m3

Poids brut : 0 kg

Montant achat

660401.40 DADevise fournisseur **660401.40 DA**

Commentaires commande : LES PRIX FIGURANT SUR LE PRESENT BC SONT FINAUX ET FERMES ET DOIVENT ETRE CONFORMES AUX PRIX DE LA FACTURE DU FOURNISSEUR. LES ARTICLES INVENDUS FERONT L'OBJET D'UN RETOUR AU FOURNISSEUR HORAIRES RECEPTION: DE 08H30 A 16H30 SEULEMENT.

Appendix 03 : SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

Site web :

NIS : 0 013 1642 00106 62

Facture H/F18/00053

Alger, le : 01-04-2018

Mode de Paiement :

DOIT 0015

H/BL18/00053

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

Commande N° :416860

PINS MARITIMES - MOHAMMADIA - Alger 16000

par :

REPORT HT : 0.00

IF :000216001974393 AI: 16295206021 RC :16/00-0019743

B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT
1	80464-05400-13	NIVEA SUN Lait Après Solaire Hydratant 200ML	1	12	923.53	11 082.36
2	80431-05100-17	NIVEA SUN SPRAY HUILE PROTECTRICE INTENSE 200 ML	1	12	1 050.42	12 605.04
3	80403-05400-17	NIVEA SUN HUILE PROTECTRICE SPRAY DORE SPF6 200ML	1	12	1 050.42	12 605.04
4	86244-09900-23	NIVEA BABY Lingettes Soft&Care, 63 pièces	10	120	218.49	26 218.80
5	86247-09900-23	NIVEA BABY Lingettes Pure, 63 pièces	10	120	218.49	26 218.80
6	86144-09900-23	NIVEA BABY Lingettes Sensitive, 63 pièces	10	120	218.49	26 218.80
7	80500-05400-95	NIVEA BABY Savon Crème 100gr	3	108	96.64	10 437.12
8	80522-05400-95	NIVEA BABY Crème Protectrice pour le Change Tube 100ML	5	60	462.19	27 731.40
9	86263-03200-26	NBABY SHAMPOOING & BAIN 500ML	4	48	756.30	36 302.40
10	86150-05400-23	Nivea BABY Shampoing 200 ML	5	60	306.72	18 403.20
11	84620-05400-84	NIVEA HAND Soins Intensif Nourrissant Tube 100ML	5	60	407.56	24 453.60
12	84624-05400-90	NIVEA HAND Soins Q10 Anti-Age Tube 100ML	5	60	462.19	27 731.40
13	80608-02000-30	SAVON Creme soft 100g	3	108	100.84	10 890.72
14	82408-02000-50	SAVON CREME CARE 100 G	3	108	100.84	10 890.72
15	80800-06100-40	Shampooing Douche Vitaly&Fresh NFM 250ML	3	36	184.87	6 655.32
16	80803-05400-40	Shampooing Douche Energy NFM 250ML	2	24	184.87	4 436.88
17	84043-06100-60	CREME DE DOUCHE CACAO BUTTER 250 ML	1	24	184.87	4 436.88
18	81060-01000-60	Creme De Douche Care Et Cashmere 250ML	1	24	184.87	4 436.88
19	83627-05400-44	NIVEA BATH CARE CREME DOUCHE NOURRISSANTE 500 ML	2	24	286.55	6 877.20
20	86934-06100-50	NIVEA HAIR CARE STYLING GEL CREME 150 ML	3	36	546.22	19 663.92
21	82266-06100-23	NDEO ROLL-ON Stress Protect - Masculin 50ML	3	36	231.09	8 319.24
22	83763-06100-23	NDEO ROLL-ON Double Effect Féminin 50 ML	3	36	231.09	8 319.24
23	82280-05400-24	NDEO ROLL-ON Women Sensation Satinée 50ml	5	60	231.09	13 865.40
24	81610-09940-23	NDEO ROLL-ON Dry Masculin 50 ML	2	60	231.09	13 865.40
25	85950-04500-26	NDEO STICK Protect &care M 40 GR	3	36	285.71	10 285.56
26	85911-09940-26	NDEO STICK Protect &care F 40G	2	36	285.71	10 285.56
27	82892-01000-23	NDEO STICK Fresh Féminin 40 ML	2	36	285.71	10 285.56

TOTAL A REPORTER HT: 403 522.44

NB colis sur cette page : 0

SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

NIS : 0 013 1642 00106 62

Site web :

Facture H/F18/00053

Alger, le : 01-04-2018

Mode de Paiement :

H/BL18/00053

Commande N° :416860

par :

REPORT HT : 403 522.44

DOIT 0015

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

PINS MARITIMES - MOHAMMADIA - Alger 16000

IF :000216001974393 AI: 16295206021 RC :16/00-0019743

B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT
28	82891-01000-23	NDEO STICK Fresh Masculin 40ML	2	36	285.72	10 285.92
29	82261-06100-23	NDEO STICK STRESS PROTECT FML 40ML	3	36	285.71	10 285.56
30	82272-06100-23	NDEO STICK STRESS PROTECT ML 40 ML	3	36	285.71	10 285.56
31	82887-01000-23	NDEO STICK Cool Kick Masculin 40ML	2	36	285.71	10 285.56
32	85941-05900-26	NDEO SPRAY Protect &care M 200ML	5	60	268.91	16 134.60
33	82242-05400-24	NDEO SPRAY For Black & White Power Invisible Masculin200ML	5	60	268.91	16 134.60
34	82238-05400-23	NDEO SPRAY Invisible For Black&White Clear Féminin 200ML	10	120	268.91	32 269.20
35	82231-05400-25	NDEO SPRAY Invisible Black & White Féminin PURE 200 ML	10	120	268.91	32 269.20
36	85975-05900-27	Invisible For Black&White Fresh masculin 200ML	5	60	268.91	16 134.60
37	82269-05400-24	NDEO SPRAY Stress Protect - Masculin 200ML	5	60	268.91	16 134.60
38	82257-05400-23	NDEO SPRAY Stress Protect - Féminin 200ML	10	120	268.91	32 269.20
39	81605-05400-23	NDEO SPRAY Dry Masculin 200ML	5	60	268.91	16 134.60
40	81619-05400-23	NDEO SPRAY Fresh Féminin 200ML	10	120	268.91	32 269.20
41	81618-05400-23	NDEO SPRAY Fresh Masculin 200ML	5	60	268.91	16 134.60
42	83732-05400-23	NDEO SPRAY Pearl & Beauty Féminin 200ML	20	240	268.91	64 538.40
43	83768-05400-19	NDEO SPRAY Double Effect Violet Senses Féminin 200ML	10	120	268.91	32 269.20
44	82913-05900-24	NDEO SPRAY FRESH AND POWER MASCULIN 200 ML	5	60	268.91	16 134.60
45	82922-05900-25	NIVEA DEO SPRAY FRESH BOOST MASCULIN 200ML	5	60	268.91	16 134.60
46	82884-05400-23	NDEO SPRAY Cool Kick Masculin 200 ML	5	60	268.91	16 134.60
47	85903-05400-26	NDEO SPRAY PROTECT & CAIRE AP 100ML FML	10	120	184.87	22 184.40
48	81103-05400-60	NIVEA VISAGE Lait de Toilette Douceur PSS 200ML	3	36	462.18	16 638.48
49	81104-05400-60	NIVEA VISAGE Lait Démaquillant Visage & Yeux 200ML	3	36	462.18	16 638.48
50	81700-05400-22	NFM Mousse à Raser Hydratante 200ML	3	36	369.75	13 311.00
51	81720-05400-22	NFM Mousse à Raser Sensitive 200ML	3	36	369.75	13 311.00
52	81740-05400-22	NFM Gel à Raser Sensitive 200ML	3	36	504.20	18 151.20
53	81730-04500-07	Gel à Raser Cool Kick 200ML	2	48	504.20	24 201.60

TOTAL A REPORTER HT: 940 197.00

NB colis sur cette page :

0

SARL ABC DISTRIBUTION

Distributeur des Produits Cosmétiques

Lot 125 Parc d'Hydra /Hydra Alger

Tél. : 025-28-08-21/22/23

Fax : 025-28-08-32

Compte :

RIB : BNP PARIBAS Agence Hydra

RC : 13B 0986693 16/00

AI : 16281451072

Id Fiscal : 001316098669368

NIS : 0 013 1642 00106 62

Site web :

Facture H/F18/00053

Alger, le : 01-04-2018

Mode de Paiement :

H/BL18/00053

Commande N° :416860

par :

REPORT HT : 940 197.00

DOIT 0015

ARDIS - CENTRE COMMERCIAL ET DE LOISIR

PINS MARITIMES - MOHAMMADIA - Alger 16000

IF :000216001974393 AI: 16295206021 RC :16/00-0019743

B 02

N°	CODE	DÉSIGNATION	NB. COLI	Nb Unite	PU HT	MONTANT HT

NB COLIS GLOBALE : 250

TOTAL POIDS : 9 000.30

Arrêtée la présente facture à la somme de : UN MILLION CENT DIX-HUIT MILLE HUIT CENT TRENTE-QUATRE DINARS ET QUARANTE-TROIS CENTIMES

TOTAL HT	940 197.00
TVA	178 637.43
TIMBRE	0.00
NET A PAYER	1 118 834.43

Toute anomalie lors de la livraison doit être signaler au SAV dans les 24H00
Tel : 025 49 08 35/36 FAX : 025 49 08 37

HASSANI IMENE NAILA

Date	Chèque ou pièce N°	Mode	Montant	TVA	Base HT	Montant TVA
				TVA 19%	940 197.00	178 637.43
			Montant Régulé	Total	940 197.00	178 637.43
			Reste à régler			

NB colis sur cette page : 0

Table of content

Dedication	
Acknowledgements	
Abstract	
List of figures	
List of tables	
List of acronyms and abbreviations	
Summary	
General Introduction	01
Chapter 01: Basic concepts in inventory management	03
Introduction	04
Section 01: Basic concepts in inventory.....	05
1-1- Definitions.....	05
1-2- The role of inventory.....	06
1-3- Types of inventory.....	06
1-4- Costs related to inventory.....	08
1-5- The purpose of inventory.....	09
1-6- Inventory's inconvenient.....	10
1-7- Inventory life cycle.....	11
1-8- Documents related to inventory.....	11
Section 02: Inventory Management.....	12
2-1- Definitions.....	12
2-2- The objectives of inventory management.....	12
2-3- The role of inventory management.....	13
2-4- The link between inventory management and other functions.....	14
2-5- Inventory management constraints.....	15
2-6- Inventory management and supply chain.....	15

2-7-	Inventory management interaction with logistic functions.....	15
2-8-	Inventory management activities.....	17
2-9-	Inventory management indicators.....	18
2-10-	The administrative tasks.....	20
2-11-	Inventory accounting methods.....	20
2-12-	Inventory record methods.....	21
	Conclusion.....	23
	Chapter 02: Inventory Management techniques and improvement.....	24
	Introduction.....	25
	Section 01: Inventory Management Techniques.....	26
1-1-	ABC Analysis.....	26
1-2-	Economic Order Quantity.....	27
1-3-	Just In Time.....	28
1-4-	FSN Analysis.....	29
1-5-	VED Analysis.....	29
1-6-	HML Analysis.....	30
1-7-	SDE Analysis.....	30
1-8-	Material Replenishment Planning.....	30
1-9-	Safety stock.....	32
1-10-	Automation.....	34
1-10-1-	Advantages.....	34
1-10-2-	Most implemented systems.....	34
	➤ VMI.....	34
	➤ Bar-coding.....	35
	➤ E-POS.....	35
	➤ WMS.....	35
	Section 02: Inventory Management improvement.....	36
2-1-	Inventory management optimization.....	36
2-1-1-	Definition.....	36
2-1-2-	The importance of inventory management optimization.....	36

2-2-	Common problems of inventory management.....	36
2-2-1-	Spoilage.....	36
2-2-2-	Dead stock.....	37
2-2-3-	Less internal communication.....	37
2-2-4-	Unqualified inventory management staff.....	37
2-2-5-	Not being automated.....	37
2-2-6-	Inventory costs are ignored.....	38
2-2-7-	Obsolete inventory.....	38
2-2-8-	Stockout.....	38
2-3-	Suggested Solutions.....	39
2-3-1-	Par level.....	39
2-3-2-	Relationships.....	39
2-3-3-	Arranging meetings.....	40
2-3-4-	Solutions for unqualified staff.....	40
2-3-5-	Write-off obsolete inventory.....	40
2-3-6-	Remarketing items.....	40
2-3-7-	Forecast demand.....	41
	Conclusion.....	44
	Chapter 03: Improving inventory management at ABC case study.....	43
	Introduction.....	44
	Section 01: Nivea company background.....	45
1-1-	Nivea's Profile.....	45
1-2-	Nivea's history.....	45
	Section 02: ABC Company background.....	46
2-1-	ABC profile.....	46
2-2-	ABC history.....	46
2-3-	Organizational structure.....	47
2-4-	The main responsibilities of each department.....	47
2-5-	Human resources of ABC.....	49

2-6-	ABC's Market.....	49
2-7-	Logistic department of ABC.....	51
Section 03: Inventory management procedures at ABC.....		53
3-1-	Warehousing.....	53
3-2-	Replenishment.....	53
3-3-	Customer's need.....	54
3-4-	Order process.....	54
3-5-	Reception process.....	54
3-6-	The delivery process.....	55
3-7-	Stock holding.....	55
3-8-	Inventory flow inside the warehouse.....	56
3-9-	Stock valuation.....	56
3-10-	Inventory record method.....	56
3-11-	Information system.....	56
Section 04: Findings and recommendations.....		57
4-1-	Inventory control system.....	57
4-2-	ABC analysis method.....	57
4-3-	EOQ.....	57
4-4-	Inventory carrying costs.....	57
4-5-	Warehouse.....	58
4-6-	Information system.....	59
4-7-	Stockout.....	60
4-8-	Overstock.....	61

Conclusion.....62

General Conclusion.....63

Bibliography

appendices

Table of content