UNIVERSITY OF THE AEGEAN
SCHOOL OF BUSINESS
Department of Financial and Management Engineering

Operations Management in Retail
Case study in Greek clothing industry

Prof. Glikas Michail

Argiro Chatzi
23108107

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ABSTRACT

The textile and clothing industry is one of the largest industrial sectors worldwide, facing challenges due to factors ranging from global economic developments to rapid changes in the field of fashion. These factors push the industry to find global solutions in order to maintain the level of performance and development through Operations Management. This thesis focuses on Greek clothing industry and its aim is to examine the extent to which aspects of Operations Management are adopted by the industry, given that right performance is key to any company's success. The research is carried out by a questionnaire analyzing how a major Greek clothing company implements aspects of Operations Management. The results indicate that despite the consequences of the financial crisis, the specific company manages its operations effectively and profitably. However, the study suggests improvements in some areas in order to produce better results.

INTRODUCTION

This thesis discusses operations management in retail with a particular focus on the Greek clothing industry. Operations management is about how organizations produce or deliver the goods and services that provide the reason for their existence. Operations Management is one of the three major functions of a business along with Marketing, Accounting and Finance, which are very important elements of a company's conduct and performance. Operations management is crucial for every company that aims to produce goods or provide services. Retail is imperative for every company that wants to make a profit. It involves the sale of goods and provision of services from a single point. The right performance of retail operations is a necessity. The role of Operations management in retail is to guarantee effective and efficient management of retail operations. Retail operations include supply chain, forecasting, store administration, location strategy and store operations.

Retail is a fast-paced industry affected by various parameters. Therefore, companies, in order to survive, have to continuously adapt to the unpredicted changes of the market and the economy.

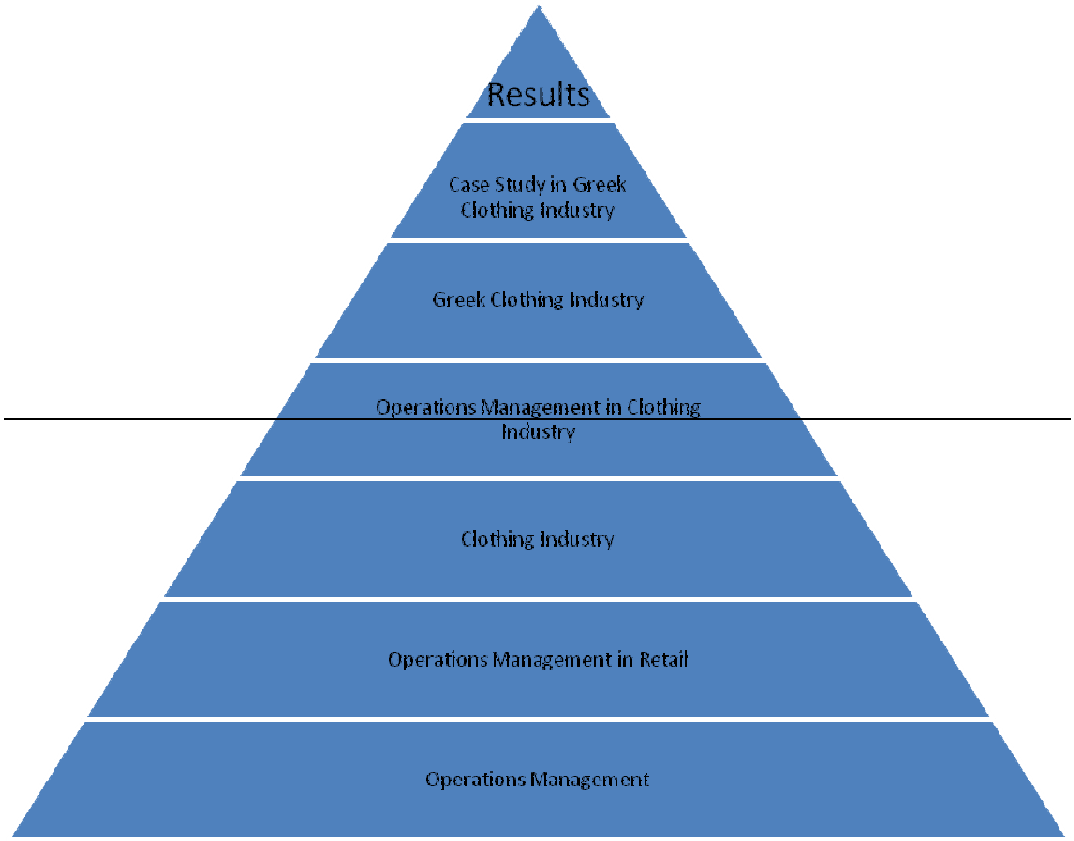
Decisions on store and plant location, supply chain, recruitment or product development are the ones that determine the financial prosperity of the company. Taking into consideration the importance and gravity of the above decisions, the participants are trying to maximize their efficiency and productivity. The more accurate the above factors are, the more profit participants make.

The purpose of this research is to identify the aspects of Operations Management Theory that apply in the field of retail and in particular in the Greek Clothing Industry. Within this context, the main motivation of the author is to analyze all the relevant factors, to examine whether these factors are adopted effectively by the industry, and if not, to explore what areas the industry should focus on in order to produce better results.

In this respect, this thesis presents a case study on a major Greek clothing company and, by collecting data from market professionals, interprets the main factors that influence the market sentiment of the participants and produces a clear picture about the strengths and weaknesses of the company.

Furthermore, the thesis compares the above results with an ideal scenario and suggests solutions on how to improve the company's efficiency, productivity and profitability.

This thesis consists of four chapters. The first three chapters explain, through the lens of theory, the basic components of this paper, namely operations management, retail and clothing industry. The last chapter presents the case study in order to present an adequate image of clothing industry in Greece.



The first chapter examines and analyses basic components of operations management as well as the transformation process pertaining thereto. The transformation process is key to transforming inputs into outputs. Basic components include operations strategy, designing, planning and control.

The second chapter includes analyzed retail in the elements which apply to the operations management and are then pointed out. The basic components of operations management in retail consist of customer services, merchandise, prices and promotions.

The reader will be informed about and gain a broad perspective of the basic characteristics of the clothing industry in Chapter 3. The clothing industry produces clothes and other sewed goods. The clothing industry is intrinsically connected with the textile industry with statistical data usually adopting an integrated approach to both industries. It is an international and highly globalized industry, with clothing often designed in one country, manufactured in another and sold worldwide. The clothing industry consists of four levels:

- Production of raw materials, principally fibers and textiles, but also leather and fur.
- Production of fashion goods by designers, manufacturers, contractors, and others.
- Retail sales.
- Various forms of advertising and promotion.

The last chapter is the case study, which consists of two parts. The first part discusses the Greek clothing industry in general and the second presents the research of the particular Clothing Company. The research was done by a qualitative questionnaire. The clothing industry is one of the most important industrial sectors in Greece. Despite the financial crisis some companies operating in the sector manage to survive and even make profit. It is important to mention that the clothing industry in general and the Greek clothing industry in particular, is a sector facing fluctuations coming from various factors.
In the final conclusion of this thesis, the aspects of growth, profit and competitiveness are described in detail, since they are presented as leading motivation factors for companies.

CHAPTER 1 - Operations management

INTRODUCTION

Rapid technological change and globalization developments of the past decades have made management of service systems necessary in highly competitive environments. Organizations must manage to be competitive because societies demand more and better products. Operations management is the key element in order to achieve better quality and larger quantity. Operations management is the lead factor for organizations to achieve their goals in the business world. The correct management of operations is critical to achieve and maintain a competitive advantage. Operations management is so important that an efficient practice of it can have a positive impact on the overall health of the economy (Mahadevan, 2010).

Operations management did not emerge as a formal field until the 1950s and 1960s. Before that period, products were made individually by skilled craftspeople in their homes and were exceptionally expensive to produce. Major developments in the field of operations management were launched as a result of the industrial revolution in the 18th century and later as a result of the need to solve problems relating to logistics. It is important to mention that techniques developed back in those days are still a part of the operations management field today (Greasly, 2008).

DEFINITION

Operations management is the business function responsible for designing, planning, overseeing and controlling the process of goods and services production (Karlsson, 2016). It involves the responsibility for development, acquisition and utilization of resources that the company needs in order to deliver goods and services to its clients. It is associated with managing the process of converting inputs to outputs. It involves managing people, information, equipment, technology and other resources needed in production of goods and services. Operations management is the main function of every company, regardless of the size or the industry as well as regardless of whether it is a manufacturing or service, profit or non-profit company. In the case of private-sector companies, the mission of the operations function is usually expressed in terms of profits, growth and competitiveness, while in public and voluntary organizations, in terms of providing value for money.

According to Greasley (2008), Operations Management is about the management of the processes that produce or deliver goods and services. He also explains that not every organization will have a functional department called 'Operations' but they will all undertake operations activities because every organization produces goods and/or services. Collier and Evans (2010) defined Operations Management as "the science and art of ensuring that goods and services are created and delivered successfully to customers".

BASIC COMPONENTS OF OPERATIONS MANAGEMENT

Figure 1: Components of operations management (Source: Stevenson and Sum, 2002)

Operations management is an area of management concerned with multiple functions, which either can be presented as a complex or as field, where each function can be described separately and in depth.

SUPPLY CHAIN MANAGEMENT

Business enterprises are investing and paying special attention to their supply chains due to three main factors. These are the fierce competition in today's

global markets, the introduction of products with shorter life cycles, and the heightened expectations of customers.

Supply chains are systems of organizations, people, activities, information, and resources involved in moving a product or service from the supplier to the customer (Stevens and Johnson, 2016). They consist of three stages:

1. supplying products to a manufacturer
2. the manufacturing process (Prajogo et al., 2016) and
3. the distribution of finished products to consumers through a network of distributors and retailers.

Figure 2: Supply chain (Source: Southwest Tech)

There are numerous definitions for supply chains but all of them describe more or less the same functions. In their simplest form supply chains (Bartezzaghi et al., 2016) consist of a supplier, a producer and a customer. Extended supply chain also includes the supplier's supplier and the customer's customer and all other service providers necessary to support the chain activities such as information providers, transporters, human resources and accounting.

All parties involved in the various stages of this process are related to each other by a supply chain. The supply chain is a subsystem within the organizational system that includes planning the activities involved in finding, obtaining and processing products. Correct and efficient coordination and collaboration are main elements between the channel partners in order to prevent spoilage and waste at any stage. In essence, supply chain integrates supply and demand (Feng and Shanthikumar, 2016) both within and outside the company. In a typical supply chain, raw materials are procured and items are produced at one or more factories, shipped to warehouses for intermediate storage, and then shipped to retailers or customers. Consequently, to reduce cost and improve service levels, effective supply chain strategies must take into account the interactions at the various levels in the supply chain. The coordinated effort and interaction between these parties to supply the best value to the customer and the organization is what we call supply chain management.

Supply chain is crucial to any organization as it refers to a wide range of functional areas responsible for delivering the product or service to the final customer. These areas contain supply chain management-related activities such as inbound and outbound transportation (Son et al., 2016), warehousing, and inventory control (Simchi-Levi, 2016). In addition, sourcing, procurement, supply management, forecasting, production planning and scheduling, order processing, and customer service are all functions related to supply chain**.** However the most important element of supply chain is that it embodies the information systems which are essential in order to monitor all these activities.

Figure 3: Supply chain management (Source: Chopra and Meindl, 2010)

A simple statement in order to understand the significance of the supply chain is that *the supply chain encompasses all of those activities associated with moving goods from the raw-materials stage through to the end user* (McCarthy et al., 2016). Noted the importance of supply chain, it becomes clear how important supply chain management is (Coughlan et al., 2016).

Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements.

Therefore supply chain management takes into consideration every facility that has an impact on cost and affects the production to conform to customer

requirements: from supplier and manufacturing facilities through warehouses and distribution centers to retailers and stores. In some supply chain analysis, as mentioned above, it is necessary to account for the suppliers' suppliers and the customers' customers as they play a significant role on supply chain performance (Stadtler, 2015). Also, supply chain management should take in consideration that it has is to be efficient and cost-effective across the entire system: total system wide costs, from transportation and distribution to inventories of raw materials, work in process, and finished goods. In relevance to that, the important aspect is to systemize supply chain and not trying to reduce costs throughout the supply chain for example trying to reduce inventories, or minimize costs for transportation cost (Monczka, 2015). Last but not least, supply chain management revolves around efficient integration of suppliers, manufacturers, warehouses, and stores, therefore tit encompasses the firm's activities at many different levels, from strategy to operations involved.

Supply chain management is also the delivery of enhanced customer and economic value through synchronized management of the flow of physical goods and associated information from sourcing to consumption. Because of the fact that supply chain management includes parties and functions outside of the organization it is crucial that external partners (suppliers, distributors, carriers, customers, consumers) should be carefully selected in order to achieve the real potential of supply chain management.

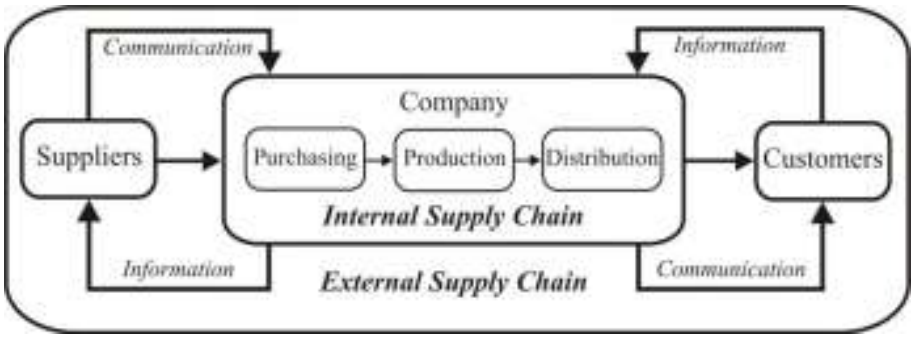


Figure 4: Internal and External Supply Chain (Diana Bratic, 2011)

Continuing advances in communications and transportation technologies (e.g., mobile communication, Internet, and overnight delivery) have a great impact in the evolution of the supply chain and in the techniques to manage it effectively.

There are some techniques in supply chain management that help organizations meet with customer demand through collaboration of all the parties in the supply chain.

Efficient consumer response (ECR) (Gizaw and Gumus, 2016) is designed to integrate and rationalize product assortment, promotion, new product development and replenishment across the supply chain. Its aim is to bring to completion the demands of end customer through effective collaboration of all the parties across the supply chain.

The focus of ECR is to combine supply chain management with demand management. This combination requires the collaboration between supplier and retailer (Emmett and Crocker, 2016). Emphasis is given to the end customer but ECR also focuses on the supply side. The successful implementation of ECR is achieved through effective logistics, managerial and information technology. These techniques are available within most firms, but the most frequent issue is to ensure that existing tools are customized in order to achieve their maximum potential. The main fields covered in ECR are category management, product replenishment and enabling technologies (Gizaw and Gumus, 2016). In addition, ECR has stimulated collaborative efforts that have increased the emphasis on key areas such as EDI, cross-docking and continuous replenishment.

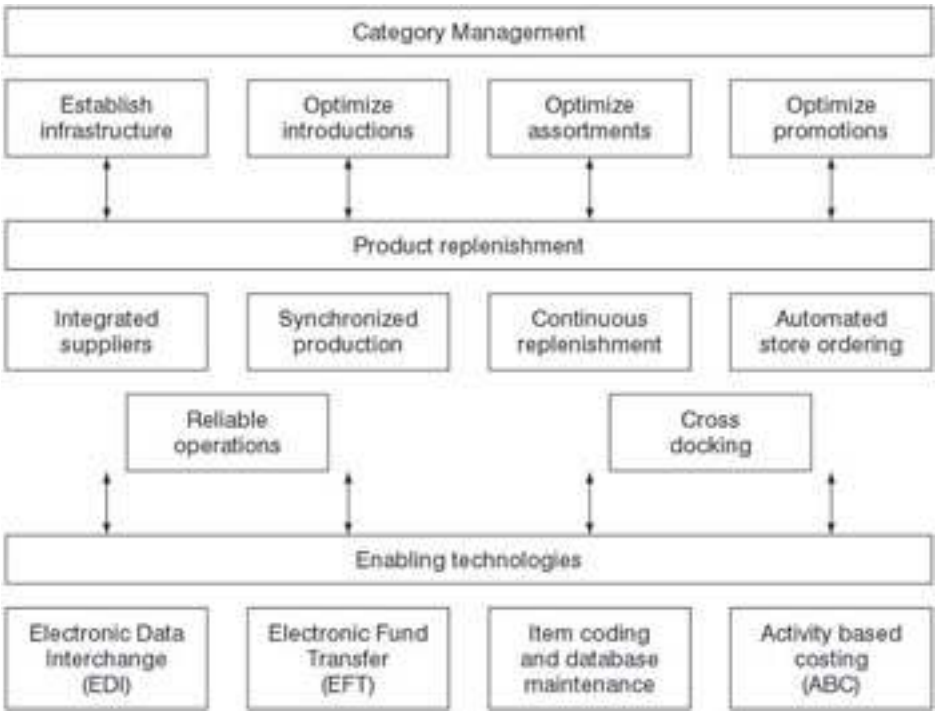


Figure 5: Main fields of ECR (Source: Fernie and Sparks, 2009)

Category management

Category management (Bakker, 2015) aims to prevent stock out situations and improve the relationship between supplier and retailer. Some of the activities of category management are the capture and utilization of knowledge of the drivers behind consumer attitudes and choices. Category

management helps ECR to enable organizations to use their joint resources in order to minimize inventory levels through the supply chain, to use cross-docking options and steamline product flows.

Category management is a part of the development of the following capabilities:

- account management
- demand management
- multifunctional selling teams
- price list restructuring
- effective and customized promotions.

Product replenishment

Product replenishment's (Philbrick and Mann, 2010) main objective is to ensure that the right quantity of products is replenished back to the store. Replenishment takes place after a command, either from the retailer's distribution center or directly from the store. This command, which is basically the order determines: which products to order and what quantities to order. An element that plays significant role to product replenishment is the stock; ordering a product in the right time and in the right quantity means avoiding running out of stock but also, have more stock than it's actually needed. If the average lead time (Agarwal, 2012) is correctly calculated, stock problems will be minimized. The anticipated lead time is the sum of four factors (Maurer et al., 2016):

- The time it takes to place an order
- The time it takes the vendor to process the order and ship the material
- The time it takes for the material to travel from the vendor to the warehouse
- The time it takes to receive, unpack, and prepare the stock receipt for sale or use

Supply chain management consists, as mentioned above, of inventory management, warehouse management, procurement and logistics.

Inventory management

Inventory is the stock of any material or resource used in a supply chain or a segment of supply chain expressed in quantities, not used at present but kept for future use in order to satisfy the demand of future requirements. Inventory includes raw materials and purchase parts, work in process (WIP), maintenance and repairs, goods-in-transit to warehouses to final customers

and finished products or merchandise (Asgari et al., 2016). An inventory system (Chen and Shi, 2016) controls and monitors the levels of inventory and decides the maintenance of the levels, when the replenishment of the stock should be made and how large the orders should be. Inventory management (Schönsleben, 2016) is a field that manages raw material purchased from suppliers, through manufacturing and till distribution of finished products. In other words, it is a group of activities applied to maintain optimum amount of each inventory item. The time between receiving the purchased materials and the transformation of them into finished products varies from organizations to organization. This depends on the cycle time of the production. For that reason it is an imperative need for organizations to keep in storage various kinds of inventories as a safeguard between supply and demand so that the system will remain efficient. It becomes clear that an effective control on inventory is necessary so that the production cycle runs efficiently with the least interruptions.

The reasons to hold inventory are to meet up with the anticipated demand, to smooth production requirements, to undock the components of the production and the distribution, to assure adequate stock, to take advantage of order cycles and quantity discounts (Pawar et al., 2016).

Inventory Levels

Inventory is required for three main stages: raw materials, semi-finished products and finished products. Raw materials undergo through levels of processes and inventory until they are transformed into finished products. There are two opposite types of pressure (Coyle, 2016) that affect the decision whether to keep low or high levels of inventory.

1. Pressure that lead to keep low inventory level can be:
   - *Storage and handling capacity*: Inventory requires space in order to be stored, therefore limited storage capacity can affect the inventory level to the minimum.
   - *Production capacity*: The differences in processes speed creates bottle necks in the production line, which will require a level of inventory for semi-finished products in those areas.
   - *Financial capacity*: In order to keep high levels of inventory, the organization need to have enough financial capabilities or may obtain a load, which leads to interests to be paid for banks.
   - *Taxes and Insurance*: Keeping high levels of inventory requires higher taxes charges and higher insurance premium policy, which may exceed the financial capacity of an organization.
   - *Customized products*: It will be difficult to keep high levels of inventory if the product is not standardized and subject to customization.

- *Product shelf life time*: It is difficult to stock short shelf time product for long time, such as dairy product and similar types of food industry.

2. Pressure that lead to keep high inventory level can be:
   - *Customer demand*: When the customer demand is high, it will be more feasible to product more to stock, which will reduce delivery time.
   - *Standardized products*: It will be more tempted to produce more when the product is more standardized and not influenced by the customer requirements.
   - *Setup cost*: Some kinds of production lines require long and costly setup process, such as steel and cement industry. It will be more feasible to keep high levels of inventory since the cost for setup these machine is high.
   - *Material cost*: Producing high quantities of products will lead to purchase more quantities of raw materials, which will lead to cost discount.
   - *Transportation cost*: High levels of inventory may allow the organization to arrange for bigger transportation tools, which may reduce the cost.
   - *Manpower and equipment utilization*: High inventory level policy leads to more working shifts, which leads to better planning and utilization labor and equipment within the working hours.

Inventory Types

There are different types of inventory (Holmstrőm, 2016), which each of them apply to the different goal every organization wishes to achieve. These are cycle inventory, safety stock inventory, anticipation inventory and pipeline inventory.

Cycle Inventory: It is the type of inventory created when the organization places periodic purchase orders based on the demand. When the demand rate is constant, cycle orders will be uniform. Each cycle inventory level will begin with the maximum then start reducing until the next order is placed.

Safety Stock Inventory: It is the amount of inventory required to operate production lines until the next shipment arrives. Safety stock inventory level is decided based on amount of waste expected from the production, uncertainty in demand level, supplier performance and current delivery commitment.

Anticipation Inventory: It is the type of inventory used when there is uneven level of supply or demand; for example when the demand is seasonal or when the supplier is going on shut down on certain time in the year.

Pipeline Inventory: It is the amount of inventory of work-in-process products that moves from point to point in the production line and not yet ready for delivery.

Inventory control

Inventory control (Frendeldall and Hill, 2016) in the fields of operations management, supply chain management and logistics can be defined as a technological system which controls and manages inventory and deals with two basic problems, the order level and the order quantity. The aim of inventory control is to reduce cost across the supply chain without interrupting production and sales (Ross, 2016). It basically answers the three basic questions in supply chain: 1. What to order?, 2. When to order? and 3. How much to order? In order to answer these questions, some inventory models were developed.

Inventory models

Economic Order Quantity (EOQ) (Kumar, 2016) is one of the oldest models for production scheduling and it is used to fix an order that will minimize the annual costs of holding and ordering inventory. EOQ applies only under some standard assumptions:

- only one product is involved
- annual demand requirements are known
- demand is constant over the year
- lead time does not vary
- each order is received in a single delivery
- there are no quantity discounts.

In this model there is a fixed cost for each order that is placed and also a cost for each material that is held in storage known as holding cost. The aim is to decide the right amount of units to order so that the total cost associated with the purchase, delivery and storage of the units is minimized.

Economic Production Quantity (EPQ) (Shekarian et al., 2016) identifies an order quantity which minimizes the total inventory costs by balancing two opposites costs, the inventory holding cost and the average fixed ordering cost. This model is an extension of EOR model, but the difference between them is that in EPQ model assumes that the quantity will be produced within the organization or parts will be shipped while they are being produced. For this reason, the orders are received incrementally while in EOR model the order is shipped complete and immediately after ordering (Hsu and Hsu, 2016).As in EOR model, EPQ applies under some standard assumptions:

- only one product is involved
- annual demand is known
- has a constant usage rate
- continuous usage, periodically production
- the production rate is constant
- lead time is fixed
- there are no quantity discounts

Quantity discount model (Alfares and Ghaithan, 2016) is also an extension of EOQ model adjusted to discounts offered by the suppliers when the order quantity is large. There are two types of discounts: all units and incremental. The purpose is, as in the two previous models, to place an order quantity that will minimize the total cost.

It has been established that the role of inventory management is to ensure that stock is available to meet the needs of the beneficiaries as and when required. The inventory manager's job is to make inventory available at the lowest possible cost. In order to achieve this, the inventory manager must ensure a balance between supply and demand by establishing minimum holding stocks to cover lead-times. Therefore, the inventory manager must constantly liaise with the programs to keep abreast of changing needs and priorities. The mirror of the inventory management is the warehouse, which must always have sufficient stocks to cover the lead-time for replacement stocks to avoid stock-outs.

The Basic Principles of Warehouse and Inventory Management are:

1. Planning inbound receipt procedures.
2. Storage formalities e.g: location management, inventory control, occupational health and safety
3. Outbound delivery procedures.

Warehouse Management

In order for a company to be ready to respond to market needs, to ensure that it has the proper stock, it is essential to have a proper space to store it. This space is a focal point for product and information flow between sources of supply and beneficiaries, and it is broadly known as warehouse. A simple definition of a warehouse is: 'A warehouse is a planned space for the storage and handling of goods and material.' (Atieh et al., 2016)

To run an efficient facility it is essential to use information systems which are computer based, with relevant software to manage the flow of products in a warehouse. The operating situation is relatively stable and management attention is focused on the efficient and cost effective running of the warehouse operation.

The basic steps in order to select and set-up a warehouse is to determine needs and consider the volume of goods; speed of through-put required; as a transit point; breaking bulk location; an area for sorting and consolidating different goods; to enhance the speed of the response; to protect and account for inventor; and as a buffer in the event of a break-down or delay in the supply pipeline.

In a warehouse it is important for a company to apply policies to conduct all operations. It is about rules and regulations to ensure not only products are kept in a proper way, but also that staff involved and working are safe and operate profitably.

According to Richards and Grinsted (2016) examples of the types of policies are:

- organizational specific warehouse management policy and procedures guideline outline
- health and safety
- human resources management
- security
- pest control
- warehouse maintenance and cleaning
- quality control
- record keeping and reporting
- reverse logistics – Return of goods and exit strategy in the event of downscaling or shutting down operations
- disposal of obsolete and damaged goods.

In addition to that, it is important that there are well defined procedures which explain how step by step activities are carried out. It is useful to have a manual for all managers and staff which they can follow in their every day job. Warehousing is a very important aspect of a company, as it might be the back office work which is strategic and crucial for the whole company to run. The procedures will normally provide the step by step guidance (Singh and Singh, 2016) on how to manage each aspect of warehousing and may cover:

- receiving and issuing of supplies
- quality control or verification
- storage of goods

- how to control stock movement
- documentation flow
- how to detect and deal with stock losses
- how rejected material will be managed
- how to deal with unwanted material, obsolete and scrap, disposal.

Location and planning of a warehouse

The location of a warehouse is chosen based on the operations of a company, it might be near a factory/production area or in focal points crucial for exports etc. In relation to location, other factors also may affect the selection (Heizer et al., 2016):

- proximity to ports of entry and beneficiaries
- existing buildings
- security
- the context
- site condition
- access
- services
- land size available
- purpose of warehouse
- previous use of the facility
- floor weight
- access to labour

In addition to the above, it is important before choosing the location to ensure that important aspects are taken in consideration, such as:

- nature and characteristics of goods to be stored
- nature of handling equipment available
- duration of storage needed i.e. short term or long term
- the need for other activities, e.g. repackaging, labelling, kitting, etc
- access and parking for vehicles
- number of loading docks required and
- secure compound.

A warehouse, as an important department of all operations in a company is not a simple storage area; it is also the reception of goods/products as well the dispatching point (Dubey et al., 2016). Moreover it can host various other activities:

- equipment maintenance and parking
- charging of equipment batteries such as pallet trucks
- refuelling of trucks

- an area for garbage disposal e.g. empty packaging
- a quarantine area for keeping rejected goods, goods to be sent back or destroyed
- an employee rest area
- washroom and
- an administration office.

Therefore these requirements determine the planning of the main operating areas (Singh and Singh, 2016), and it is essential to:

- allocate space for each type of product and locating number
- allow sufficient space for easy access to the stacks for inspecting, loading and unloading. Stacks should be one meter from the walls and another meter between stacks
- sizing the goods receipt and dispatch area
- allow space for storage of cleaning materials and supplies
- allocate areas for damaged items by consignment number
- allow sufficient space to repackage damaged items and place it in separate stacks
- sufficient free space is needed to operate a warehouse effectively. When planning the size of a warehouse consider:
    - planning on having about 70-80% utilization of available space, whilst considering:
    - throughput rate
    - number of stock keeping units (SKU)
    - handling characteristics of items, etc.

Last but not least, some relief items require special attention in terms of the type and security of the storage area (Emmett and Crocker, 2016). For example:

- Medical supplies and drug shipments can contain a large number of small, highly-valued and, often, restricted items, many with a limited shelf-life. Thus, a secure area is required, as well as judicious attention to expiry dates.
- Hazardous products such as fuels, compressed gases, insecticides, alcohol, ether and other flammable, toxic or corrosive substances must be stored separately, preferably in a cool, secure shed in the compound but outside the main warehouse.
- Antibiotics and vaccines may require temperature-controlled cold storage arrangements, with sufficient capacity and a reliable, as well as a back-up, power source.
- With combustible items, such as alcohol and ether, specific attention is required when storing and handling. Inventory management techniques

need to be implemented to prevent wasteful surpluses and to ensure proper stock rotation to avoid costly losses due to expired goods. Procedures for controlling, preserving and releasing medical supplies and drugs should be established in consultation with the medical experts.

If all of the above are important to locate and plan a warehouse, it is now the moment to walk through a warehouse and determine the space utilization and handling factors. For example, it is better to store the most frequently picked items close to the shipping area. As mentioned above the warehouse operation is composed of four key work activities (Steinke and Fischer, 2016):

1. goods receipt
2. storage
3. picking
4. goods dispatch

In order to make an estimate of the total resources required, the first step is to estimate the requirements of the key work activities in turn and the level of demand and the second is to combine together everything during one working day. There might be simultaneous activities, or phases, in any case though the aspects to consider when managing a warehouse are minimum described below (Steinke and Fischer, 2016):

- planning the workload
- allocating resources
- space utilization & handling, receiving goods & storing goods
- assembling consignments
- despatching consignments
- disposal of goods
- pest control
- security
- inventory management
- handling and stacking techniques
- occupational health and safety

Warehouse operations managers are tasked with ensuring the efficient flow of products in and out of the facility, optimizing the building's layout, making sure orders are fulfilled and products are in stock, but not overstocked (Harb et al., 2016). Add ensuring profitability and minimizing overhead and labor costs to the mix, and warehouse operators have their work cut out for them. The warehouse manager is usually responsible for monitoring the movement of goods as they are transported from the supplier and for the control of stock movement in the warehouse facility (Singh and Singh, 2016). This means that

periodically should report to headquarters for any vital to change of stocking, or moving of products. He/she establish levels of operating stocks based on consumption/rate of usage. The stock levels shall be reviewed from time to time depending on current needs. Can also review and report for products which are no longer available, or are not moving in the supply chain.

Another important factor which should be mentioned in reference to warehouses is the equipment aspect (Emmett and Crocker, 2016). Depending in the turnout and the size of the company, there might be need of human resources instead of machinery and vice versa. However, there is the basic warehouse equipment which is required to ensure the smooth execution of work in a warehouse. All equipment should be properly stored when not in use and a regular maintenance schedule posted. Warehouse equipment is maintained to prevent accidents and breakdowns from occurring. Warehouse staff should be trained in standard daily maintenance practices and the correct use of equipment. Where necessary, they should be equipped with personal safety equipment such as work gloves, work boots, goggles, etc.
Required equipment may include:

- sufficient quantities of standard forms, calculators and stationery to keep proper storage records
- small tools for opening cases, such as hammers, pliers, crowbars, steel cutters
- tools and materials for store repair and simple maintenance
- supplies for reconditioning damaged packaging, such as bags, needles, twine, oil containers, stitching machine, strapping machine, adhesive tape and small containers or cartons
- a sampling spear for inspecting foodstuffs
- scales for weighing goods
- standard wooden pallets in sufficient numbers – ideally international
- standardization organization's "Euro" type (120 × 80cm)
- two-wheel hand trolleys for moving supplies within the warehouse
- a pallet-jack to move pallets
- a forklift where pallets are to be loaded and offloaded from trucks
- brooms, dust pans, brushes, shovels, sieves, refuse bins for cleaning and disposing of collected waste
- first aid kits, flashlights, fire extinguishers and other fire-fighting equipment both inside and outside the warehouse
- weighing scales and
- ladders.

The warehouse is a key component of the supply chain. It buffers uncertainties and breakdowns that may occur in the supply chain. When properly managed and appropriately stocked a warehouse provides a consistent supply of material when it is needed. As warehousing can be an

incredible important factor for the success of a company, the heart of all business there are broadly known best practices which can be implemented while planning and operating a warehouse. Among others safety first is crucial, in addition clean aisles and proper position for everything even for products which will be dispatched later the same day, identification system of all products if possible with adequate software system directly linked to inventories, detailed tasks appointed to staff through manual and repeated training, with the help of equipment and machinery the maximization of vertical space and all floor space.

Project Management

Project management (Turner, 2016) is the science (and art) of organizing the components of a project, whether the project is development of a new product, the launch of a new service, a marketing campaign, or a new clothing line.

The PMI's Project Management Body of Knowledge (PMBOK) defines projects as:
"A project is a temporary endeavor undertaken to create a unique product, service, or result."

The two basic characteristics (Andersen, 2016) of projects are, firstly that it is temporary and specific, which means it has a beginning and end, so defined scope and resources (whether people, cash, materials, or time) to achieve it. Secondly that it is unique, and not a repeated operation, it is not a part of normal business operations but a specific set of operations designed to accomplish a singular goal.

In order to accomplish a project, a team of people meet to work together and all must be expertly managed to deliver the on-time, on-budget results, learning and integrating the needs of organizations.

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. While the terms may differ from industry to industry, the actual stages typically follow common steps to problem solving—"defining the problem, weighing options, choosing a path, implementation and evaluation." The primary challenge of project management is to achieve all of the project goals within the given constraints. The primary constraints are scope, time, quality and budget. The secondary — and more ambitious — challenge is to optimize the allocation of necessary inputs and integrate them to meet pre-defined objectives (Steyn et al., 2016).

Project management has five separate phases (Archibald and Archibald, 2016):

1. Initiating
2. Planning
3. Executing
4. Monitoring and Controlling
5. Closing - completion

Project initiation

To initiate a project it is important to define goals, objectives and critical success factors for the project. The project initiation (Alotaibi and Mafimisebi, 2016) includes the conception of project, at this step the idea for a project will be carefully examined to determine whether or not it benefits the organization. In this stage a decision making team will identify if the project can realistically be completed. The initiative can be a result of covering needs, coming from inside or outside the organization: clients, market, other stakeholders, operations manager.

Project planning

Planning includes specific activities, detailed plans of how the work will be carried out, including time, cost and resource estimates, tasks, desired deliverables and the outcome, it is predefined what the project is and what users hope to achieve by undertaking the project (Turner, 2016). The determination of budget, schedule, timeline and resources needed are essential at this phase. The project manager lists all activities or tasks, how the tasks are related, how long each task will take, and how each tasks is tied to a specific deadline. The project manager will also need to manage assumptions and risks related to the project. The project manager will also want to identify project constraints. Constraints typically relate to schedule, resources, budget, and scope (Andersen, 2016). A change in one constraint will typically affect the other constraints. For example, a budget constraint may affect the number of people who can work on the project, thereby imposing a resource constraint.

Project execution

Resources' tasks are distributed and teams are informed of responsibilities. The actual execution of the project starts with the set-up of the team which will

undertake tasks to execute them and give deliverables (Alotaibi and Mafimisebi, 2016). The project manager knows how many resources can use and the budget for the project. In this phase the work must be done to deliver the service, product or desired outcome.

Project monitoring and control

The project manager is in charge of updating the project plans, schedule and timeline to reflect actual time elapsed for each task. With detailed reports and actual monitor the project manager is able to understand how well the project is progressing overall. A managing software system usually facilitates the administrative aspects of project management (James, 2016). During this phase, project managers may need to adjust schedules or do what is necessary to keep the project on track.

The important task of this phase is to ensure that a project stays on track and take corrective action if needed to ensure it does.

Project close

Formal acceptance of the deliverables and disbanding of all the elements required to run the project. After project tasks are completed and the client has approved the outcome, an evaluation is necessary to highlight project success and/or learn from project history. The deliverables, well defined in the beginning process have to be actual delivered, and the organization/client can have the service / product.

Projects and project management processes vary from industry to industry; however, these are more traditional elements of a project. The overarching goal is typically to offer a product, change a process or to solve a problem in order to benefit the organization (Verzuh, 2015).

In its modern form, project management dates back to the early 1950s, although its roots go further back to the latter years of the 19th century. As businesses realized the benefits of organizing work around projects - recognizing the critical need to communicate and co-ordinate work across departments and professions - a defined method of project management emerged.

For the history, it is important to mention that in 1966, a structured approach to project management was released under the name PRINCE2 process model (Oveisi, 2016). It is a generic project management method within a

clearly defined framework. The key to PRINCE 2 method is the creation of an agreed set of products, and not activities or tasks. It provides the basis for planning and control, that is, how then to coordinate people and activities, how to design and supervise product delivery, and what to do if products and therefore the scope of the project has to be adjusted if it does not develop as planned.

Many organizations nowadays do not employ full-time project managers. It is common to pull together a project team to meet a particular need, one that usually involves producing an end product or service that benefits the organization or effects change. The end result can be tangible or intangible. Project management is all about getting to that end result successfully.

Depending on the result, commonly referred as deliverables, and the actual results of a project, in consideration of the industry that it is coming from, there are important aspects in the process, phases of project management. The role of the project manager is one of great responsibility. The project manager's job is to direct, supervise and control the project from beginning to end. Project managers should not carry out project work - managing the project is enough (Svejvig and Andersen, 2016). A project manager should meet the criteria to undertake responsibility to begin and finish something in the restricted terms the project is planned with. Therefore, the selection of team, the monitoring of execution and the whole process need a skilled, multitasking, efficient, able to adapt to and manage changes person. In order to successfully manage a project, the project manager must define the project, reduce it to a set of manageable tasks, obtain appropriate resources and build a team to perform the work (Ramazani and Jergeas, 2015). The project manager must set the final goal of the project and motivate the project team to complete the project on time. The project manager must inform all stakeholders of progress on a regular basis. The project manager must assess and monitor risks to the project and mitigate them.

Project management is all about creating an environment and conditions in which to achieve a particular goal or objective - in a controlled manner with a team of people.

However, there are barriers, issues, risks that affect project success, and this can happen in any phase and process. The typical problems that might occur, and should be taken in consideration while planning the project execution are (Hornstein, 2015):

- Poor communication
- Disagreement

- Misunderstandings
- Inclement weather
- Union strikes
- Personality conflicts
- Poor management
- Poorly defined goals and objectives

The solution - in order to eliminate risks – is to create standard processes and procedures to deal with them.

Project management knowledge draws on ten areas (James, 2016):

- Integration
- Scope
- Time
- Human resources
- Stakeholder management
- Cost
- Quality
- Procurement
- Communications
- Risk management

As mentioned the three most important items that project management is dealing with are time, cost and scope (Svejvig and Andersen, 2016). These form the vertices with quality as the central theme, the triple constraint can be shown in figure below and can be explained in words, the projects must be within cost, must be delivered on time, must be within scope and must meet customer quality requirements.

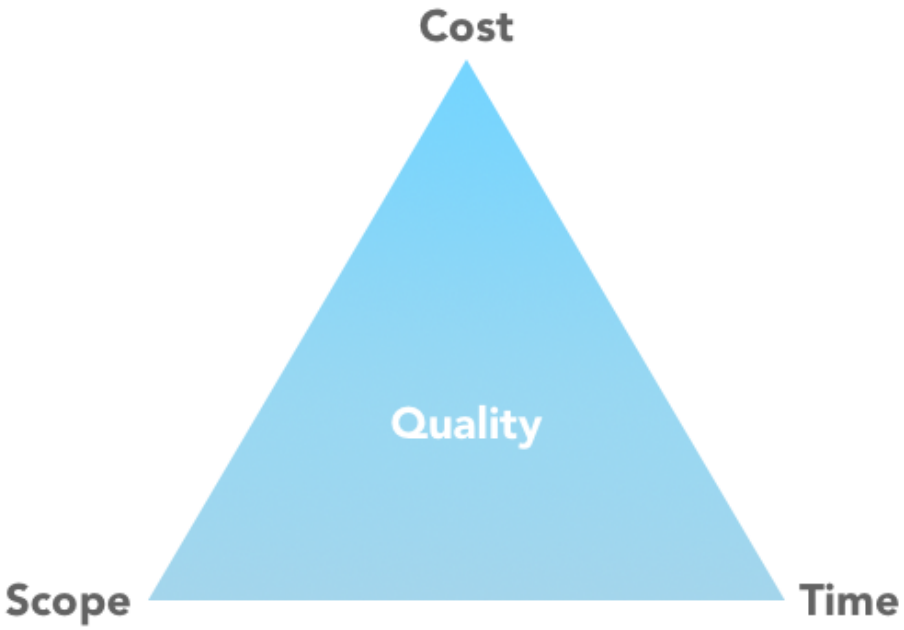


Figure 6: Three constraints of Project Management (Source: Cleland and Ireland, 2006)

More recently, the project management triangle has given way to a project management diamond - with cost, time, scope and quality as the four vertices and customer expectations as a central theme:

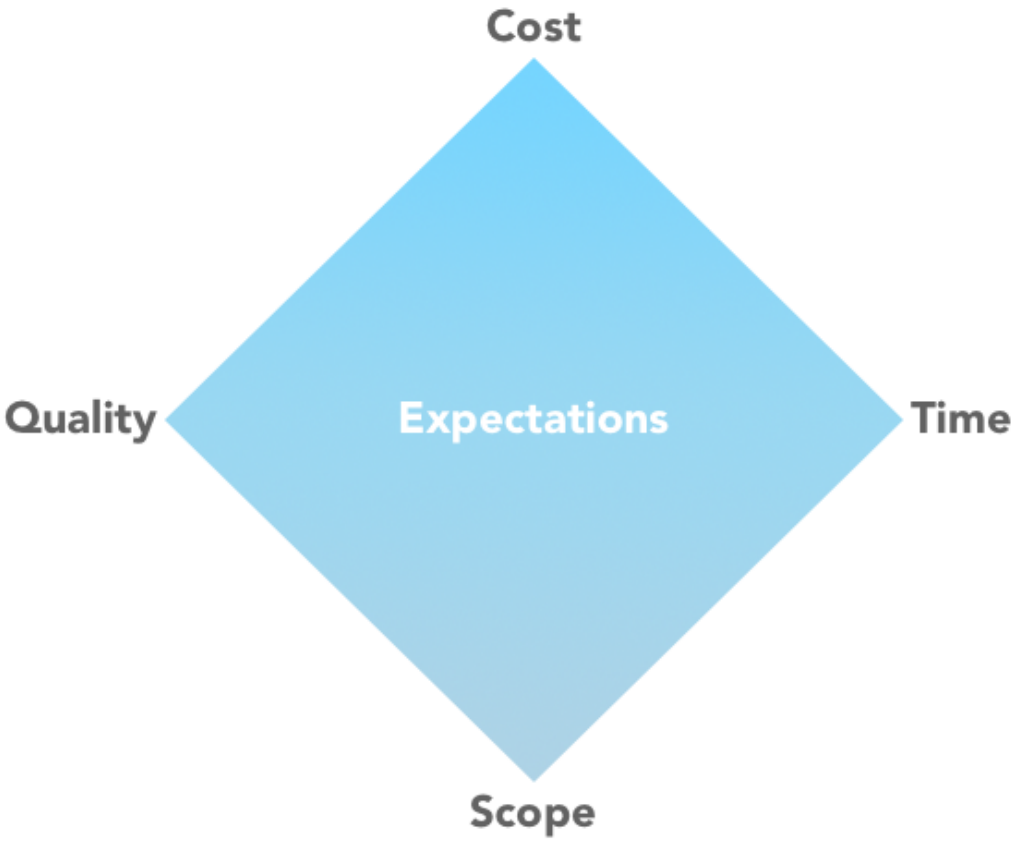


Figure 7: Project Management Diamond (Source: Cleland and Ireland, 2006)

Project management is without doubt core function of operations management, having its own specific goals, to be delivered through a defined process and within a time limit. These three elements can in some views provoke questions about the similarity or not between them.

Operations management is an ongoing organizational function handling the process to transform inputs to outputs, whereas project management is about handling a specific project which leads to the creation of a unique product, service or result.

Timewise therefore project management has a limit, which is the creation of one of the above, whereas operations management is an ongoing process which have repetitive, permanent, or semi-permanent functional activities (Choi et al., 2016).

Furthermore, operations are permanent endeavors that produce repetitive outputs. Resources are assigned to do the same tasks according to operating procedures and policy. In contrast, projects are temporary and help the business to meet organizational goals and to respond quickly and easily to the external environment. Organizations use projects to change operations,

products and services to meet business need, gain competitive advantage and respond to new markets.

Project management also aims at supporting the business; however it does it through executing and integrating strategic goals that will aligning a business's operations with internal or external customers.

In conclusion, the management of these two systems: projects and operations is often quite different, and as such requires the development of distinct technical skills and management strategies. Projects require project management and operations require business process management or operations management.

Projects and operations do meet at various points during the life-cycle of a product or service (Choi et al., 2016). For example when:

• Re-engineering business processes,

• Developing or changing product and services, and

• Improving operations or product development.

Location Strategy

Location strategy is a plan for finding the best possible location for a company by identifying company needs and objectives and matching them with the appropriate locations (Khanna, 2015). If a company selects the wrong location, it may fail to have access to customers, workers, transportation, materials, and so on. Therefore, location often plays an important role in a company's profit and overall success. By being a long-term decision, the decision greatly affects both fixed and variable costs as once committed to a location, many resources and costs issues are difficult to change.

An operations manager has an innumerable of criteria that needs to be articulate in order to conclude where the plant should be positioned. The most important factors that affect the location decision can be summarized below:

- *Facilities*. It is a planning which determines what kind of space a company will require in its short-term and long-term goals. This relates to the size of the company. Furthermore, Infrastructure is important as companies must consider what their infrastructure requirements will be, including what modes of transportation they will need and what kinds of telecommunications services and equipment they will need.

- *Labor Productivity*: Wage rates are not the only cost as you have to keep in mind that potential lower production may increase total cost at the end.
- *Exchange Rates and Currency Risks*: As rates change over time, the exchange rate can have a significant impact on cost structure.
- *Costs*: Are divided in tangible (easily measured costs such as utilities, labor, materials, taxes) and intangible (less easy to quantify and include education, public transportation, community, quality-of-life). One of the most important cost is the transportation cost which can be found under Logistics operations. So it is crucial that an evaluated appraisal of the transportation options and costs for the potential manufacturing and warehousing facilities should be carefully assessed.
- *Political Risk, Values, and Culture*: National, state, local governments attitudes toward private and intellectual property, zoning, pollution, employment stability may be in flux. The worker attitudes towards turnover and unions and also global cultures have different attitudes towards punctuality, legal, and ethical issues. All the above factors must be taken in serious consideration as can create conflicts and decrease the productivity and the effectiveness of the organization.
- *Proximity to Markets*: This factor is very important to services plus just in time systems or high transportation costs may take it important to manufacturers. Furthermore, trade zones is crucial point as companies may want to consider the benefits offered by free-trade zones, which are closed facilities monitored by customs service's where goods can be brought without the usual customs requirements.
- *Environmental regulation*: It has an impact on the relationship between a company and the community around a potential location. Companies should consider a variety of environmental policies that might have an effect on their operations in different locations
- *Proximity to Suppliers*: Affects the access to supplies and goods important as much as the transportation costs.
- *Proximity to Competitors* : This is called clustering and is often driven by resources such as natural information, capital, talent and labor resources. So for example a wine making company will locate somewhere with natural resources of land and climate while on the other hand size a software developer somewhere with talent resources of bright graduates in scientific/technical areas.

As operations management constantly evolves, we see some new trends emerging also in the location strategy.

- *Globalization and technology*: These two have been by far the biggest drivers of change in the location decision process over the last thirty years. Due to technology improvements, economic growth, international expansion, globalization location strategy has become more flexible giving more opportunities to the managers.
- *Telecommunication systems*: Telecommunications technology has created the "virtual office" of employees working from remote locations. The growth of the virtual office has impacted location strategy in that some companies no longer need as much workspace because many employees work from remote sites. When these employees need to work at the office, they can call and reserve office space for themselves. The decrease in facility size can lead to millions of dollars' worth of savings each year, while increasing productivity.
- *Location Database*: have enabled companies to do initial screening themselves, hence reducing their need to rely on economic developers to providing only very specific information and details on locations.
- *Ease of finding available office space*: Companies also now expect to move into new facilities more quickly than in the past, so they tend to focus more on leasing facilities than purchasing land and building new facilities. Also, by leasing facilities, companies can relocate every few years if the market requires it.

Human Resources Management

Human resources management (HRM) (Brewster et al., 2016) refers to the management of people in organizations. It comprises the activities, policies, and practices involved in obtaining, developing, utilizing, evaluating, maintaining, and retaining the appropriate number and skill mix of employees to accomplish the organization's objectives. The goal of HRM is to maximize employees' contributions in order to achieve optimal productivity and effectiveness, while simultaneously attaining individual objectives (such as having a challenging job and obtaining recognition), and societal objectives (such as legal compliance and demonstrating social responsibility).

The objectives of HRM include (Wilton, 2016):

- assisting the organization to have the right numbers of employees in order to achieve its strategic and operational goals
- helping to create a good climate within the organizations in which employees are inspired to develop their skills
- maintaining performance standards and increase productivity through job design, training and development

- ensuring effective two-way communication
- helping to create and maintain a balanced relationship between the employer and the employee
- helping to create and maintain a safe and healthy work environment
- developing programs to meet the economic, psychological, and social needs of the employees
- helping the organization to retain productive employees
- ensuring that the organization is in compliance with provincial/territorial and federal laws affecting the workplace (such as human rights, employment equity, occupational health and safety, employment standards, and labour relations legislation).

When HR aligns with the organization's strategy many advantages arise, such as growth to employee's commitment, better financial results (Heizer et al., 2016). Also, the organization can retain the right employees for the organization's business and culture.

Human resources management it is not only an administrative function but plays a strategic role crucial to the success of the organization. There are seven main roles human resources management has in almost every organization (Mathis et al., 2016).

1. Staffing

   One of the major tasks in HRM is staffing. Staffing (Dickmann et al., 2016) is the entire hiring process from posting a job to negotiating a salary package. Staffing consists of four main activities:

   - *Development of a staffing plan***.** The staffing plan can show how many people should be hired based on revenue expectations.
   - *Development of policies to encourage multiculturalism at work.*
   - Multiculturalism in the workplace is becoming more and more important, as we have many more people from a variety of backgrounds in the workforce.
   - *Recruitment.* This involves finding people to fill the open positions.
   - *Selection.* In this stage, people will be interviewed and selected, and a proper compensation package will be negotiated. This step is followed by training, retention, and motivation.

2. Development of workplace policies

The workplace policies provide fairness and cohesion within the organization. It is human resources' job to develop these policies in collaboration with other departments, as HR do not and cannot work alone. In order to develop these policies, HRM, executives and management work together. Some workplace policies involve (Mathis et al., 2016):

- Discipline process policy
- Vacation policy
- Dress code policy
- Ethics policy

3. Compensation and benefits

   Compensation (Brewster et al., 2016) includes anything the employee receives for his/her work. HR managers should make sure that compensation is fair and high enough in order to attract people to work for the organization and also competitive comparing to other similar positions. Experience, education, years of works are some aspects which HR takes into consideration in order to calculate payment. Employee's compensation consist of:

   - Pay
   - Health benefits
   - Retirement plans
   - Stock purchase plans
   - Vacation time
   - Sick leave
   - Bonuses
   - Tuition reimbursement

4. Retention

   Retention (Tracey, 2016) includes everything the organizations does in order to keep employees satisfied and therefore within the organization. Low and unfair payment is considered to be the main reason why employees leave but there are other reasons such as problematic relationship with co-workers and managers, poor workplace environment, issues around the job etc.

5. Training and development

   Once a new employee has been hired, it is an imperative need firstly to be trained to do the job he is hired for and secondly to continue and develop new skills. Training could be an aspect of retention, as employees who feel that they are developing new

skills and become better at what they do, become happier in their job. Also, this could result higher productivity in the overall performance of the organization.

6. Dealing with laws affecting employment
   HR department must be familiar with all the laws referring to the workplace. Due to the fact that laws change very often it is HR's obligation to keep up with the changes and communicate them to the employees. Some of these laws are:
   - Discrimination laws
   - Health-care requirements
   - Compensation requirements such as the minimum wage
   - Worker safety laws
   - Labor laws

7. Worker protection
   Safety is a major consideration in all organizations. Oftentimes new laws are created with the goal of setting federal or state standards to ensure worker safety. Unions and union contracts can also impact the requirements for worker safety in a workplace. It is up to the human resource manager to be aware of worker protection requirements and ensure the workplace is meeting both federal and union standards (Heizer et al., 2016). Worker protection issues might include the following:
   • Chemical hazards
   • Heating and ventilation requirements
   • Use of "no fragrance" zone
   • Protection of private employee information

Figure 8: Main tasks of HRM (Source: Dias, 2012)

Operations Strategy

Operations management is very important to an organization due to the fact that manages most of the organization's resources. Strategy of a business organization first appeared in the 1960s, when the need of long-term business planning occurred. Strategy is the direction and scope of an organization over the long-term, which achieves advantage in a changing environment through its configuration of resources with the aim of fulfilling stakeholder expectations (Johnson, Scholes & Whittington, 2005). Operations strategy must be linked with business and corporate strategies as the development of this linkage tend to make companies more successful and profitable (Stonebraker and Keong Leong, 1994). Strategy is crucial to any organization which seeks prosperity over the long-term. The combination of these two gives us operations strategy (Cachon, 2016) which concerns the pattern of strategic

decisions and actions which set the role, objectives and activities of operations (Slack, Chambers & Johnston, 2004). The use of the word “pattern” indicates that there is a consistency in strategic decisions over time. Operations strategy is vital to any organization for two basic reasons, the first is that it sets the boundaries in which its business strategy can be implemented and the second is whether its operations are capable of giving a competitive advantage.

Operations strategy concerns two related issues: operations strategy process and operations strategy content (Jagoda et al., 2016). Operations strategy process is all about how the organization evolves a proper operations strategy and operations strategy content involves the basic decisions that need to be taken in order to form an operation strategy.

Operations strategy process (Radnor and Bateman, 2016)
There are four perspectives regarding operation strategy, a top-down or a bottom-up process (Sting and Loch, 2016) regarding business and corporate strategies, but also process based on market requirements or capabilities of the operation resources (Slack and Lewis, 2002).

1. *Top down process* determine the organization’s operation strategy. First the operation task should be identified according to the general business strategy of the organization. Once the task is recognized, the operation strategy should be developed.
2. *Bottom up process* uses actions and decisions made in operations through the previous years in order to articulate the operation strategy. At first these actions and decisions may appear random but over the years they help constitute a coherent operations strategy.
3. *Process based on market requirements* (Kim, 2016) emphasizes to the market environment in which the organization operates. Terry Hill (1985) focused on the marketing strategy of an organization and how it should be linked to the operation strategy in order to achieve orders of its products and services in the market area. He also believed that there are two types of criteria that must be taken into consideration by any organization in order to win orders. The first is market qualifying criteria and involves all those factors that must be satisfied before the customer decides to make a purchase. The second is order winning criteria and includes all those factors that actually urge the customer in making a purchase. Therefore, operation strategy must gratify market qualifying criteria and be superior at order winning criteria.
4. *Process based on the capabilities of operation resources* uses its excellence in operations in order to form the organization’s strategy. The strategy development should contain information about current operational capabilities and an analysis on how they can be developed

in the future. This should lead to a decision of the appropriate market in which the organization could expand and be competitive.

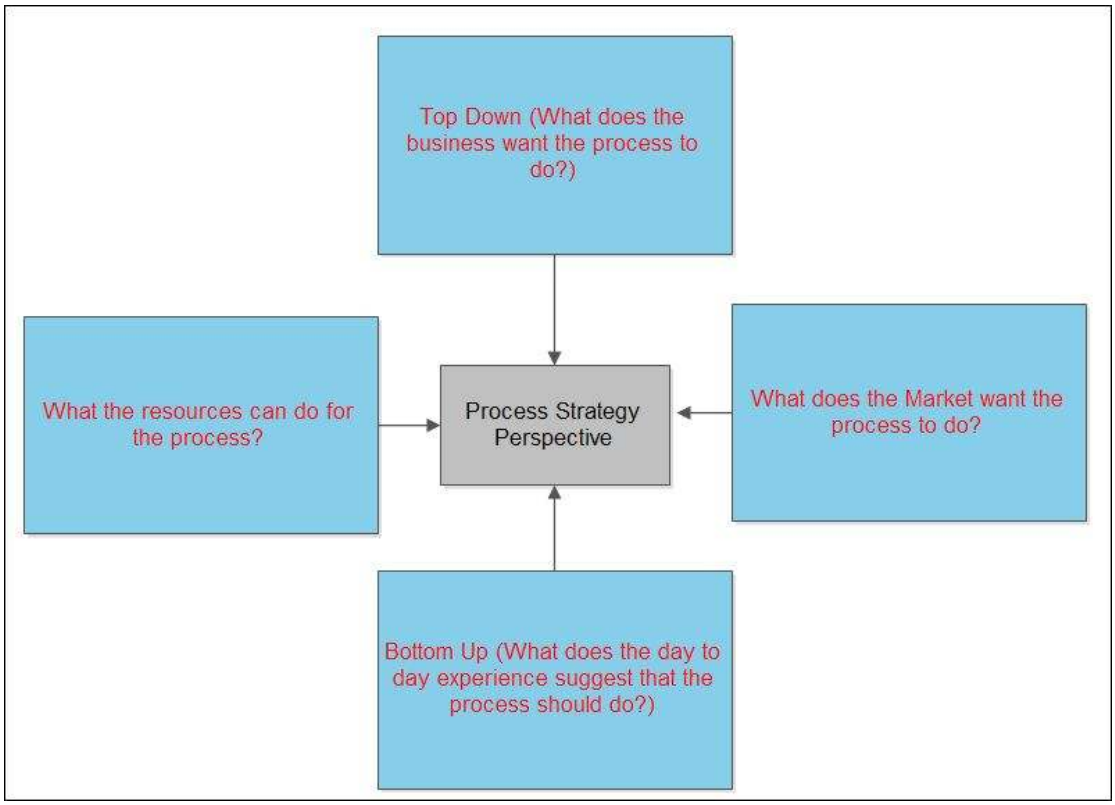


Figure 9: Four perspectives of Operations Strategy Process (Source: Slack et al., 2012)

Operations strategy content

The decisions that need to be taken in order to develop an operation strategy are usually classified in structure and infrastructure. Structure is the physical characteristics of operations and infrastructure is the people and systems of operations. The structural decisions contain (Suri, 2010):

- Facilities: location, size of resources. Decisions on where the location of the facilities should be, the size it should have, which products must be produced in each facility and which market should each location serve.
- Capacity: the capacity of operations and their ability to respond to changes in customer demand. These decisions are concerned with the use of facilities, for example through shift patterns, working hours and staffing levels. Decisions about capacity will affect the organization's ability to serve particular markets from a given location.
- Process technology: equipment technology that should be used in the operation process.

- Supply network: decisions about suppliers and their location, which operations are conducted in-house or are outsourced. Manage good relationships with suppliers.

Structural decisions often require big capital investment and therefore set the direction of operations for many years ahead. So it is crucial that these decisions should be taken very carefully and according to plans and analyzes. The infrastructure decisions include (Bicheno, 2008):

- Planning and controlling: involves the systems used for planning and controlling the operations
- Quality: assure quality standards for the products and services
- Work organization: set responsibilities and organizational structures in operations
- Human resources: recruit and train the staff properly
- New product development: develop new product based on market demands through systems and procedures
- Performance measurement: financial and non-financial performance management and how it links with recognition.

As it can be seen, these decisions are also very important for the organization and should not be underestimated. It may be easier to change some of the infrastructure decisions nevertheless that fact does not mean that the organization should give less thought when making them (Suri, 2010).

Product Design

The main function of product/service design (Jindal et al., 2016) is to generate ideas and concepts and convert them into usable objects and services. The goals of designing a product/service are to find new products to design, develop and market but also make that product a competitive advantage by providing differentiation, low prices and accelerated response. Designing in order to be successful must emphasize in some principles such as translate market's needs, improve existing product and develop new ones, formulate quality goals and cost targets, construct and test prototypes.

At the stage of product design there are four steps that almost every organization follows and these are:

Step 1 – Idea development

Every product or service begins with an idea. In order to remain competitive, organizations must design and produce innovative products regularly. These ideas might come from the internal (staff, research and development department) or external (customers, competitors) environment of the organization.

Ideas from customers: marketing department is the link between customers and product design and is responsible for identifying new products opportunities that may come from collecting information and buying patterns from customers. This kind of information may arise from researches and questionnaires. Management may like an idea but if this idea does not apply to the customer's preferences it could turn out to be a disaster for the organization.
Ideas from competitors: by observing another's organization product and services, there is the option whether to imitate or come up with a different or better idea. There are two methods of collecting ideas from competitors. The first is through reverse engineering, which is taking a product apart in order to understand how the competing organization made the product and analyze its parts and features. With this method, the organization has the advantage to use all of the best parts and features from different products.
Ideas from staff: staff has an everyday interaction with customers and through complaints or suggestions from customers, staff may come up with ideas for innovative and more efficient products.
Ideas from research and development (R&D): Research and development is a function operating in some organizations and its aim, as its name implies, is firstly, to research market in order to come up with new ideas and knowledge and secondly, develop ways to utilize and operationalize these ideas that derived from the research.

Step 2 – Product screening

Product screening is the evaluation of the developed idea in order to determine its success or failure. The product screening team evaluates the idea according to the needs and criteria of the three major functions of the organization. These are operations, marketing, and finance. The criteria analyzed in every function are:
Operations: operations examines issues and answer questions such as, what are the production needs of the proposed new product and how do they match to the existing resources, will new facilities and equipment will be needed, Does the organization have the right skills to manufacture the product, can the material for production be readily obtained.
Marketing: marketing analyzes issues such as, what is the potential size of the market for the proposed new product, how much effort will be needed to develop a market for the product and what is the long-term product potential.
Finance: finance explores issues such as, what the proposed new product's financial potential, cost, and return on investment is.

Step 3 – Preliminary design and testing

Once an idea has passed the screening stage, the preliminary design and testing begins. At this stage, design engineers turn the performance

specifications into technical specifications and prototypes are built and tested. According to the test results and the process of revising changes are made in order to make a prototype that meets with customer's demand and preferences. Therefore, all this process continues until all the problems have been worked out.

Step 4 – Final design

After all the testing, the product reaches the final stage, which is the final design. This is where the final product specifications are made. The final specifications are then translated into specific processing instructions to manufacture the product, which include selecting equipment, outlining jobs that need to be performed, identifying specific materials needed and suppliers that will be used, and all the other aspects of organizing the process of product production.

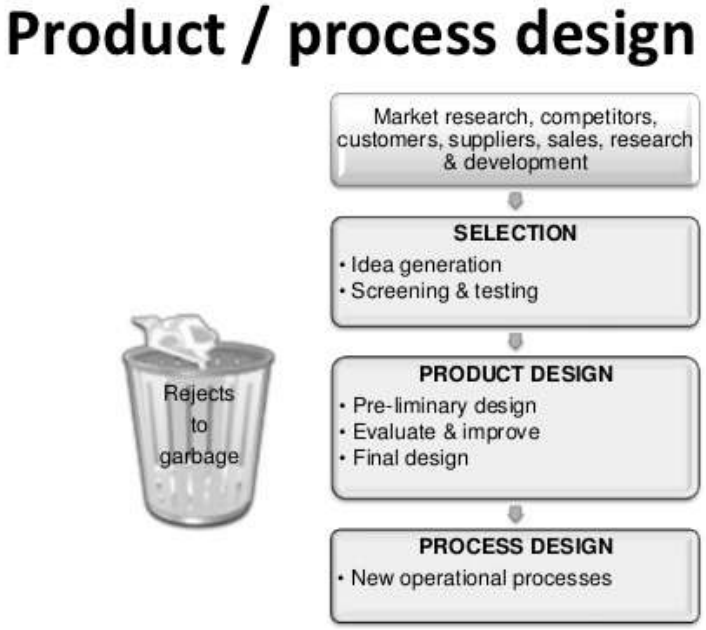


Figure 10: Product Design Stages (Source: Ulrich, 2003)

During product design there are some factors that need to be considered and these are design for manufacture and product life cycle.

Design for manufacture (DFM)

Behind every product that is made to please the end customer, there is a procedure in order to manufacture it. This procedure must be well planned, meaning that the organization must take into consideration how easy or difficult is to manufacture the product. Design for manufacture (DFM) is a series of guidelines that should be followed in order to produce a product easily and profitably. DFM guidelines focus on two issues:

1. *Design simplification* means reducing the number of parts and features of the product whenever possible. A simpler product is easier to make, costs less, and gives us higher quality.

2. *Design standardization* refers to the use of common and interchangeable parts. By using interchangeable parts we can make a greater variety of products with less inventory and significantly lower cost and provide greater flexibility.

Product life cycle

Every product/service has a life cycle that is composed from four stages: Introduction, Growth, Maturity, and Decline (Reijers et al., 2004).

1. *Introduction*. After appropriate research and forecasting it is introduced to the market. The research is necessary in order to assure that it is adequate for the specific market in the specific time. Operations will need to maintain flexibility in terms of design changes and response to changes in demand level.
2. *Growth*. In this stage the product/service stabilizes in the market and the demand increases. In order to determine the time it will remain in the market, an effective forecasting of demand becomes imperative. The main concern of operations will be to meet a rapid increase in demand whilst maintaining quality levels.
3. *Maturity*. In this stage the product/service reaches a steady demand so fewer improvements are needed. Now the forecast demand should estimate the time remaining for the product/service to die out. The main issues for operations will be minimizing costs and maintaining a dependable supply.
4. *Decline*. It is the stage in which the offer of the product/service should terminate or replace the existing product with a new one or even find a new use for it.

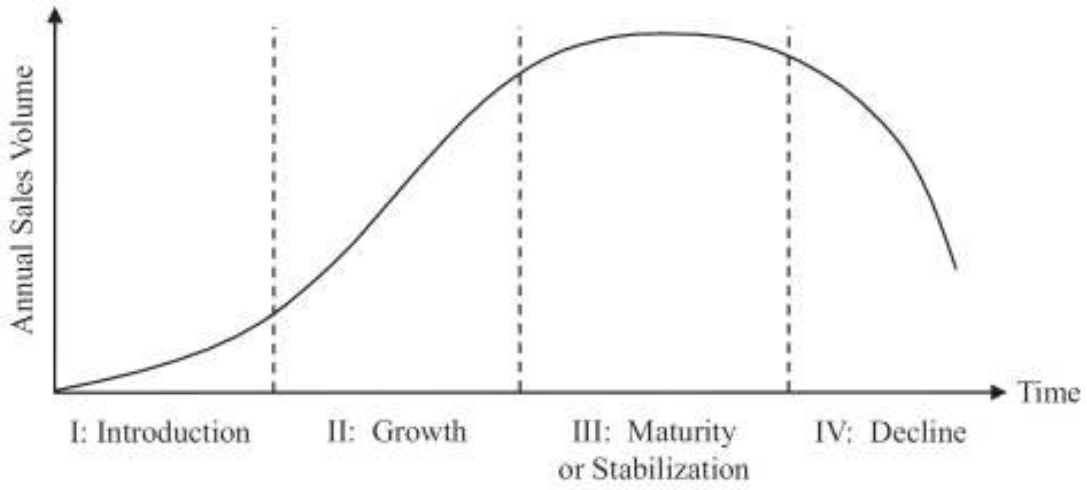


Figure 11: Product Life Cycle (Source: Wikipedia)

There are various methods of designing and a company's goal is, by considering the target market, to choose the right one in order to establish a good productivity. These methods include standardization, mass customization, delayed differentiation, modular design, robust design. Standardization (Ding and Keh, 2016) is the process of developing technical standards and it applies in a specific production regarding products /service that stay almost the same over the years. Some of the advantages of standardization are lower design cost, routine in purchasing, handling and inspection of procedures as the disadvantages are high cost of design changes prevent organizations to improve their products. Mass customization (Wang et al., 2016) is a process of developing standardized products but incorporate customization. Delayed differentiation (Tseng and Hu, 2014) is a form of method that leaves the product uncompleted until the customer's preferences are known. Modular design subdivides a system into smaller parts. These parts can be manufactured independently and be used in other systems. Modular design (Bonvoisin et al., 2016) has advantages as low cost production, flexibility in design, augmentation. Examples of modular design are cars, computers, elevators. Robust design (Siva et al., 2016) focuses on improving the fundamental function of the product or process, thus facilitating flexible designs and concurrent engineering. Indeed, it is the most powerful method available to reduce product cost, improve quality, and simultaneously reduce development interval. (Operations Management Product and Service Design n.d)

Planning and Control

Develop plans, procedures and strategies in order to achieve a stated objective. Planning and control reconciles supply and demand and its purpose

is to reassure that operations run effectively so that customer's demands are satisfied (Krishman et al., 2010).

Planning involves selecting missions and objectives and the actions to achieve them. It requires decision making, which is, choosing from among alternative future courses of action (Mahajan and Van Ryzin, 2001). However, clearly a plan does not always assure that the events planned will actually happen. There are so many things that can change such as the decisions of the customers, the time the suppliers deliver the products, failure of machines or even absence of staff. Controlling activities are those that assure that the performance in the organization takes place in accordance with planned performance (Smith and Agrawal, 2000). Control makes the necessary readjustments which allow the operations to deliver the objective that the plan has set.

Since the word "*future*" was aforementioned, it is rational, at this point, to classify the terms. In the long term, operations managers are interested in what they intend to do, the resources that may be needed and the objectives they wish to accomplish. Therefore, they set the plan of the organization, considering an aggregated demand, without the aspect of control because there is not much to control. They, basically concern about the financial targets they want to achieve. In the medium term, a partially analyzed demand is taken into consideration so planning and control is more accurate. The aspect of control is used in order to deal with the unpredictable issues that may come up and assure to minimize the deviations from the original plan. Financial and operations objectives must be achieved. In the short term, a disaggregated demand is necessary in order for the resources to be put to place. Interventions are made so that the plan has no deviations (Wang et al., 2012).

The four main activities of planning and control (Figure 12) are loading, sequencing, scheduling and monitoring and control (Wang et al., 2012).

1. *Loading* is the quantity of work allocated to the processes appropriately in order to manufacture products. Either it is machine or people, loading must take into account the actual valuable working time. As a machine does not work all the time due to failure or weekends or false maintenance so do people due to rest breaks, idle time or even boredom.
2. *Sequencing* is the activity where decisions are taken on the order in which the work should be tackled
3. *Scheduling* comes after sequencing and involves a detailed timetable showing when the work must start and when it must stop in all the part of operations.

4. *Monitoring and control* is the activity of supervising all the operations to assure that the original plan is indeed happening. If it is not, then, re-planning becomes a necessity.

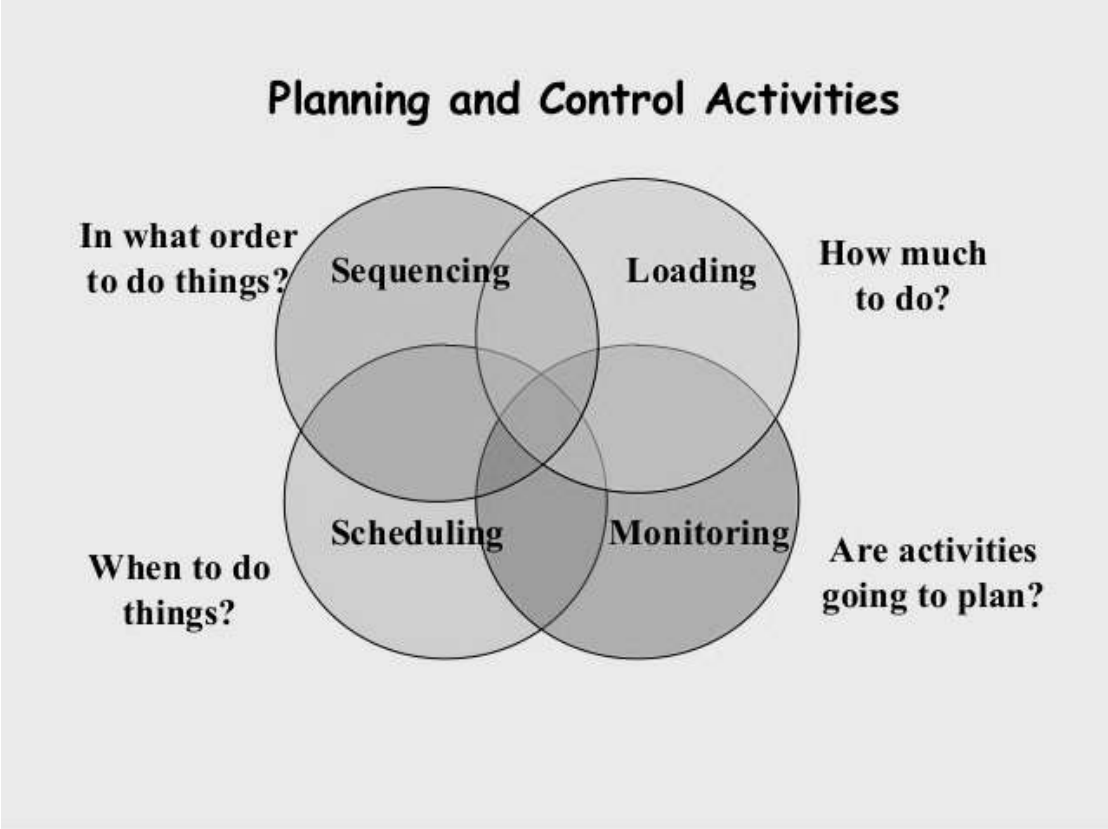


Figure 12: Main activities of planning and control (Source: Burke, 2013)

Productivity and Quality

Productivity

Productivity and quality have been some of the issues receiving significant attention both within individual organization and on a national level. Productivity is very important to an organization as it measures to what extent the resources of an organization are being used effectively in transforming inputs into outputs (Bowie, 2002).

The two key words of productivity can be "*effective*" and "*efficient*", moreover in operations management terms: "*A business system should be both effective and efficient. A system is effective if it achieves the desired results, and a system is efficient if it uses a 'reasonable' amount of effort (inputs) to achieve the desired outputs*" (Vonderembse and White, 1991).

Productivity measures may be used in variety of ways such as to compare the overall performance of the organization with competitors or similar organizations, to enable management to control the general performance of the organization by controlling the performance of individual sectors of the organization, to compare the relative benefits accruing from the use of differing inputs, or varying proportions of the same inputs and last to give other internal management purposes. Inputs to the production process can affect productivity. The quality of materials the reliability and precision of the equipment and the skill of management all affect productivity. In seeking productivity improvement, management needs to examine the overall impact of changes in the production system, rather than focusing narrowly on reductions in labor costs (Colvin, 2000).

Assuring the importance of productivity, it becomes necessary to find ways to improve it. Such as improving efficiency by lowering total operating costs, generating savings in labor and machine time and reducing waste; improving effectiveness by making better decisions regarding communication, organizational design and staffing; achieving higher performance by increasing quality, reducing accidents and lost time, and minimizing equipment failures; developing better organizational health by improving morale, satisfaction and cooperation (Moinzadeh, 2002).

Quality and Total Quality Management

Quality is defined as the totality of features and characteristics of a product or service that bears on its ability to satisfy given needs (Raman and Ton, 2004). Consumers demand high quality in goods and services at a fair price. Quality characteristics which the customer looks for in a product can be performance, features, reliability, conformance, durability, serviceability, aesthetics, other perceptions (Colvin, 2000). If these characteristics are not given to them, there are plenty similar products to turn into which meet their expectations. Therefore, business and industry have realized that quality is vital to survival.

Last but not least, a very important aspect in quality is total quality management (TQM) (Mitra, 2016), and is always presented in a significant way in theory and bibliography. TQM is the integration of all functions and processes within an organization in order to achieve continuous improvement of the quality of goods and services at the most economical levels. The goal is customer satisfaction (Chen, 2003). TQM focuses on the following:

- meeting the needs and expectations of customers
- covering all parts of the organization
- including every person in the organization

- examining all costs which are related to quality, especially failure costs and getting things 'right first time'
- developing the systems and procedures which support quality and improvement
- developing a continuous process of improvement

The main principles of TQM can be summarized in three statements (Whitaker, 2016). Firstly, quality is defined by the end customer thus their needs must be met. This means that the organizations must consider quality both from internal and external factors, meaning the producer and the customer. The organization must view thing from the customer's perspective. Secondly, quality is the responsibility of all employees in all parts of the organization. In order to achieve involvement across the whole organization, TQM uses the concept of internal customer and internal supplier. The implication is that bad quality provided within an organization will eventually have impact to the external end customer. It is therefore crucial that internal customer's needs are satisfied. Thirdly, the continuous process of improvement culture implants a culture which identifies the importance of quality.

Production Management

Production management is a process of planning, organizing, directing and controlling the activities of the production function. It combines and transforms various resources which are used in the production's subsystems of the organization into value added product in a controlled manner (Slack et al., 2004).

Objectives of Production Management

The objective of the production management is "to produce goods and services of the right quality and quantity at the right time and the right manufacturing cost (Daft and Marcic, 2016)".

Right Quality

The quality of product established is based upon the customers' needs. The right quality is not necessarily the best quality. It is determined by the cost of the product and the technical characteristics as suited to the specific requirements (Harrison and van Hoek, 2002).

Right Quantity

The manufacturing organization should produce the products in the right number. If they are produced in excess of demand the capital will block up in the form of inventory and if the quantity is produced in short of demand, it leads to shortage of products (Harrison and van Hoek, 2002).

Right Time

Timeliness of delivery is one of the important parameter to judge the effectiveness of production department. So, the production department has to make the optimal utilization of input resources to achieve its objective (Harrison and van Hoek, 2002).

Right Manufacturing Cost

Manufacturing costs are established before the product is actually manufactured. Hence, all attempts should be made to produce the products at pre-established cost, so as to reduce the variation between actual and the standard (pre-established) cost (Harrison and van Hoek, 2002).

Operations Research

Operations Research (Hazen et al., 2016) is the science when applied the decisions are documented. It is a methodology rather than a set of mathematical techniques. The Greek Operational Research Society defines Operational Research as “the scientific preparation of decisions”.

The main concept of operations research is addressing the problems of management in an organized process in order to find solutions for every problem, if not the best solution at least a satisfactory one.

Historically, the development of Statistics during the interwar period paved the way for operational research, which began to get developed in Great Britain (1936-1937). During the Second World War, the usage of operational research groups in the general staff in order to address various issues and primarily organizational and operational (radar, Battle of Britain, antisubmarine warfare), showed the greatest benefit of operational research. From Greta Britain operational research spread to the US where in the first groups worked around 1942 (Simhi – Levi et al., 2000).

The great successes of the new branch in the military field quickly attracted the interest of industry. In this fact contributed, also, the “industrial boom” that

followed the war. It was found that the problems that had to be faced by the new and ever growing in size enterprises were practically the same as the recent military problems. The year 1956 was a milestone in the history of operations research since it was first introduced on a commercial scale the computer and allowed the realization of operational research studies in any kind of business (Slack and Lewis, 2002).

Operational research has broad application field practices relating to decision-making in complex systems and processes (Hazen et al., 2016). The problems for which organizations seek the most favorable solution are due to the fact that the available resources are limited. Also, the complexity of the problems makes the management unable to understand the consequences of the decisions.

The problems faced by operations research are mainly classified into the following categories (Jacobson, 2016):

- Inventory management.
- Inventory replacement and maintenance.
- Competition, Waiting.
- Design work.
- Resource Allocation.
- Quality Control.
- Social Organization.
- Production.
- Sales.
- Project Planning.
- Energy policy.
- Environmental Protection (Slack and Lewis, 2000).

The main methods and techniques used by business researchers are the following (Jacobson, 2016):

- Linear Programming.
- Integer Programming.
- Nonlinear Programming.
- Dynamic Programming.
- Queues Theory.
- Communication Theory.
- Information Theory.
- Decision Theory.
- Game Theory.
- Equipment Replacement Theory.
- Inventory Control Theory.
- Theory of graphs and networks.
- Theory of stochastic processes.
- Simulation (Rushtan et al., 2006).

The operations research applied to real decision problems by following specific steps (Hitt et al., 2016):

- Formulation of the problem (diagnosis malfunction symptoms of the system, data collection, analysis of the decision, setting targets e.t.c.).
- Construction of the model of operational research. These models are divided into deterministic and stochastic.
- Development of computational techniques (algorithms), where necessary.
- Solve the model.

- Implementation and support of the final solution (Rushtan et al., 2006).

Operational Research Problems

Resource Allocation Problems

Resource or means allocation problems e.g. workers, materials, machines, money in different alternative or antagonistic activities among them, exist in cases where the available resources are not sufficient enough to perform each of these activities to the maximum extent desired so we seek to allocate resources so as to optimize the overall effect (e.g. cost, profit).

The examples of resource allocation problems are numerous both in national economy and the smallest part or activity of a business. For example, the long-term economic development program of a country, the investment planning of a company, the workers distribution in jobs, the engine installation in a factory, the transportation of the products from factories or warehouses to various destinations, the mixing raw materials to produce finished products, etc (Slack et al., 2004).

In order these problems to be solved the mathematicians use programming (linear, non-linear, integer, dynamic programming) as well as simulation, graph theory and networks and theory of stochastic processes.

Inventory Control Problems

It is inconceivable, nowadays, the production to exist without inventories. Maintaining, however, large stock of a useful resource (e.g. raw materials, machinery, goods, money, workers etc.) can result in the increase in cost ratio of spending immobilized capital, storage costs, management etc. On the other hand, the low stock retention involves the risk of the resource being unavailable when asked which translates also in cost (Slack et al., 2004). Therefore, there is an optimal control problem stock, i.e. determining the required height at any time so that the total cost to be minimal. In order the above problems to be solved; scientists have designed a special theory of operations research.

Problems due to waiting

Waiting problems are innumerable in our daily life and work, such as the funds in call centers, doctors' surgeries, at car service stations, in persons' transportation, in factories warehouses in ports, in airports etc. The basic

elements of a standby system are the form of customer arrivals in the queue, the mechanism in service and priority law customer service. The phenomenon of waiting is due to the existence of no stability in the rate of customer arrival and rhythm service (Hitt et al., 2016). In order to address this problem, there have been developed the so-called queuing theories, which are based on the theory of probability and statistics.

Time Scheduling Problems

In this category of problems, we face time order execution interdependent individual tasks which make up a large project. The purpose is to find the critical work which can regulate the total time of the project execution, and to identify the means by which the work will be achieved so as to be completed within the desired period of time with the lower cost (Wu, 2016). Projects that require timing is for example the construction of large building complexes, the shipbuilding, the maintenance of mechanical equipment, the business s establishment etc. In this case, special techniques of theory graphs, linear programming and simulation are used (Slack et al., 2004).

Replacement and Maintenance Problems

Over time, the efficiency of mechanical parts decreases and results sometimes in maintenance and operating costs to exceed the cost of maintenance, operating and depreciation of a new machine. As a result, the challenge is to find an optimal maintenance or replacement policy in terms of minimizing the total cost or maximizing the total profit from the operation of the equipment. These problems treated with a relative theory which is based on statistical and dynamic programming (Hitt et al., 2016).

Competition Problems

Competition occurs when business objectives conflict. This conflict occurs because the available resources of each business are limited. A part of this conflict is the competition against nature that is the case where there is uncertainty about the time or place. This type of problems is approached by models of game theory and statistical decision (Heizer et al., 2016).

TRANSFORMATION PROCESS

In order to understand Operations Management, it is required to explain the transformation process (Kuratko, 2016), which, in other words is, the task of the managers to transform the inputs into outputs by u sing effective and efficient procedure.

Operations management uses resources to create outputs that fulfill market requirements. Input resources can either be used in the process of creating goods or even if not used, have a significant role in the creation process. In order to distinguish them, input resources, according to the analysis of Slack et al., (2010), are classified as:

1. Transformed resources:

The operation adopts and converts transformed resources in order to produce goods and services. There are three types of transformed resources:

-Material, all the physical inputs used in the process.

-Information, knowledge that can be used in the process making it more effective.

-Customers, who are transformed in some way.

2. Transforming resources:

They are used in order to perform the transformation process. There are two types of transforming resources:

-Staff, those people participating directly in the transformation process or supporting it.

-Facilities, such as machines, equipment, land and infrastructure.

Between inputs and outputs there is the "*transformation process*" which make this conversion possible. The basic transformation model below shows the three elements of operations: inputs, transformation process and outputs. The transformation process is any activity or group of activities that converts inputs, add value to them and eventually present the output to the market (Atali et al., 2006).

Figure 13: The transformation model (Source: Open University)

Another important factor, which can also be described as the "*boundary of the operations system*", is the external environment which is outside of the control of the organization. Since it is not included in the internal environment of the organization, it is called "*boundary*". This is about suppliers, customers, and the environment.

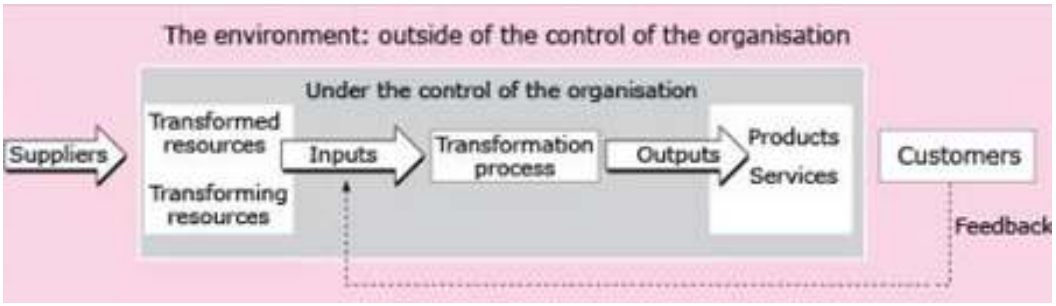


Figure 14: The operations boundary (Source: Open University)

The external environment may include people, capital and managerial skills as well as technical knowledge and skills. In addition various groups of people make demands on the enterprise. For example employees want higher pay, more benefits, and job security. On the other hand, consumers demand safe and reliable products at a reasonable price or suppliers want assurance that their products will be bought (Wisner and Stanley, 2008).

All operating systems are influenced by the organization's environment. This environment includes both other functional areas within the organization, each with its own policies, resources, forecasts, goals, assumptions and constraints, and the wider world outside the organization – the legal, political, social and economic conditions within which it is operating. Changes in either the internal or the external environment may affect the operations function.

Transformation process includes several changes to materials, information and customers - (inputs) - such as:

- Changes in the physical characteristics of inputs
- Changes in the location of inputs
- Changes in the proprietary rights of inputs
- Storage of inputs
- Changes in the form and intention of information
- Changes in the psychological and physiological state of customers

Sometimes transformation includes all types of inputs - material, information, customer - at once and can be accomplished by the same organization. For example, a withdrawal from a bank account includes (Womack et al., 2007):

- ✓ information about the client,
- ✓ material such as money
- ✓ and the customer who came with no money and left the bank having money.

As it appears there are different types of transformation and can be categorized into:

- Manufacture - physical creation of products for example car industries assembling automobiles.
- Transport - movement of materials or customers for example taxi services or airlines.
- Supply - change in the ownership of goods for example in the retail sector.
- Service - provided information or product's storage for example accountants or warehouses.

Another element shown in Figure 1 is the feedback loop. Feedback is crucial to the whole process because it basically controls the operations system and therefore the successful delivery of goods and services. The feedback comes either from internal or external resources. Internal resources encompass testing, evaluation and improvement of goods and services as well as external resources may be the suppliers of the products or even the actual customers. It is a way of continuously improving and making the process more efficient.

During the transformation process there are several activities required to produce goods and services. There is the overall transformation (Koubaa, 2016) which is the basic function of the process there are also other more detailed transformations equally essential for the completion of the process. The overall transformation is known as the macro operations, as well as the more detailed transformations the micro operations.

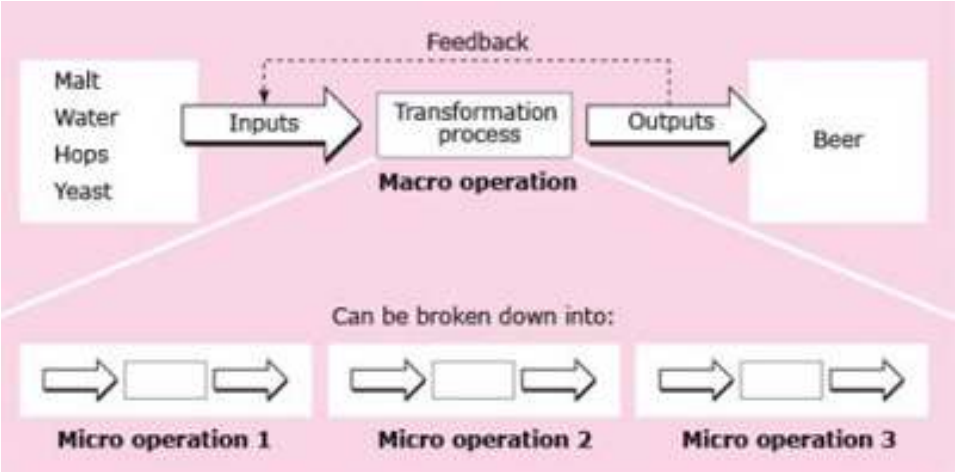


Figure 15: Macro and micro operations (Source: Open University)

It is commonly known that operations transform materials into finished products, as a car industry assembles various parts into an automobile. However, the truth is that every organization that produces goods and services transform resources that may not be materials but alternatively information or customers. For example: accountants and insurance companies are mainly concerned with information and knowledge

transformation in order to provide services, or even customer transformation such as an ill person (input) to a healthy person (output) which is a transformation process by a hospital (Wisner and Stanley, 2008

CONCLUSION

As it was aforementioned, during the last decades, the globalization set as a necessity a better system management. As a result the field of operations management has become imperative in the majority of businesses and organizations all over the world.

Operations management can be defined in many ways regarding the aspect it is observed and applied. The common element of every definition is that the core is a better managing of the processes in order to boost businesses' competitiveness.

Furthermore, in the above chapter, the main components of operations management were analyzed. This was made in order to become more clear the importance of applying the strategies of operations management in businesses and organizations. Every element of the operations management is a single subchapter including definitions, surveys and applications.

Operations Management is a strategic and important department of each possible business, and therefore it is necessary that every manager or a special department be able to transform the theory in practice. The aim of this paper is not only to present the basic aspects and theories of Operations Management but also to investigate how these strategies can be successfully applied to the retail sales, and more specifically in clothing industry.

The next chapter includes the aspects of the retail industry and how operations management can be applied in order to be helpful for obtaining the comparative advantage.

CHAPTER 2 - Operations management in Retail

Definition of Retail

Retail involves the sale of goods and services to customers from a single point, such as malls, markets, departments, stores etc. Retailing is part of the supply chain, which consists of many different stages. It links raw materials producers, manufacturers, wholesalers and transport firms with the last stage to be the retailer who provides the final link between producer and consumer. A retailer is a business that sells products or services, or both, to consumers for their personal or family use (Levy and Weitz, 2004). The main task retailers have is to accomplish satisfying consumer's needs by having the right merchandise, at the right price, at the right place, at the right time. This premise of retailing should be thought of as a foundation for all retail decision making. Many people incorrectly believe that retailing involves only the sale of products in stores, but it also involves the sale of services, for example a doctor's exam, a haircut, an automobile rental, an express package delivery. Due to increased competition, many organizations that provide services to consumers have adopted retailing principles in order to satisfy customer's needs, such as convenient locations or offers made to the service provided (Tang et al., 2016). Another definition of retail can be: "*any business that directs its marketing efforts towards satisfying the final consumer based upon the organization of selling goods and services as means of distribution*" (Cachon, 2003).

Basic Components of Retail

The field of retail operations concerns the work individuals do in managing the day to day functions of retail establishments, whether it is small stores or large chain stores. Key words in which we shall emphasize while viewing the information in this chapter are: Supply chain, Forecasting, Store administration, Location strategy, Customer relationship management. On top of them as the retail store is a critical asset to the retail business, and therefore is the place where the customer interacts with the store's offerings and makes the decision whether to make a purchase or not, it is crucial to add store operations which is an imperative need: that the store operations are managed effectively by the store manager (Bensoussan and Chutani, 2009).

Store operations include budget and planning, safety – security, training program, inventory and stock management:

1. *Budget and planning* is the operation that ensures that there is appropriate planning and organization of staff, inventory and expenses based to the goals set in the strategy of the company. Through this it is important to monitor a loss prevention plan to protect the company's inventory and assets as well as to develop and monitor the adequate budget to keep the store properly maintained and upgraded if possible.
2. *Safety and security* is both internal and external and relates to customers and employees. It is an operation related to legal compliance information that the staff should be familiar with in order to work in a safe environment which is safe for customers, and in consideration to security the task is to prevent any loss from internal and external theft.
3. *Training program* relates to the staff of the store and based to the size of the store and to company's strategy contains the appropriate training of each employee based to job description which he/she is responsible of and training to serve the goals of each company.
4. *Inventory management* is important to a retail business as it is the key to keep up with customers needs and prevent loss. Every retail store must ensure to manage inventory in order to avoid being out of stock. Inventory is connected directly with forecasting and effective supply chain of the business. Errors in forecasting can result in lost sales and excess inventory.

All the above: store operations together with the key words of retail mentioned in the previous paragraph, are the pieces of the big puzzle of retail and can be defined as the main components of retail operations. Among these, and in consideration of the relativity to the main object of this paper, which is operations management in clothing industry for a greek company, chosen as a case study, two major pillars of retail should be analyzed before focusing in "operations management in retail" and these are: "location strategy" and "supply chain management" (Bitran et al., 2008).

Location Strategy

Location is a major and crucial factor regarding the retailer's success. It is often said that within the retailing industry only three things matter: location, location, location. The majority of retailers put location first on their list of tactical considerations as a successful decision on location affects the success or failure of the store. Locations decisions might be risky and should be well thought off. It requires a systematic approach to the acceptance or rejection of certain areas in favor of others. Retailers must choose their locations carefully for two reasons. First, location is typically the most important consideration in a customer's store choice. Second, location

decisions are important because retailers can use them in order to develop a long-term competitive advantage. It is easier for the retailer to change price, service or merchandise assortments but a change in the location of the store can be catastrophic because retailers have to make high investments to buy and develop real estate or commit to long-term leases with developers. Therefore, an excellent location has a strategic advantage competitors cannot easily copy (Arfelt, 2010).

According to Biggs (2010) there are specific decisions involved in choosing a location for a retail store and they come in three stages:

1. *Region/Market Area* refers to the part of the country or a particular city the store will be located. The first step is to carry out a detailed external marketing audit, analyzing areas such as the macro environment (political, economical, social, technical factors), customers, competition and the retail market itself. From the analysis positive or negative factors will come up that will affect the suitability of the proposed region. The second step is to analyze most important factors such as level of customer spending, degree of competition, availability of sites and regulations regarding the development of the store.
2. The *trading area* is the place in which a store may be established is a town, city, or a section of a city, but it is a point to which customers come from the surrounding areas to buy. Trade areas can be divided in three zones which are primary trading zone, secondary zone and tertiary zone. Primary zone is the geographic area from which the store derives the majority of customers (60 to 65 percent or higher if it is a local retail outlet). Secondary zone is the geographic area of secondary importance in terms of customer sales. It usually extends three to seven miles and is no more than 20 minutes drive time from the outlet. Tertiary zone includes those customers who occasionally shop as an alternative to local shopping. The zone can extend to fifty miles from the outlet. The boundaries of a trade area are influenced by the store's accessibility, its competition's location and the type of the store. If the accessibility to the store is not easy the trade area will decrease. If two stores selling the same merchandise are too close together, their trade areas will shrink because they offer the same merchandise. The analysis of the trade area begins with a detailed trade area audit covering topics such as population's demographics, disposable income, lifestyle, business climate, competition, current shopping patterns. The outcome of the analysis can give the retailer a clear picture of demand as the best regions or trade areas are those that generate the highest demand or sales.
3. *Site selection:* The retailer now has detailed trade area information for a number of potential sites. The final stage in the location decision making process is the selection of the actual site for the new store. The

best location is the one that generates the most traffic from the store's target market. Some factors that affect a location's ability to generate traffic are accessibility, location advantages within a center and legal considerations. Accessibility of a site is how easily a customer may get into and out of it. In order to achieve that, retailers evaluate several factors such as road patterns, road conditions, barriers, visibility, congestion and parking. Visibility refers to customer's ability to see the store. In an area with highly transient population such as tourist centers or large cities visibility is very important. Accessible parking is also very important to a customer. Location advantages within a center refer to the advantages that may appear if a store is located close to another with same merchandise or close to a department store. Because of the advantages in these locations, the development of a store requires big investments. Legal considerations must be taken by retailers because laws regarding land use have become very important. Legal issues that affect the site decision include environmental issues, zoning, building codes, sign regulations and licensing requirements.

There are three typical types of sites, the solitary site, the unplanned shopping area site and the planned shopping area site (Arvedlund, 2009). The solitary site may be a single free-standing retail outlet isolated from other retailers and positioned on a road or a street. The advantages are the lack of competition, low rental costs, lower operating costs, high vehicular traffic and visibility, convenience for customers and ease of parking. The disadvantages are the difficulty in attracting new customers and therefore the promotional costs may be higher. Also they are usually located where there is little pedestrian traffic. The unplanned shopping area may be a retail location with two or more outlets in close proximity to each other. The majority of central shopping areas are unplanned. In this type of site, many retailers will coexist offering the customer a variety of retail choice, the ability to compare prices and save time by utilizing different stores. Two more advantages are the higher level of pedestrian traffic and the probable access to public transportation. The weaknesses of this type are the traffic congestion and parking, higher rents and taxes, poor condition of buildings in older city centers. The planned shopping area site is a retail location which has been developed to provide access to a number of outlets such as shopping malls. It is developed and operated as a single unit and the retailers rent spaces in order to place their merchandise. The initial plan is for the center to have some large key brand stores and a number of smaller retailers adding diversity and interest. The strengths of this type of site are the adequate parking facilities, the ability for individuals to satisfy all their needs in a single place, the ability to increase security and reduce theft; the weather

conditions do not affect the shopping procedure. Weaknesses may be the inflexibility stipulated by the rental agreement such as opening and closing hours, rents may be higher, smaller stores may not be as successful as others.

Supply Chain Management

Supply chain management in retailing context, is the delivery of economic value to customers through the management of the flow of physical goods and associated information from vendors to customers (Levy and Weitz, 2007). An effective supply chain management can cause benefits such as reduces inventories, lower operating costs, product availability and customer satisfaction. These improvements apply to the companies which transform their working partnerships with customers or suppliers into mutually beneficial collaboration. Retailers who understand the importance of their supply chain tend to be more profitable than others who do not understand their dependency from supply chain members. Therefore retailers must work collaboratively with supply chain members to generate mutual gains and savings.

Supply chain management techniques are quick response and efficient consumer response (ECR):

1. *Quick response* (QR) technique is designed to reduce inventory levels by reducing order lead times and moving to more frequent deliveries of smaller consignments (Campbell and Frei, 2010). QR is a business strategy designed to optimize the flow of information and merchandise between channel members and increase customer satisfaction through the implementation of technologies such as electronic data interchange (EDI), bar coding and point of sale data capture. EDI is a computer guided communications network between retailer, manufacturer, and other physical distribution affiliates such as transportation firms (Campbell and Frei, 2010). Bar coding is used for data entry as it captures information at the point of sale by means of electronic scanning devices. Through barcode slow-selling items can be identified, preventing inventory build-up. Also, the effects of merchandising changes can be monitored, allowing fast-moving, more profitable items to occupy the best space. As long as the supply chain management is concerned, an advantage of bar coding is that when a manufacturer packs a box for shipment, a Unique Identifying Number (UID) can be assigned to the box.

   A database can link the UID to relevant information about the box; such as order number, items packed, quantity packed, destination, etc. The

information can be transmitted through a communication system such as EDI so the retailer has the information about a shipment before it arrives. When the shipment reaches its final destination, the UID gets scanned, so the store knows the shipment's source, contents, and cost.

2. *Efficient Consumer Response* is a method of collaboration between manufacturer and retailer in order to reduce inefficiencies in the supply chain. Main goal of ECR is fulfilling the needs of customers in most quickest and efficient way with minimizing costs. Some activities of efficient ECR are category management, continuous replenishment programs, vendor-managed inventory. Category management, according to Buell et al., (2010) is a process that involves managing product categories as business units and customizing them (on a store by store basis) to satisfy customer needs. Category Management in a business tends to alter the relationship between retailer and supplier. Instead of the traditional adversarial relationship, the relationship moves to one of collaboration, with exchange of information. Category management has the following component processes: definition of category, define the role of the category within the retailer, assess the current performance, set objectives for the category, devise an overall strategy, devise specific tactics, implementation and review of the above (Forslund, 2015).

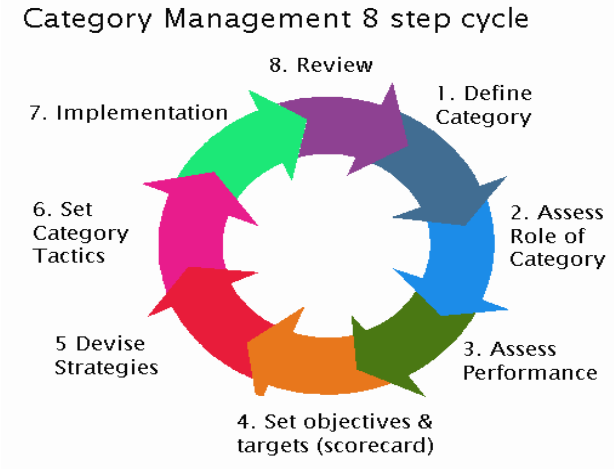


Figure 16: The category management 8 step cycle (Source: Wikipedia)

A continuous replenishment program is the sharing of forecast and related business information and collaborative planning between retailers and vendors to improve supply chain efficiency and product replenishment (Levy and Weitz, 2007). The potential of this method is to take retailers and

manufacturers far beyond continuous replenishment models in terms of reducing inventory levels, cutting out of stock in retail and meeting with customer demand. Vendor-managed inventory uses daily sales data for reordering processes. It gives the ability to the vendor to control both the production/replenishment process and the in-store availability of a product. The benefits of this method have been identified as labor savings, warehouse and shipping improvements and inventory reduction.

Basic Components of Operations Management in Retail

Operations management in retail involves managing the building and fixtures, merchandise, price, promotion and customer service. All of these activities require day-to-day attention and we can say that operations management is running the store. Operations management is concerned with maximizing the efficiency of the retailer's use of resources. Operations management converts resources into sales and profits. In other words, its aim is to maximize the performance of current operations (Boyd, 2008). The basic components of operations management will be further analyzed below, and is important to know that all of them are equally important to operate in business properly.

Customer Service

The retailer must have the ability to turn a potential customer into a buyer. It takes time and effort to build a reputation for customer service but once it is achieved, it is a valuable strategic asset for the organization.

Retailers build a competitive advantage by offering excellent customer service. Costumers are assets to the retail store so the staff must be kind to them and assure that they have a pleasant shopping experience. Staff has to assist customers in their shopping and help them buy merchandise according to their needs and pocket.

Buell and Campbell (2010) stated that there are two approaches that retailers use in order to make customer service an advantage, customization and standardization. Customization approach is used by retailers to provide customer service that is tailored to meet each customer's personal needs. This approach typically results in customers receiving superior service. However, the service might be inconsistent because the service depends on the capabilities of the service providers. Another element of customization is the money the organization must invent in order to have well-trained service providers or complex computer software. Standardization approach is used by retailers to provide customer service by using a set of rules and procedures so that all customers receive the same service. If the organization enforces

these procedures, inconsistencies in the service will be minimized. Through standardization the product/service produced by an organization is received exactly the same all over the world.

Merchandise

Merchandise can be the product or the service which is sold during the retail process. Merchandising refers to the intermediate stages, which the products pass through from the original source to the end consumer. These stages, according to Weiberg et al., (2007) involve: planning, sourcing, buying, arranging, displaying and space management. Planning suggests that the organization must take into consideration the customer, the competitors and the type of the retail business. Sourcing involves finding the location and purchase the merchandise to sell in the store. Buying involves selecting the merchandise and negotiating the terms with suppliers. These duties include following up orders and shipments to ensure they arrive as and when specified. Arranging and displaying have a major affect on sales because customers expect display of merchandise to be exciting, enticing and convenient. Space management is concerned with placing merchandise within the store in the most profitable manner.

Merchandise management is the analysis, planning, acquisition, handling and control of the merchandise investments of retail operations (Shen and Huang, 2008).

1. *Analysis* is needed through merchandise management because the retailer must be able to identify the market which is about to enter and then determine the needs and wants of the customers in order to buy the right merchandise.
2. *Planning* is referring to the timetable that needs to be made in order for the merchandise to be ordered and delivered on time.
3. There is a need for *acquisition* from either wholesalers or manufacturers.
4. *Handling* assures that the merchandise is where it is needed to be in order to be sold in perfect condition.
5. As the financial aspects of buying merchandise can be treated as an investment decision, there is the aspect of *controlling* the processes to ensure adequate returns are achieved.

Price

Each product or service in retail is sold, this means it has a price, which is not only a mirror to its value but also reflects various other factors such as the

operations management “fee”, as well as the producer’s rights (for example designer rights) or the inventor’s rights etc.

Pricing is an interactive decision made in conjunction with the firm’s mission statement, its goals and objectives, its strategy, its operational management and its administrative management (Shen and Huang, 2008). The importance of pricing decisions is growing as today’s customers are looking for good value when buying merchandise and services.

There are some basic terms related to pricing such as: original and sales retail prices, merchandise cost, markup, initial markup, maintained markup and gross margin or profit. In details:

1. The *original retail price* is the first price at which the merchandise is offered for sale and the sales retail price is the final selling price, which may be quite different. This happens when the most of the merchandise is sold but there are some remaining units. In order to sell the remaining units, a reduction of the price unit becomes necessary. For the units sold in the reduced price the original retail price and the sales retail price are two different things. In the aggregate for all the units sold, the average sales retail would still be different.
2. *Merchandise cost* is the billed cost of merchandise including any applicable trade or quantity discounts or transportation costs on the merchandise.
3. *Markup* indicates the difference between merchandise cost and retail price. It applies in a single item or to all of the merchandise in a store.
4. *Initial markup* is the difference between the merchandise cost and the original retail value placed on the goods.
5. *Maintained markup* is the differential between the gross cost of goods sold and the net sales. Net sales are the prices actually received for merchandise sold during the period. Gross cost of goods sold is the aggregate amount of the merchandise cost of all items sold within a period. Due to the fact that net sales and gross cost of goods sold are based on something that has actually happened it is very difficult the maintained markup to be calculated in advance.
6. *Gross margin* or profit is the difference between the total cost of goods sold and the net sales. The total cost of goods sold has been adjusted for cash discounts and any alteration or workroom expenses.

Pricing Policies

Taylor (2008) reported that there are three basic pricing policies: pricing above market levels, pricing at market levels and pricing below market levels.

1. *Pricing above market levels*. Some retailers follow this policy because certain markets sectors are receptive to high prices as non-price factors are more important than price. Sometimes retailers are forced to price above due to high cost structure. Some other conditions that permit retailers to price above include merchandise offerings, services provided, convenient location and extended hours of operations.
   Merchandise offerings: many consumers are willing to pay more in order to acquire a special item, an exclusive line or unusual merchandise.
   Services provided: consumers are willing to pay higher prices in order to obtain an array of services such as liberal credit, free alterations, home delivery or even wardrobe counseling.
   Convenient location: if a shop is located in an airline terminal or in a hotel, automatically has a location advantage which allows charging high prices.
   Extended hours of operations: if a shop remains open where others close, retailers are able to charge higher prices for the merchandises available.
2. *Pricing at market levels*. For some lines of merchandise there are typical markup goals which are largely a matter of trade custom. It is the most common policy as the retailers lowers its' risk by selling at the same price as the competitors. This, though, can lead to a fierce competition and may force the retailer to adopt a different approach including gifts or services.
3. *Pricing below the market level*. The consumers in a large market sector usually buy merchandise on a price basis, so it becomes very attractive for retailers to adopt a below market pricing. In order to offer lower prices, retailers minimize the expenses concerning customer service or store atmosphere, reduce their markup and operate from modest facilities.

Promotion

Retailing is a very competitive sector and effective promotion mix is essential for every store. We shall analyze the promotion feature through the necessity that merchandise or product is offered through a store. Prospective customers must be invited, urged, even persuaded to buy if a store is to succeed. A store

may have the right merchandise and facilities in order to satisfy customer's needs and wants and still fail to make a profit if sales are not effectively promoted. The components below comprise the retailer's promotion mix advertising, sales promotion, publicity, personal selling (Stoll, 2008).

Advertising

Phillips (2010) gave a definition of advertising which is the presentation of a message, impersonally or through mass media, acknowledged and paid for by the advertiser. Stores differ in their need for, and ways they use, advertising. For maximum success every store must advertise, but only effective advertising is profitable. In order to reach people who are not customers of the store, especially those who do not pass the store's window, advertising is essential. A basic compromise for a company which advertises itself is that the merchandises available, as well as the services provided, should match the message of the advertisement. If not, a bad reputation will be spread and potential customers will be averted from visiting the store.

The main purposes of advertising are to build and spread a reputation for the store, to increase the customer traffic and sales of the store and through the accomplishment of these two aims to increase the net profit of the company (Phillips, 2010). Building and spreading a reputation for the store comes first as the retailer must 'sell' his store as good place to trade and then sell his merchandise. Retail advertising may be divided in two types, institutional and promotional. Promotional advertising is intended to bring customers into the store to purchase specific items of merchandise. Institutional advertising seeks to develop goodwill for the store and to create confidence in its merchandise and services; and thus to build a permanent patronage. Institutional advertising is of two general types: service and prestige. Service advertising seeks the customer's steady patronage by pointing out the services and conveniences offered. Prestige advertising emphasizes on merchandise quality, complete selections offered and general progressiveness.

Sales promotion

Sales promotion is those marketing techniques, which are used, usually on a temporary basis, to make goods and services more attractive to the consumer by providing some additional benefit whether in cash or in kind (Sullivan and Adcock, 2002). Sales promotions tend to be directed at improving the retailer's short run performance as they can be used on relatively short notice and help in achieving the overall promotion goals. Promotion equates with incentive and the two basic types, in terms of the things most likely to appeal to the customer, are primarily monetary awards and product offers. This kind of promotion is called consumer promotion and is offered by the retailer or the manufacturer to the customer, while trade promotion is offered by the

manufacturers to retailers or to other members of the distribution channel. Manufacturers use techniques such as bonus as a standard offer, discount, coupons etc., in order to persuade retailers to sell or stock their products.

Publicity

Publicity is any non-personal stimulation of demand for a product, service or business unit by planting commercially significant news about it in a published medium or obtaining favorable presentation of it upon radio, television, or stage that is not paid for by the sponsor (Pinedo, 2010). Publicity has its strengths and weaknesses. Credibility based on publicity can be high as the message is delivered to the receiver by an independent source that is not paid by the organization. The fact that no payments are made also means that promotional costs are low. The number of people receiving the message is high because people tend to pay more attention to television or radio. The major disadvantages of publicity are two and both relating to control. As noted above, an independent source delivers the message. This can lead to a possibility of message distortion. The other is that the retailer cannot control the timing or frequency of the publicity.

Personal selling

Personal selling is an oral presentation by the sales staff to prospective purchasers with the purpose of making a sale. Personal selling is an important factor to promotion mix as the performance of the staff determines the satisfaction of the customer regarding the retailer and the purchase experience. According to Sullivan and Adcock (2002) there are three types of personal selling exist and are transaction processing, routine selling and creative selling. Transaction processing is the lowest level of personal selling, as the staff has simple duties such as the checkout. Routine selling offers a higher level of personal selling with the staff ready to provide customer support. Creative selling offers the highest level of personal selling with the staff designated to provide unique support to each customer. Personal selling, in any level offered, must be successful in order to build customers satisfaction, bonds with the employees and positive attitudes. Last but not least personal selling can also be an aspect of customer service.

Conclusion

Every time someone enters a retail store, his/her shopping experience has been extensively planned, from the items seen for sale to the layout and design of the store. In addition, it is now understood that the final image is the result of a chain of operations behind the scenes, and many times not even in the store visited but in the offices of the company where the strategy is planned. Retail operations concern working in all types of retail stores, from

small stores with only a handful of workers to large chain stores with hundreds of employees.

Operations management in retail and especially in a store is a complex of aspects that combines human resources - staff, management team, customers – with merchandise – products or services – and brings them together in one location, which is the store. The store can be a shop of various kinds or a site in the internet (e-shop). In both cases the final goal is to have profit for everyone, for the company is translated to bigger annual turnover and for the customer is translated to a satisfactory purchase.

Combining the two previous chapters, it can be highlighted that the ways operations management can be applied are various. It depends on what output the manager of a business wants, on the branch of the economy the business is and on many other factors. In other words, operations management is a helpful tool which can be transformed in many ways in order to be successfully adopted by each firm all over the world. The core is the same. What, really, is changed, is the final output and the initial input used.

Retailing is one of the world's largest and most competitive industries, the customers are increasing their demands and retailers have to predict the desires or even create them. This is a classic example of how fashion works in clothing industry.

Having presented the basic aspects of operations management in general in the first chapter of this paper, and the basic components of retail and operations management applied in retail in this chapter, we will now proceed to match all of the above to a classic retail industry: the clothing industry. The index of the third chapter is the same as the two previous. Specifically speaking, the following chapter includes definitions, elements and the application of operation management in the clothing industry.

CHAPTER 3 – Clothing Industry

Definition

Clothing industry is a global enterprise devoted to the business of making and selling clothes. Some observers distinguish between the fashion industry (which makes “high fashion”) and the apparel industry (which makes ordinary clothes or “mass fashion”), but by the 1970s the boundaries between them had blurred (Britannica, 2015).

Fashion industry refers more or less to the style/styling of clothes, apparel and accessories worn in different periods of time by groups of people, it is about any mode of dressing. There may appear to be differences between the expensive designer fashions shown on the runways of Paris, Milan, New York and the mass-produced sportswear and street styles sold in malls and markets around the world. However, the fashion industry encompasses the design, manufacturing, distribution, marketing, retailing, advertising, and promotion of all types of apparel - men’s, women’s, and children’s - from the most rarefied and expensive “haute couture” (French term for “high sewing”) and designer fashions to ordinary everyday clothing.

Clothing and textile industry was a sector appeared in the early years and had a long history with changes in manufacturing processes such as development of denim in the 1600s, mechanized textile looms in the 1760-70s, sewing machines in 1840s, etc. Other milestones of the clothing industry, concerning distribution and retail processes have been the department stores in the 1830s, mail ordering in the 1880s, store chains after World War II, online sales in the 1990s.

Prior to the mid-19th century most clothing was custom-made; all clothing was handmade for individuals, either as home production or on order from dressmakers and tailors. Advanced technology pushed the industry into new realms of mass production and sophistication. In 1846, the sewing machine was invented and patented by Isaac Singer (Cosgrave, 2000). The rise of sewing machine indicated mass production in standard sizes and fixed prices. Along with mass production, the customer needs brought “fashion trends”.

Clothing and textile industry first developed in Europe and America but now it is an international and highly globalized industry, with clothing often designed in one country, manufactured in another, and sold world-wide. For example, an American fashion company might source fabric in China and have the clothes manufactured in Vietnam, finished in Italy, and shipped to a warehouse in the United States for distribution to retail outlets internationally.

Nowadays clothing industry is a multibillion-dollar global enterprise, which develops worldwide. Data on the fashion industry typically are reported for national economies and expressed in terms of the industry's many separate sectors, therefore aggregate figures for world production of textiles and clothing are difficult to obtain. However, by any measure, the industry inarguably accounts for a significant share of world economic output (Britannica, 2015).

Main Activities of Clothing Industry

The fashion industry consists of four levels: the production of raw materials, principally fibres and textiles but also leather and fur; the production of fashion goods by designers, manufacturers, contractors, and others; retail sales; and various forms of advertising and promotion. These levels consist of many separate but interdependent sectors, all of which are devoted to the goal of satisfying consumer demand for apparel under conditions that enable participants in the industry to operate at a profit.

Production Process

The clothing and textile industry covers a range of activities including the transformation of natural (cotton, flax, wool, etc.) or synthetic (polyester, polyamide etc.) fibers into yarns and fabrics, to the production of a wide variety of products such as hi-tech synthetic yarns, bed-linens, industrial filters, and clothing.
The production process can be divided in two basic functions, firstly the production and treatment of raw materials and secondly the transformation of these fabrics to products. This consists of how from raw material we can have a finished garment.

1. Production and treatment of raw materials.

There are two types of textile fibers: natural fibers and chemical fibers. Natural fibers derive from plants (seeds, leaf, skin, fruit, stalk) and animals (animal hair, silk, avian hairs). The most used natural fibers are cotton, linen, wool, silk. Chemical fibers include those fibers coming from the transformation of natural polymers, synthetic fibers, and fibers from inorganic materials. Some chemical fibers are cellulose, viscose, modal, acetate fibers, polyamide, polyacrylic, polyester, polyurethane, polyvinyl, and blended fibers such as cotton-viscose, wool-polyester etc. The treatment of raw materials includes a process called spinning, in which raw materials are transformed into fabrics. This stage includes the production of basic fabrics and the procedure of giving to the fabrics visual, physical, and aesthetic properties that costumers

demand. Fabrics are divided in three main categories: woven fabrics, knitted fabrics and compound fabrics (Fabrics and Raw Materials n.d).

2. Transformation of fabrics to products.

The transformation of fabrics to products comes in many stages; the production process (The step-by-step process 2014) consists from the designing of the product to the final tagging and packing, in order for a T-shirt for example to be ready to be presented in the market through retail sales and then to arrive to a customer. All these virtually consist of operations in the clothing industry, which for the scope of this paper -which is the operations management efficiency- are presented in detail, in order to distinguish and examine them in the last chapter in the case study.

Design/Sketch

The first step of manufacturing a garment is to design a sketch for the cloth that is to be produced. The designer draws several rough sketches without many details. These sketches are then analyzed by a panel of designers who select a few of them, which are rendered in detail separately.

Pattern Design

The first pattern is developed by the pattern maker according to the design. The main purpose of making this pattern is to create the sample garment for test fit.

Sample Making

Once the pattern design is developed, is sent to the sewing unit so that the sample can be assembled. The prototype sample is developed at very initial stage and it is usually done on the substitute fabrics in order to reduce cost. Then the fit sample is made to analyze the pattern fit and design and it is developed by the actual fabric which is going to be used for production or sample yardage fabric is used. The size set sample is made mainly to check the factory's capability to produce the sample in all sizes. The last sample that is developed is the pre-production sample which is considered to be a contract between buyer and factory. It is made from the original fabrics and once it is approved, the production starts.

Production Pattern

The pattern design and the samples are used for creating the production patterns. The production pattern is one which will be used for bulk production. This pattern can be developed by two methods: manual and computerized known as CAD/CAM method. Many companies today use the CAD/CAM method because of the advantages it has against manual method, such as

the ease of designing patterns, fluency and precision. If the production pattern is created in CAD/CAM it can easily be stored and modified at any time.

Grading

Grading is the stage where different standard sizes are created by scaling a pattern up and down. Pattern grading may be difficult by manual method but with the use of computer it becomes much easier and faster.

Marker Making

Marker making is the process of determine the most efficient layout of pattern pieces for a specified style, fabric, and distribution of sizes (Apparel Production Overview 2014). It is a critical step throughout the production process, as it can determine the amount of fabric that is needed for the construction of garments and therefore the amount of money that will be invested. It is a process that can be also made manually or computerized and again the CAD/CAM method is usually chosen as it is more efficient.

Spreading

Spreading is the processes of superimposing lengths of fabric in preparation for the cutting process. The equipment of the process can be either spreading surfaces (table, pin table, vacuum table) or spreading machines.

Cutting

The fabric is then cut, according to marker dimensions, with the help of cloth cutting machines suitable for the type of the cloth.

Sorting/Bundling

In this step the patterns are sorted according to size and design and bundles of them are made. Making bundles of mismatched patterns can create severe problems so precision and attention is required.

Sewing/Assembling

The sorted bundles of fabrics are now ready to be stitched. There are the sewing stations for sewing different parts of the cut pieces. In sewing stations there are several operators who perform a single operation. For example, one operator may make only straight seams while another sew the waist seams or make buttonholes. Finally, when all the parts of the garment are sewed, they are assembled together to give the final form of the clothing.

Finishing

After sewing, the garment will get its final look after undergoing different finishing processes. The finishing processes include thread cutting, which is necessary in order to cut and trim the loose and uncut threads, stain removal, steam ironing, and final finishing.

Inspection

This process is carried out by the quality department and can be defined as the visual examination or review of raw materials, partially finished components of the garments and completely finished garments in relation to some standards, specifications, or requirements, as well as measuring the garments to check if they meet the require measurements (Apparel Production Overview 2014). Some operations made in this step include checking each prepared garment against defects such as open seams, wrong stitching techniques, missing stitches, raw edges etc., imparting quality in the product, ensuring that the product has achieved the quality requirements of the buyer, restricting the defects to enter to the final product.

Tagging/Packing

The finished garments are transferred to the tagging and packing section. Packing supervisors have the responsibility to provide the tagging operators with the appropriate information about price and brand tags. When tagging is completed garments are packed according to the specifications of the buyer and send for distribution.

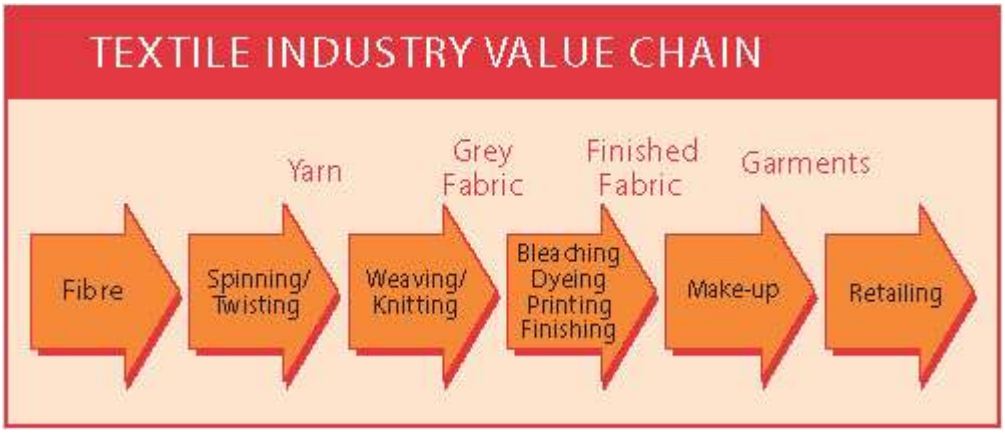


Figure 17: Transformation Process (Source: Gereffi and Memedovic, 2003)

Supply Chain in Clothing Industry

The basic supply chain in the clothing industry consists of four levels in a pyramid. On the top level is a retailer, the second is a clothing maker, the third level is a fabric maker and the fourth is a yarn maker. Each partner in this supply chain sends and receives information, which must be given in the right time. For example, if the retailer does not provide information in the right time about the increase of sales on a particular product, the demand will be increased at every step of the supply chain. This leads to late orders that lead to late deliveries and longer lead-times. Therefore a fluent and transparent

exchange of information among the players within a supply chain is necessary.

Some approaches mentioned in Chapter 2 can be used in order to make the supply chain more efficient. Quick response (QR), emphasizes on faster communication between partners to enable them to respond better and faster to rapid changes in the retail marketplace (Gustafson, Schmiosing-Korff, 2004). QR in the clothing industry, not only helps to increase the industry response to change in product demand but also to reduce costs and inventory. It is a critical factor in the process because it can lead to improvement of competition, as the whole supply chain depends on the expectations of the market. Another approach is vendor-managed inventory (VMI), which is an efficient replenishment practice designed to enable the supplier to respond directly to actual demand without the distortion and delay of decisions in the customer's purchasing organization (Gustafson, Schmiosing-Korff, 2004). The benefits of VMI are the control over shipment and inventory and the elimination of fluctuations stemming from retail buying practices.

In order to design an efficient supply chain in clothing industry it is necessary to examine the specific market and its characteristics. Among others, the characteristics that challenge supply chains for companies acting in fashion markets are:

1. Short life cycles: the product has a short life cycle and the sales are usually brief and seasonal.
2. High volatility: the demand coming from customers is rarely stable as it is influenced by several factors like weather, trends or idols.
3. Low predictability: due to high volatility the demand is very hard to predict.
4. High impulse purchasing: only if the customer is confronted with the product he/she can make a buying decision.(Gustafson, Schmiosing-Korff, 2004)

In clothing industry, time becomes an important key factor. A company operating in this industry must be ready for all the seasonal changes that affect the products and therefore the goal is to replace or "refresh" them continuously. In order to achieve this goal, an efficient supply chain must be developed.

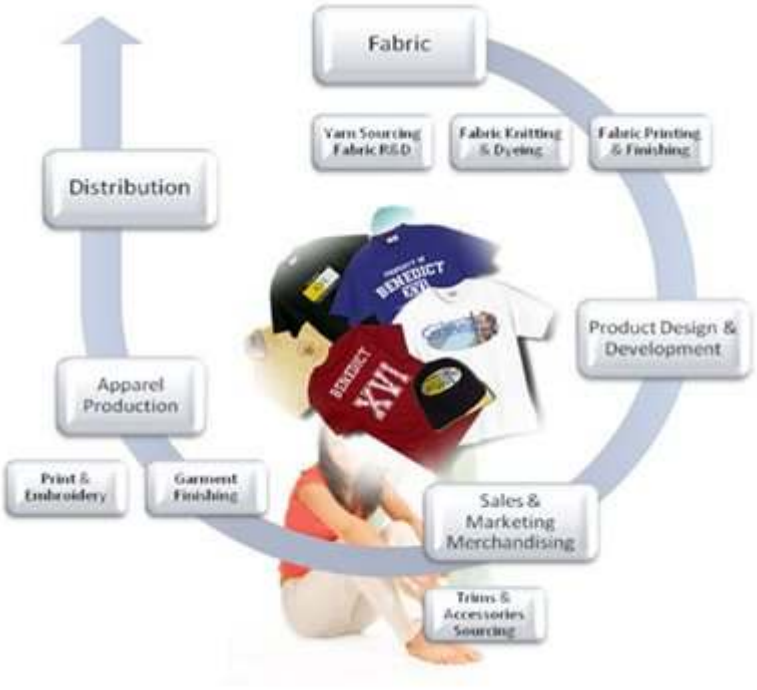


Figure 18: Apparel Supply Chain (Source: Jin, 2006)

Retail Sales

The retail factor is the last step in the value chain of clothing industry thus, very important. Retail sales can be achieved by various methods, and most important are: wholesale channel, fashion shows/trade events, direct to customer.

1. One of them is the *wholesale channel*. A simple definition of the wholesaler is: the person or firm that buys large quantity of goods from various producers or vendors, warehouses them, and resells to retailers (Business dictionary n.d). The wholesale channel is usually a logical starting point especially for emerging fashion brands, as it requires less upfront investment in infrastructure. It can also reduce the financial risk associated with production and manufacturing costs. Another advantage of the wholesale channel is to test response to a product or a collection. Some businesses build their wholesale channel by hiring an experienced in-house salesperson or working with an external showroom. Their job is to leverage their networks and contacts to assure that appointments with the right buyers are set, the products are presented effectively and, ultimately, orders are secured (The basics, 2013). The wholesaler becomes the main representative for the brand so a proper research and selection is crucial.

2. Another method to show and sell the production of the company is via *fashion shows* and *trade events*. With a sales team in place, the

company will be able to take part in the various markets and sales-related events that occur on a regular basis all over the world (The basics, 2013).

Even though a fashion show can eventually turn out to be profitable for the company, attending it can be a big expense for emerging designers because aside from venue fees, there are additional costs that need to be considered such as stylists, models, makeup artists etc. Given that the investment for taking part to a fashion show is big, the company should consider first the audience that wants to reach, the message that wants to send and the gain in press, credibility and, eventually, sales. It is one of the most personal ways to introduce your brand to potential buyers.

3. The alternative to wholesale is the *direct-to-customer* channel. It includes physical retail, e-commerce, pop-up stores, and online stores. There are many benefits to this channel, both from a financial and branding perspective. Firstly, the economics for the company can be great. By selling directly to end consumers, the gross margin is much higher than it would be if it had to be shared with the wholesaler. Secondly, the company can have the control of the entire shopping experience, interaction directly with the customers. Of course, retail businesses require significant upfront investments, investments in e-commerce and human resources in order to grow commercially and showcase their entire product offerings. Finally, a great retail presence can serve as a prototype model for shop-in-shops and international licensing. The main disadvantage of this channel is the inventory. If the product does not sell, the inventory remains to the company.

Financial Importance of Clothing Industry

As previously mentioned, clothing industry is a multibillion-dollar global enterprise and is one of the most important retail industries worldwide.

Apparel is a basic good, which everyone all over the world consumes, and because it is easy to produce, the influence of this industry in the economy is quite significant. According to European Commission (2015) clothing industry accounts for a significant share of world economic share and plays an important role in the European manufacturing industry, employing 1.7 million people in 185.000 companies and generating a turnover of 166 billion Euros. The industry accounts for a 6% of employment in the total manufacturing in European Union (EU).

Today, in Europe, the textile and clothing sector remains a small and medium-sized based industry, as each enterprise usually employ fewer than 250 persons. Companies of less than 50 employees account for over 90% of the workforce and produce almost 60% of the value added (European Commission 2015).

The countries with the biggest production in EU are Italy, France, Spain, the United Kingdom and Germany. All together they account for the three quarters in the European production. Generally, the United Kingdom and Germany are responsible for the textile production where Italy, France and Spain contribute in the total clothing production. This makes the industry a leader to world markets. The role of the leader is attributed to the industry because it has some strengths such as flexibility, specialization, quick adaptation of the structure of the markets and development of new products meeting with the consumers' new needs.

The textile and clothing sector in EU is one of the two biggest players in the global market. The European textile and clothing sector accounts for 20% of the extra-EU exports[1], while intra-EU exports[2] account for more than 70%. The main exporters are Italy, Germany, France, Spain, UK and Belgium who between them represent almost 80% of total EU exports of textile and clothing products (European Skills Council 2014). According to data from European Union, EU clothing imports increased strongly over each quarter of 2014. Europe imports about half of the world's entire clothing production with China manufacturing an estimated 65% of the world's textiles and clothing. With labor costs less than one third of the competitors in Europe, China achieved to attract rising market shares and become the major competitor. Other manufacturing countries and emerging economies include India, Cambodia, Bangladesh and Turkey.

Competiveness of Clothing Industry

In recent years, European clothing and textile industry has initiated several transformation and modernization processes in order to obtain a competitive advantage in global market. A combination of trends has led to this evolution. The main trends according to Europa are:

- Liberalization of trade, with the elimination of import quotas[3] on January 1st 2005.

[1] Extra-EU exports refer to the transactions with all countries outside of the EU.
[2] Intra-EU exports refer to the transactions within the EU.
[3] A governmental restriction on the quantities of a particular commodity that may be imported within a specific period of time, usually with the goal of protecting domestic producers of that commodity from foreign competition.

- Globalization of production and markets, meaning that the chain of production applies in a wider geographical area.
- Price competition.
- The evolution of competitiveness factors increasingly associated with innovation, research, skills, quality and creativity.
- Concentration in manufacturing and distribution.
- Pressure on innovation and differentiation.

Companies try to improve competiveness by taking advantage of low labor costs countries and relocating the production there. If a company is not in the production sector it can still profit by the lower priced products imported overseas. Lower manufacturing prices give company the advantage of discounts, which can give a competitive advantage. Discounts can be between 15% and 35% for products sourced from Asia and Africa (Gans et al., 2009). Furthermore, another way to compete is by vertical product differentiation, which means the production of high value products that do not apply in the mass production performed by east countries. This method has a weakness as it only works in markets where customers tend to differentiate across qualities.

The strategic approach that the industry must incorporate to its general strategy is to improve competiveness by focusing on continuous progress in the areas of research, innovation and training.

CONCLUSION

Clothing industry, one of the most important retail industries, is facing great challenges from the digital age and is a question, how fashion brands will evolve. A very important aspect is the addition of the online sales, which gives the opportunity to the clothing company to collect information on demands and sales in a digital way, directly compatible to inventories through specific software used, and can easily and almost automatically respond to the needs of the consumers.

Special attention should be paid in the following conclusions, which are found in the fashion insight report for 2014 about the “The future of fashion retailing in a digital age”:

- ✓ A state of change has become the new normal for fashion retail brands
- ✓ The sector’s most successful brands are those that have catered to customers’ needs and tastes
- ✓ Multichannel developments will focus on how to bring customer offers together

- ✓ Fashion retailers need to leverage online evolution to develop brand propositions
- ✓ Personalization key to combat threat of disintermediation of shopping experience

From the same report, as a conclusion to this chapter we are presenting the answers of “What are the biggest issues fashion retail faces today”. Most important it was mentioned the ability of providing a quality multichannel offer, secondly the strength of maintaining brand loyalty, thirdly the competition in a saturated market, and followed among others: Sourcing/designing standout products, changes in consumer behavior, competing on price, predicting trends and business rates.

After having analyzed the aspects of operations management and the application in retail and clothing industry, it is rational, at this point, to see how all the above mentioned theories and strategies are applied in a real clothing industry.

The next chapter includes the case study of a well-known retail clothing business which is established as a branch in Greece. The aim of the following chapter is not only to investigate how the theories of operations management are applied in this firm but also how helpful was such an adoption in maximizing the annual profit and how satisfied were the final customers.

CHAPTER 4 – Case study in Greek clothing industry

GREEK CLOTHING INDUSTRY

Today's Greek textile sector, in particular the textiles, clothing and leather industry remains one of the most important industrial sectors. There are numerous drives that affect the specific sector and that have led to radical changes at a global level during the last years, such as abolition of import quotas, EU enlargement, globalization of capital, environmental regulations, new and emerging technologies, intellectual property rights (IPR), consumer affairs and public health regulations, which of course affected the Greek case.

The Greek clothing and textile industry is the one of the most important industrial sectors in Greece, with various changes during the last decades in the identity of the industry and in the apparel & textile sector more generally, as well as in the fluctuation in economic numbers and indexes (both textile and clothing indexes). The Greek clothing and textile industry could be divided in the clothing part and the textile part. However this is an extremely specialised aspect for the purposes of this analysis. Therefore, we will present a picture of the whole sector, with special a special focus on the clothing industry and retailing sector.

In the 1990s, the production of clothes has decreased more than 50% in comparison to 1980s. From 1992 to 1997, the sector has lost at least 25% of employees. Moreover in 1996 Greek production comprised only 67% of men clothing and 93% of women and children clothing of what had been produced in the previous year. In 1997 the production index decreased 5,4% (Korfiatis, 1997).

Hellenic Fashion Industry Association (SEPEE) is the main representative of the apparel and textile industry in Greece. SEPEE was founded in 1973 as a non - profit organization and is headquartered in Thessaloniki, with a branch office in Athens. SEPEE is the largest apparel manufacturers association in Greece and its members (more than 300) are apparel manufacturers, textile manufacturers as well as other apparel associations (Hellenic Fashion Industry Association n.d).

SEPEE provides researchers, as well as investors with information for the industry and statistics, which are valuable for an understanding of the Greek clothing industry today. The key figures in 2012 (The Apparel & Textile sector, 2012) for the "Apparel & Textile Sector" in Greece are:

- ✓ Number of companies (manufacturing): 2.000

- ✓ Number of employees (manufacturing): 35.000
- ✓ Number of employees (trade): 30.000
- ✓ Value of exports: 1,3 billion €
- ✓ % in the manufacturing exports: 18%
- ✓ Turnover: 2.8 billion €
- ✓ Retail Sales: 4,0 billion €

The above numbers reaffirm that the Greek clothing and textile industry is one of the most important industrial sectors in Greece.

During the past few years, the industry has suffered once again, this time due to the financial crisis. A number of major worldwide changes modified the production in the particular sector, which has been experiencing a slump. The results according to the Hellenic Clothing Industry Association (2012) are the continuous closure of businesses, which immediately affects unemployment, a drop in production and demand and transport of production to neighbor countries with low wages. Increasing globalization and intense international competition combined with the financial crisis have changed the conditions relating to production and employment. Businesses in the sector give a battle in order to survive and adapt to those changes.

This is a general image of the sector in Greece but some companies still manage to stand still and make a profit. According to a survey on the published balance sheets that is presented every year by the Hellenic Fashion Industry Association (SEPEE), the turnover of the clothing industry in Greece in 2014 showed an increase of 6%. After 2010, 2013 and 2014 were the first years that Greek clothing industry recorded profits. As stated in the survey, among 115 enterprises, the turnover in 2014 came up to 720, 6 million Euros. The biggest increase of 14, 4% was recorded by the medium businesses with a turnover between 5-15 millions of Euros. The big businesses with a turnover above 15 million Euros recorded an increase of 2, 7%. On the contrary, small businesses with a turnover below 5 million Euros recorded a decrease of 1, 5%. According to the same survey, Greek exporting companies in 2014 recorded an increase of 2, 2% in their turnover, which is a very interesting data for the future of the sector (Greek Fashion, 2014).

As reported by “exportgate”, there are some characteristics about clothes manufactured in Greece which makes them unique. The quality of clothes, made by fine textiles, the perfect tailoring, the inspiration and very good taste of Greek designers and manufacturers make Greek manufactured clothes special to the global market. That is why Greek fashion exporting companies achieved to experience increasing rates of expansion to foreign markets during the last decade.

In addition to the above, Greek textile manufacturing exporting companies are divided into four distinct sub-sectors:

1. The production of textiles
2. The manufacture of clothing
3. The production of leather
4. The manufacture of footwear

Exportgate is a Portal that brings together Greek Exporters and International Importers in an effort to strengthen multilateral trade between Greek businesses and their International counterparts. This has been an initiative from a Greek bank, Eurobank, in cooperation with the Panhellenic Exporters Association (PSE), the Greek International Business Association (SEVE), the Exporters Association of Crete (EAC), SEV Hellenic Federation of Enterprises and the main bilateral chambers of commerce in Greece. Exportgate is under the auspices of the Ministry for Development Competitiveness Infrastructure Transport & Networks.(About Exportgate n.d)

Given the above information, it is necessary to add that in general, the textile and clothing industry in Greece has developed three main strategies to meet pressure from competition and adapt to new demands:

- A cost-oriented approach which uses relocation to low-cost countries
- An innovation-oriented approach diversifying the spectrum towards high-quality and specialty textiles products
- A productivity-oriented approach based on automation and IT-based supply chain management, which helps to increase flexibility and create global sourcing systems.

Another important aspect for the Greek clothing industry, stated by SEPEE is the types of Greek apparel companies. They can be divided in private label manufacturers and Greek brands.

1. The advantages of Greek *private label manufacturers* which make European brands & retailers to prefer Greece for their added value products are:

   - ✓ Excellent quality – design – price matrix
   - ✓ Very flexible
   - ✓ Quick response & fast delivery
   - ✓ Ability to respond in small and medium size orders
   - ✓ Greece is the leading cotton producer in EU
   - ✓ Highest quality of cotton
   - ✓ Fully integrated textile chain

- ✓ Long experience in exports

2. The advantages of *Greek brands* are:
   - ✓ Good design & creativity
   - ✓ Very good quality – price ratio
   - ✓ Flexibility
   - ✓ Ability to respond both in small and medium orders
   - ✓ Development of big trade chains in Greek market
   - ✓ Continuing increase of branded Greek exports

Last but not least from the characteristics in Greek clothing industry mentioned above, it is important to view the retail clothing companies that operate in Greece. Using the "basic activities of the clothing industry" (explained in Chapter 3), I created a list of clothing companies functioning in Greece, and divided them in categories based on the following criteria:

- Where the product is manufactured – *production process.*
- Where the product is sold – *supply chain.*

The categories are:

A. Companies which are importing clothes from one brand, such as Inditex, HM, or brands from Haute Couture as Prada, Chanel etc.
B. Companies which are importing clothes from several (smaller) brands and create their own style and are mainly called boutiques.
C. Companies which are both importing or having clothes from Greek suppliers, clothes from several (smaller) brands and create their own style and are mainly called boutiques.
D. Companies which produce and sell in Greece.
E. Companies which produce and sell in Greece, and are also exporting.
F. Companies which are importing and producing in Greece.
G. Companies which are importing and producing in Greece, and are also exporting.

The clothing enterprise chosen for case study, «Toi&moi», is a Greek brand, which is importing 40% and producing in Greece 60% of the merchanide, and apart from selling in Greece is also exporting through a network of 33 stores.

In order to understand the position of the specific company in relationship not only with its competitors but also in the Greek market, some statistics are presented below. The data refer to 2014 and the table of Excel from which below statistics were obtained can be found in the Appendix.

The clothing company covers the 1,56% of the market share in assets with 16.162 million Euros and ranks twelfth nationwide. The first company among

215 is AXF S.A (Attrativo) and covers the 5.45% of the market share in assets with 56.478 million Euros.

In terms of sales, Toi&moi ranks ninth among the 215 companies with 13.084 million Euros whilst the first is AXF S.A with 32.575 million Euros.

The total assets of the 215 companies is 1.035.279.000 billion Euros and the total sales reach 665.363.000 million Euros.

From the sample of 215 companies we can conclude that the industry showed a decrease on the revenues in 2014 compared to 2013. However, 2013 and 2014 were the first years that Greek clothing industry recorded profits

CASE STUDY – «TOI&MOI»

INTRODUCTION

The aim of this thesis is the valuation of operations management theory in the field of retail and in particular in the Greek clothing industry. In order to conclude my research in Greek clothing industry I used bibliography, information from Greek clothing associations and from the Chamber of Commerce and Industry, as well as field research in retail stores together with conversations with employees who are working in the clothing industry in various positions.

Taking into consideration all of the above, I have concluded that «Toi&moi» is an appropriate “case study” which:

- ✓ is a representative example of the general image of the Greek clothing industry,
- ✓ serves as an example that follows good practices,
- ✓ has margins of amelioration in the domain of operations management,
- ✓ cooperated and had willing to contribute with information for this paper.

In continuance with what was mentioned in the first part of this chapter, Toi&moi is a “Greek brand”, a company which is both importing and producing in Greece, and selling its products inside the country and abroad (exporting). This is the last category in the list of Greek clothing retail companies.

Some information to support this choice is that Toi&moi is a Greek manufacturing clothing enterprise, which has a history of 27 years in Greek market, functions stores all around the country in big and smaller cities, in 2014 had a turnover of 13.084 million Euros, and 32 stores globally. Also,

keeps another Greek characteristic, it is a “family business”. Basically the designs of the merchandises are developed in-house. However, the company is open to suggestions from peers and experts. Last but not least, it was the first Greek company to inaugurate online sales.

Additional detailed information for Toi&moi, as an introduction, before the detailed questionnaire:

Toi&moi is a creative fashion business, leader in Greek fashion industry since 1988 which aims to deliver confidence and satisfaction to its customers. Its trademark is registered in more than 55 countries all over the world.
It is a family company that is managed from Papazafeiropoulos brothers. In 1991 the first exclusive store opened in the Peristeri district of Athens, the same area where all the company’s activities were housed. The second store opened five years later in 1996 at Ermou Street, the most known shopping area in Athens. In 2002, the clothing company ranked 6th among the healthiest manufacturing enterprises in Greece, according to Eurostat. Two years later in 2004, the company’s network expanded by opening retail outlets in Halandri, Glyfada, Nea Ionia and Patission Steet. During the same year, the acquisition of new buildings was stepped up. The landmark year for Toi&moi was in 2005 as its central premises were relocated to a new, modern building with a surface of 11000 sq. m. at Nea Philadelphia. During the same year the company launched its cooperation with “2kdesign”, one of the best offices in company design imaging, which created a new communication profile for «Toi&moi». Also in 2005, the company launched a four year cooperation with “Air Paris”, one of the most famous European advertising agencies. In 2007 the first international store opened in the United Arabic Emirates in Dubai. During the second half of the year, the chain store grew with 2 new openings in the boarders of Greece in towns Arta and Agrinio. The second international store opened in Lebanon (Beirut). Also, in 2007 the company decided to facelift some of the most major sale points, for example the store in Ermou Street, the store in Thessaloniki and the store in Peristeri. In 2008 the chain continues to grow with the opening of 2 new stores in “Golden Attica” and in a mall of Pireaus, “Athens Heart”. Just before the end of 2010, it became the first Greek retail company to own an online shop. In 2011, despite the financial crisis, the clothing company continued to grow by opening 2 more new stores in the city of Patra and at “The Mall” Athens. In 2013, the company reinforced its communication plan by having Greek famous celebrities choose the brand for their public appearances.

QUESTIONNAIRE – methodology

The methodology in order to obtain information from the Clothing Company was by a qualitative questionnaire. Qualitative questionnaires could be used to gather facts about people's beliefs, feelings, experiences in certain jobs, service offered, activities and so on. The questionnaire is designed in such a way that participants have freedom to express their views in response to the question asked without any influence or clues from the interviewer.

For example, Qualitative research aim to provide an understanding of how or why things are as they are. For example, the author asked the interviewee to explain how they chose their product and why they chose that one. This discussion may cover how they monitor the whole process, how they get information on the competitions, how they select a supplier and other things besides.

There are various types of qualitative research methodologies. Research of this sort is mostly done face to face, when the interviewer asks the required questions, draw out answers, and encourage discussion.

The present study in order to reach the research aims and objectives utilized as a key tool semi-structure interviews by leading members of the industry. Semi-structure interviews are 'non-standardized' and could also be characterized as 'guided-open interviews', often allowing a higher degree of confidentiality as the replies of the interviewer tend to be more personal, compared to structured interviews, which allow a high degree of standardized questions and answers. Furthermore, semi-structured interviews provide the opportunity to the interviewer to develop secondary questions or omit others according to the process and opportunities presented for further conversation. The questionnaire was divided in different categories based on the theory from Chapter 2 and 3 in order to provide the final conclusion. After the interview with the general managers of the Clothing Company the questionnaire was given to them, additionally. The correct and accurate responses from each department of the clothing company was crucial in order to conduct a proper research. In addition, the research included many store visits and Internet research in order to gain a general image.

It is notable that the writing, and rewriting, of the questionnaire was a mirror in deeply understanding the theory developed in the first part of this paper, and most important due to answers of employees I had to go back and research parts of the operations management which at first sight were not included in the retail theory. This interaction was the major factor to conclude in the following categories:

- ✓ General questions for the enterprise including financial information, the legal status of the company and franchise possibilities.
- ✓ Basic components of retail which include information about retail stores, store operations especially for staff / employees and forecasting, location strategy and supply chain management.
- ✓ Basic components of operations management in retail which include information about customer service, merchandise, pricing policy, promotion / advertisement.
- ✓ E-shop and site development as a basic characteristic of the company, which can be viewed as a comparative advantage.

The detailed questionnaire will be attached in the Appendix of this paper.

QUESTIONNAIRE – answers by «Toi&moi»

GENERAL QUESTIONS / ENTERPRISE

1. History of the company and milestones. Information about the creators of the brand. How come you came up with this name for the brand?

Toi&moi is a creative fashion business, leader in Greek fashion industry since 1988 which aims to deliver confidence and satisfaction to its customers. Its trademark is registered in more than 55 countries all over the world. From the outset, its name conveys the philosophy of its collection: casual and elegant designer clothes expressing the two-faces of the brand, playing with the different feminine moods and always remaining loyal to quality measures. It is a family company that is managed by Papazafeiropoulos brothers.

2. What is the type of company? Is it in the stock market? Financial information and annual turnover.

Toi&moi "ABEE", is the type of the company. ABEE means Industrial and Commercial S.A. The company is not at the stock market and its annual turnover is 13 million Euros.

3. Do you do franchise? What are the criteria for the stores to grow? Is there a research before you give permission for a store to open? Who decides?

The company does franchise. The criteria for a store to grow are: previous relevant experience, financial backup, passion for fashion, personality matching with the image of the company, store and size of store. An appropriate research is done and it depends on the population of the city and the leakage to other markets. The permission to open a store is given by Mr Constantinos Papazafeiropoulos, wholesale operation and development manager in cooperation with commercial director and managing director.

BASIC COMPONENTS OF RETAIL – STORES

4. How many stores Toi&moi has in 2016? What kind of stores? Are there departments in bigger stores (shop in a shop)?

The company already allocates its products in 33 own label stores in Greece and abroad (corporate, shops in shop and franchise). These shops consist of 13 corporate shops, 8 shops in shop, 5 outlets, 4 franchise and 3 shops that are abroad. The expanding of the brand outside Greece plays a significant role in the company's strategy. Additionally, the company has a wholesale

network exceeding 200 multi brand stores throughout Greece and other countries.

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS

5. What are the main store operations? Are there departments in each store or central management?

The main store operations are:

- Cash handling and managing receipts
- Prevent Shoplifting
- Refunds and Returns
- Customer service
- Store staff scheduling and motivating
- Store administration
- Managing promotions, events and partnership
- Visual Merchandising
- Training Program
- Inventory and stock management

The staff of each store consists of the sales persons and the store manager. The number of the employees of each store depends on the size of the store and the average number of daily visitors. The first seven operations are handled from the store staff, and the other three are held in collaboration with other company's departments. For example, the Visual Merchandising team is responsible for the store as well as the windows' display. This team in collaboration with the store's team guarantees the perfect image of the clothes and the store.

6. What is the safety – security related plans you have?

Toi&moi stores meet all the specifications about safety and security (exit signs, fire-extinguisher).

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS/ STAFF – EMPLOYEES

7. Staff: What is the planning of staff and departments in the company? What is the planning of staff in every store? Does every store has a manager and every employee has certain task? Or all of them circulate in various positions such as customer service? How many employees are in each store? Does this depend to size of store or location? Do

employees circulate in many stores or they have one base? Where are the central offices?

The HR department makes a plan, which includes the tasks for every employee. Every store has a store manager and sales staff. The manager has the following tasks: merchandise control, team building, new members training, cashier management (finances of whole store), initial orders for every season, statistics of sales and communicating the collection to employees. Sales staff has the following tasks: sales, customer service, organize merchandise on shelves and store display, reorders and organization of stock, maintenance of cleanliness of the store, adjustment to procedure changes made by the central offices. The number of employees in every store meets three criteria: size of store, number of visitors per day, amount of sales. The minimum number of employees in one store is four people including the manager and the maximum is eight. Usually, employees have one base but if there is need elsewhere they must go. The reason for one base method is that the company believes in personal selling, which is, the relationship built between employees and customers. The Central offices are in Nea Philadelphia, 58 Pindou str and Mideias str.

8. How you hire employees? From central offices or each store? Do you train them? Do you have extra motivation such as percentage in sales? What do you do for the staff to bond, such as yearly parties?

Hiring is done by the central offices and in particular from the HR department. The process is the following: HR examines all the CVs sent to the company and selects the best ones or those appropriate for a specific job. Then, the first interview is arranged. If the candidate passes the first step, a second interview is done with HR and the retail manager. If the position is within the store, the third step includes a one week test in the position along with training, and at the end of the week the store manager together with HR writes a review and decides if the candidate is right for the position. If the position is in the central offices, the third step is an interview with the managing director. In every position there is training, which is a responsibility of the manager of each department. In every store, there is a bonus given based on the monthly sales mark. If this mark is achieved, everyone in the store take a commission.
For the bonding of all employees it is arranged a yearly party.

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS / FORECASTING

9. Is there a department to decide for new collections? How do you achieve having merchandise in all stores? Do you keep data and statistics for sales? How you forecast upcoming sales?

Design and sales department decide about the new collection. In order to have the right quantity of merchandise, the initial order and reorders must meet the demand. This is achieved by the following way: every store has its own budget based on historical data, performance of the store (sales), qualitative characteristics of customers and administration's goals. This budget is divided in sub-goals and the quantity of the initial order is derived. Reorders are based on the sales and the needs of each store. Data and statistics are kept by each store by a business intelligence program called "Clickview".

The company does a research in order to forecast the upcoming sales. The research includes: historical data from the stores, changes on the market (for example the opening of a competitive store close to «Toi&moi»), changes in the purchasing power of customers and the general economic condition of the country. The financial department takes into consideration this research and through analysis, the upcoming sales are estimated.

10. Who is in charge of Inventory and stock management? What program do you use?

In charge for the inventory and stock management is our warehouse manager. Warehouse manager is in touch with shops in order to assure that are full of merchandise, to avoid being out of stock and to handle their reorders. The program used is Aberon WMS (Warehouse Management System) that gives the company flexibility to check with warehouse information, while at the same time helps in distribution of merchandise to the different points of sale. This way, the supply chain, which is of great importance for growing the profitability of the company, is optimized.

11. IT- support. What kind of software you use for stocking and warehouse? Is it online with the cashier?

The software that is used is SoftOne that features a user-friendly interface that provides the company the necessary functionality to optimize business processes and increase customer satisfaction. For their warehouse, the program that they use as mentioned above is Aberon WMS (Warehouse Management System).

BASIC COMPONENTS OF RETAIL - LOCATION STRATEGY

12. Store location, in details: how many stores are there in every city? Where are they (shopping streets, malls)? Are there rules to open a store such as location or size? What is the size of stores?

Below there is analytical information about the location of the shops:

GREECE

THE MALL ATHENS Marousi, Andrea Papandreou 35, T 210 619 7735

ERMOU Ermou 75, T 210 321 2611

PATISION Patision 360, T 210 228 2433

ATHENS HEART Tavros, Pireos 180, T 210 341 1171

ATHENS METRO MALL Ag. Dimitrios, Vouliagmenis Av. 276, T 210 971 2675

KIFISIA Kyriazi 34, 210 8082967

AIGALEO Iera Odos 227, T 210 590 8573

GLYFADA A. Metaxa 20, T 210 898 6463

N. IONIA Av. Irakleiou 314, T 210 271 7085

PERISTERI Rousvelt 2 & Ethnikis Antistaseos 1, T 210 572 7979

CHALANDRI Chaimanta 24, T 210 682 4653

RIVER WEST Kifisos 96-98 Av., 210 5698254

MEDITERRANEAN COSMOS Pilea, 2310 473306

PATRA Rifa Fereou 76 st, 2610222717

ARTA Skoufa 139 st., 2681078484

KALAMATA Frantzi 14 st., 27210 21093

AGRINIO Papastratou 38 st., 26410 57210

CORNERS
ATTICA Panepistimiou 9 st., 211 1802766

ATTICA GOLDEN Kifisias 37A av., 211 1814117

ATTICA TSIMISKI Tsimiski 48-50, Thessaloniki, 2311819163

NOTOS GALLERIES ATHENS Eolou 99 & Likourgou 2-8 st., 210 3214554

NOTOS GALLERIES PIREUES Iroon Politechniou 35 st., 210 4116411

NOTOS GALLERIES THESSALONIKI Tsimiski 24 & Mitropoleos 31 st., 2310267077

SHOPPING HOUSE Alimos, Theomitoros 41 st., 210 9825910

LAMIA POLITIKOS, Amalias 2 & Kapodistriou st., 22310 30161

CYPRUS
My Mall Limassol, Franklin Rousvelt Av. 285, 0035725954914

OUTLET
PERISTERI EMPOLI OUTLET, Konstantinoulopoleos 35 Av., 210 5786221

SPATA McArthurGlen Designer Outlet, Gialou, E71, 210 6638083

FACTORY AIRPORT 210 3541031

FALIRO FACTORY FALIRO, Pireues 76 st., 210 4817819

MEGA OUTLET Pilea, 2310 474771

UAE
DUBAI The Dubai Mall, Sheikh Zayed Road, T +9714 3308325

LEBANON
BEIRUT Ghaleb Center, Hazmieh Road , T +961 5 456724

The opening of a store depends on multiple factors. Firstly, the financial department analyze the demand and the consumer power that exists in the area. These factors along with the general economic situation influence the decision concerning the location and the size of the shop that our company might open.

The stores have different sizes as the located zones and the demand of each area are different. For instance, as can be derived from the above location table, there are four different points of sale in the centre of Athens. This is so, since the centre of Athens is the main shopping destination in Athens.

BASIC COMPONENTS OF RETAIL - SUPPLY CHAIN MANAGEMENT

13. Where do you find textiles? Do you have standard suppliers for the fabrics?

In collaboration with textiles representatives, the clothing company seeks for textiles with fine quality. Most of the textiles purchased are from Europe or third world countries. Toi&moi always looks for new suppliers.

14. You have one factory?

No, the company has numerous suppliers.

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - CUSTOMER SERVICE / CUSTOMERS

15. What is the target group of costumers?

The target group is women between 25-35.

16. How is this achieved in relation to store location?

The main target of the clothing company is malls or shopping centers. The store must be above 120 sq. m so that the merchandise is displayed appropriately and the image and philosophy of the company can be distinguished.

17. Does target group of customers affects the staff you hire? For example you hire only women? Do you have an age window or sex window? What is the image you want to show through the staff?

There is a big connection between staff and target group. Staff is chosen carefully in order to meet with target group. There is no distinction in sex, although 9 out of 10 sale staff is women. That is because they believe that women more easily understand the needs of other women and can be more helpful. The age of the staff is based on the target group, namely 25-35. The image of the staff is determined by the retail manager and the HR manager so the image of the company is showed to the customers. They wear clothes of the current season in a form of advertising. There are some characteristics that the staff must have in order to represent the company and are listed below: passionate with fashion, energetic, trendy, fashionable, happy, self-motivated, sales driven, interested in consumer satisfaction, mission and vision driven, team players, adjustable to change due to the sector they work in (fashion changes continuously).

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - CUSTOMER SERVICE / CUSTOMER RELATIONS MANAGEMENT

18. Customer Service. Do you have newsletter? Do you have social media?

To keep customers up-to-date and loyal, a newsletter is sent three times per week to the company's registered lists. The theme of the newsletter depends on the marketing activities, the season of the year, or an action that the company wants to promote.

Social media play a major role to the marketing strategy, they serve as the path to communicate the brand and promote the collections. The main social media used are:
Facebook
https://www.facebook.com/toimoifashion
Twitter
https://twitter.com/toimoifashion
Instagram
https://www.instagram.com/toimoifashion/
Pinterest
https://gr.pinterest.com/toimoifashion/
And Youtube
https://www.youtube.com/user/toimoifashion

19. What is the policy for changes?

Online sales: The customer may return a product within 14 days from the receipt. The customer fills in the **Return Form** found in the packaging in order to inform the company about the reason of the return.

The **Return Form** offers the following options:

- Exchange. The returned product is exchanged whether it was defective or if the customer received the wrong code, or it is not the right size. For the best service, the customer should inform the company within 24 hours from receipt on his wish to exchange the product.
- Reimbursement to bank or Paypal account, through which was paid the order, within 30 calendar days from the receipt of the returned product.
- Credit of the value of the returned item to e-shop customer's account in order to use it during next purchase.

All the returned products, in order to be accepted, should be in their original quality state and labels should not have been removed. Moreover, for reasons of hygiene, they do not accept returns of swimsuits, leggings, tights and earrings if these have been removed from their original packaging.

As for off-line returns, the customer has the right to return the products within 14 days from the receipt and make an exchange or reimbursement of the amount.

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL – MERCHANDISE

20. What is the merchandise of «Toi&moi»?

Toi&moi is a manufacturing and trading women's clothes and accessories company. Each year creates two main and two flash collections that distributes to 33 own label stores in Greece and abroad but also to over 200 multi brand stores throughout Greece and in foreign countries such as Libanon, Cyprus, Albania, Germany and Russia. The collections consist of dresses, skirts, tops, jeans, trousers, knitwear, outwear, shirts, jackets, accessories and shoes. Each collection contains about 600 SKUs (Stock keeping units).

21. Merchandise. Who designs the clothes/accessories? What is the process?

The design department designs the clothes and the process is the following: the retail department by having feedback from the Toi&moi stores, the wholesale department by having feedback from the multi brand stores, the e-shop and the design department determine the quantity that needs to be produced about each item. Then, the design department examines the current trends of the market and by including the general philosophy and image of the company, they develop the first sketch. Next, the fabrics are chosen which go through elaboration (prints, patron) and the final pattern is made. In Toi&moi only the first production pattern is made. Then, the pattern is given to collaborators for cutting, sewing, labeling and finishing processes. 60% of the production is done in Greece and 40% abroad (Turkey, Italy, China, and India). When the production is ready, it is shipped to the central offices and is ready for distribution to Toi&moi stores and multi brand stores (wholesale).

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL – PRICE

22. Is there a pricing policy for merchandises? Do you have a standard price? Do you do offers and sales?

The pricing policy of Toi&moi is usually at market levels. The average retail price is 52€. Offers and sales are provided.

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - PROMOTION / ADVERTISEMENT

23. Does advertising plays a major part of your operations? Is there an advertising department? Do you do television/radio advertisements? Do you give your clothes for TV shows or to famous to wear them?

Advertising plays a major part in the company. Marketing and communication department is responsible for advertising and promotion of the image of «Toi&moi». There are no advertisements in television or radio. The ways Toi&moi chooses to advertise their products are by giving clothes to be worn in television shows, celebrities, singers and actors and via social media, magazines, and fashion bloggers.

ESHOP / SITE

24. E-shop. When you started sales online? How the e-shop functions? Is it one for all countries? How you deliver? Is it user friendly? Does it compete with sales from store?

Online sales started just before the end of 2010. Toi&moi became the first Greek fashion retail company which launches its own on line shop.

Functions: The e-shop has many everyday operations. The first care is to serve customers' needs so a lot of attention is given both in the presale and after sale services. Concerning the merchandise, every day products are dispatched from the warehouse, are packaged and billed in order to be sent to the customers. Moreover, other tasks take place such as photo shootings, uploading of new images and updating of the content.

Finally, banners and newsletters are created and sent to the company's clients on a weekly basis.

Language: The online store is available in two languages that the visitor can choose from, Greek for Greek market or English language for foreign countries.

Shipment: The shipment of the products is undertaken by “Geniki Taxydromiki” (in Greece) and UPS for countries abroad. In Greece, the products are delivered the **next** working day from the date of order (**2-3** working days for remote areas), and within **3-5** working days (standard delivery) or within **1-2** working days (**express saver delivery**) for countries abroad. Orders registered **until 12:30** (local time), are processed on the same day, while orders registered beyond that time, are processed the next day. All orders registered on Friday **after 12:30** (local time) and during weekend are processed on Monday. The delivery of the products in Greece is between 9:00 and 18:00, Monday to Friday and between 9:00 to 13:30 on Saturday (Geniki Taxydromiki). The delivery of products abroad is between 9:00 to 18:00, Monday to Friday and between 9:00 to 12:00 on Saturday (UPS).

Easy navigation: There are various ways to look for a product at the online store:
1. Browse through the different sections of online store using the black bar located at the top of the homepage.
2. Use the search option, located at the top left of every page of online store
3. Use the icons located at the centre of online store’s homepage.
Toi&moi ensures the best, time and quality wise, shipment of products to the indicated destination, being well aware that it is important for the customers to receive an item of excellent quality within the expected time frame.

E-shop and shops: Toi&moi eshop offers the opportunity to consumers who either live far away from or for various reasons cannot visit a Toi&moi shop, to access the products and feel, in some sense, the experience that a Toi&moi customer has. That said, the aim of the e-shop is rather to extend the range of «Toi&moi»’s customers, by offering a supplementary service, than substitute the service provided by the existing shops.

25. Site, the image of the company. Who is in charge of the site? How often you renew it?

In the site there are banners in the central page, which promote the clothes per category and smaller banners which promote new arrivals and new trends. The banners change 3 times a week. In charge of the site is the e-shop manager and in cooperation with the marketing department they decide about the advertising of e-shop, meaning what must be promoted according to the stock. For example if they have too many shirts available, they post it on facebook and there is a direct link to the e-shop.

CONCLUSION, RESULTS OF RESEARCHING «TOI&MOI»

Results

The aim of this thesis was to examine if the functions and techniques of operations management are well performed by companies operating in the Greek clothing industry. This was achieved by analyzing a well-known Greek clothing company through a qualitative research.

Toi&moi is a clothing company focusing on paying special attention to all operations management components. The department division is strict enabling employees to have a clear picture of their responsibilities and their exact role within the company.
At the same time it promotes flexibility while it has a clear perspective of the market and acknowledges the risks of being left behind by competitors. A risky element of the business is the fact that fashion industry itself is one of the most fast-paced fields around the world and it may take several years to create the desired profile to customers. At the same time, a wrong step can ruin the effort instantly. For example, well established world-wide retail companies have suffered major loses because of their marketing approach, including a single commercial that may send the wrong message.

One of the main advantages of the clothing company is their flexibility to rearrange the merchandise if a new competitive store opens, as well as to relocate employees to other stores if needed for a specific period of time.

With the use of statistical tools like surveys, questionnaires and financial indexes that have paid extra attention to the team working element the company has always sought to get the best out of the whole chain of the employees. The staff, from the employees serving at the till until those responsible for the logistics, have to be trained and work under the company's code of ethics.

Despite its successful position in the market, the continuous work does not stop. For example the inauguration of online sales gave the company the innovative advantage in comparison to other Greek brands. Being an entrepreneur is a way to continue the success.

Toi&moi was the first company in Greece to launch an online shop. Shopping on line allows the shoppers to purchase products from the convenience of their homes instead of physically visiting a store offering an easy access to a great variety of products. Toi&moi made a great effort to make their online

shopping customer friendly as an organized and appealing website can play an essential role in the income of their business. The portal with an authentic designs are entirely customer centric, which also helps in marketing as well as branding of the products. Through market research the company accurately forecasted the increase of the online sales after 2010, which was the year that the e-shop was developed. Adopting services from world-wide e-shops like free returns, refund or next day delivery, offers a high quality service and through customer feedback a lot of attention is given both in the presale and after sale services. The average number of orders per day is 55, while during sales period the orders reach 150, which play a significant role in the prosperity of the clothing company.

If we could point out a few strategic practices of the clothing company which apply to the theory presented in this paper, I would choose the ones that are outlined in the next sections:

Location strategy

The clothing company is paying attention and has specific rules for the image of each store, and the location strategy is a very important factor in order to decide how to market its merchandise to the customers. Based on the analysis in Chapter 2, the stores are located within the planned shopping area site. The planned shopping area site, as mentioned, is a retail location which has been developed to provide access to a number of outlets such as shopping malls. It is developed and operates as a single unit and the retailers rent spaces in order to place their merchandise. The initial plan is for the center to have some large key brand stores and a number of smaller retailers adding diversity and interest. For the clothing company it is very important to rent a store in all major Greek shopping centers, usually known as malls. As mentioned in Chapter 2 location decisions might be risky and should be well thought off. Such decisions require a systematic approach to the acceptance or rejection by consumers of certain areas in favor of others. In order to minimize the risk, the company researches the market, and combines other factors such as the population of each city, the age profile and average income. This means that sometimes they may prefer to open a store in a certain town, where at that time there is a flow of customers, instead of finding out the origin of the said customers. This certainly applies more to the smaller towns in Greece. For example, if a new shopping centre in Komotini is “serving” customers from all neighbouring towns, the company will choose this town, instead of, eg, the neighbouring Alexandroupolis. In conclusion the clothing company wants to be in the “primary zone” of each “trading area”.

There are specific decisions involved in choosing a location for a retail store and they come in various stages. Toi&moi researches before any decision and at the same time has specific benchmarks that need to be met such as a minimum of 120 square meters for each store.

Customer service

In relation to customer services, the company offers retail policy and employs friendly staff in order to achieve high quality services, which can also stand in the most competitive requirements among bigger companies and international brands. For example, in the context of their exchange policy, they also return money which is something that only few Greek retail stores offer, in comparison to international brands that have money return as a flagship.

Another important aspect that the company wants to ensure for its customers is the accessibility of the stores, which are in primary zones in shopping centers or inside malls. Retailers build a competitive advantage by offering excellent customer service.

Finally, consumers bring income to the retail store and therefore the staff must be kind to them and assure that they have a pleasant shopping experience. All staff is carefully selected, and trained to the highest level in order to serve customers in the best possible way. For example, the clothing company believes in “personal selling”, and in order to achieve this, they prefer the staff to be based in one store, so that it can develop a customized service to customers and also cultivate a friendly approach. Thus, one could safely assume that the clothing company mixes the two basic approaches that retailers use in order to make customer service an advantage, namely customization and standardization. Precisely because the company targets customized service it simultaneously provides, through standardization, a set of rules and procedures so that all customers receive the same service. This is important in itself but also significant for the expansion of the company. This is so because the product/service produced by an organization is, through standardization, received in the exact same way all over the world.

Last but not least, in order to achieve the desirable customer service the number of employees in every store has to be compliant with three criteria: first, the size of the store; secondly, the number of visitors per day; and finally, the amount of sales. In this way the company ensures that it has the proper staff to serve customers. At the same time, for online sales the clothing company ensures the best shipment of products to the indicated destination, time and quality wise, being well aware that it is important for the customers to receive an item of excellent quality within the expected time frame.

For supply chain management we could point out that the steps for the production process and the supply chain management are clearly defined and it appears that it would some times be more profitable to outsource parts of the operations in other countries, or other companies, Toi&moi collects all merchandise in the central offices and then distributes it in stores or in multibrands (wholesale). By adopting this “Central Hub” technique, they can ensure that everything is in in order in terms of quality as well as proper management. Each department of the supply chain cooperates closely with all others, and with the use of various software the whole process becomes easier in order to decrease inventories and have a quick response to the customers’ demand. An effective supply chain management can result in benefits such as reduced inventories, lower operating costs, product availability and customer satisfaction. The program selected to come along with the process from the staff is believed to give the company flexibility to check with warehouse information, while at the same time it helps in distribution of merchandise to the different points of sale. In this way, the supply chain, which is of great importance for increasing profitability of the company, is optimized.

Suggestions

In addition to the information given, special attention should be paid to sectors where the clothing company has room to improve and to claim more customers and better sales.

One sector should, in the author’s opinion, be promotion and advertising. It is a fact that the clothing company uses adequate tools for this, such as personal selling, promoting clothes through celebrities, working within the social media etc. In addition, the company uses publicity tools such as supplying actors and producers with clothes for the actors to wear on TV, who then appear at the “end credits”. The company does not pay for this kind of publicity but offers clothes free of charge. This is an indirect advertisement, as the company does not use direct TV commercials. However, I strongly believe that the company could use the general preference of Greek consumers for Greek brands, a corollary of the financial crisis. For this reason, Toi&moi could advertise the fact that it is a Greek company, with experience of many years in the market, improving conditions in the Greek labour market on the one hand and offering Greek products on the other. Also, the company could use TV or Radio advertisements to promote the philosophy of the company and the merchandises produced. A last critical view in the advertising sector could be that the company sends weekly newsletters, which might end up

being detrimental to the image of the company as customers receive many emails already.

Another field where the company has room for improvement is related to merchandises themselves, in particular expansion to other target groups, such as older or younger women or even men collections. This is a rather impressive and competitive business as well as successful in what it does, and the company has the knowledge to expand in new collections. In this way, the company can satisfy its customers with refreshed products, together with new items for friends, and family. Let us not forget that standard customers are getting older, and would like to keep shopping in their favourite store.

It is a fact that “Pricing at market levels” is the most common policy as the retailers lowers the risk by selling at the same price as their competitors. This can however lead to a fierce competition and may force the retailer to adopt a different approach, including gifts or services. Toi&moi uses pricing at market levels, which is a justifiable practice. However, a suggestion would be to create a “fine line”, with higher net profit. In this way, the company could inaugurate a line especially addressed to some distinguished customers, or even only to “members” or special lucky women through a competition. The above are tools used by competitive enterprises in Greece, such as “H&M”.

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As a final conclusion, it is interesting to mention that Toi&moi even in the difficult years of the Greek financial crisis remains a major national clothing brand with an important turnover and perspectives to grow. As mentioned in the first Chapter, in order to understand Operations Management, it is required to explain the transformation process, as it is the task of managers to transform the inputs into outputs through effective and efficient processes. It seems through the analysis, that the Management team of the company understands very well this statement, and this might be a reason for their success.

FINAL CONCLUSION

Operations management is the main function of every company, regardless of the size, the industry, and of whether it provides goods or services or whether it is profit or non-profit. In the case of private-sector companies, the mission of the operations function is usually expressed in terms of profits, growth and competitiveness. This also applies in the clothing industry.

In relation to Toi&moi, which is our case study, and having reviewed all operations management, as well as operations management in retail we can conclude that the company successfully reaches its targets with respect to profit, growth and competitiveness. This is due to very good cooperation between the central offices and stores; and especially within each store, which is a complex of aspects that combine human resources - staff, management team, customers - together with merchandise – products and services. In addition to the above, it would be useful to mention a quote from Chapter 1: *Two key words of productivity can be "effective" and "efficient". In operations management terms [a] business system should be both effective and efficient. A system is effective if it achieves the desired results, and a system is efficient if it uses a 'reasonable' amount of effort (inputs) to achieve the desired outputs.* This applies very well to our case study, which is an effective business and has an efficient system.

The clothing industry is definitely characterized by the key words used in the first paragraph of this part: profit, growth and competitiveness.

Many interesting issues about the clothing industry came up during the research of this paper. These include exploitation of designers, factories that use under-aged workers, cheap labor and unsafe working conditions. These factors, which have been hallmarks of the clothing industry for centuries, also provide part of the sources of profit, growth and competitiveness. Surely these factors should at least be mentioned in this closing part, but are beyond the purpose of this paper.

Needless to say, the need for low cost of production with a view to maximising profit should not breach fundamental human rights, notably children's rights, through the use of under-aged workers in factories. This is a problem, which in management terms, can be overpassed through Corporate Social Responsibility and/ or related practices. Many successful clothing industries have campaigns and cooperate with non-profit organizations, or devote part of profit to philanthropic gestures. Sometimes this becomes a landmark of the company. For example, "TOMS" shoes introduced the idea that purchase of one pair of shoes amounts to the company offering another pair to children in need of it. This is quite clearly a marketing tool and a method of

advertisement, which however also drives the company to redistribute part of profit.

Regarding growth of each potential clothing business, and the fact that most clothes are produced in one country and sold in another, a typical result is globalized production in the retail-clothing industry. This has caused the decrease in traditional clothing manufacturers from different countries. Differentiation offered by traditional manufacturers has currently eclipsed and is supplemented by the fashion industry. For example, Greek style sandals is a current trend inspiring designers worldwide including “Dolce and Gabbana” or “Alexander MCQueen”.

Retailing is one of the world’s largest and most competitive industries The customers are increasing their demands and retailers have to predict the desires or even create them. Every time someone enters a retail store, his/her shopping experience has been extensively planned, having created a certain image of the items seen for sale to the layout and design of the store. Since the clothing industry is one of the most profitable ones, it is reasonably a competitive industry. It is very interesting how a basic need, that of dressing, is transformed into a global industry with millions of employees and massive revenue.

All the above are facts, that have been fully documented, stated, and reported and constitute externalities, namely the “environment”, which is outside of the control of the organization. Nevertheless, all operating systems are influenced by the organization’s environment. This environment includes both functional areas within the organization, each with its own policies, resources, forecasts, goals, assumptions and constraints, and the wider world outside the organization – the legal, political, social and economic conditions within which it operates. Changes in either the internal or the external environment may affect the way in which operations function. Therefore all clothing companies should take into consideration the mentioned facts and through operations management, should try to overcome them. This is the only way that clothing industry will remain a multibillion-dollar global enterprise and one of the most important retail industries worldwide.

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APPENDIX 1 – QUESTIONNAIRE TO «TOI&MOI»

GENERAL QUESTIONS / ENTERPRISE

1. History of the company and milestones. Information about the creators of the brand. How come you came up with this name for the brand?
2. What is the type of company? Is it in the stock market? Financial information and annual turnover.
3. Do you do franchise? What are the criteria for the stores to grow? Is there a research before you give permission for a store to open? Who decides?

BASIC COMPONENTS OF RETAIL - STORES

4. How many stores Toi&moi has in 2016? What kind of stores? Are there departments in bigger stores (shop in a shop)?

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS

5. What are the main store operations? Are there departments in each store or central management?
6. What is the safety – security related plans you have?

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS/ STAFF – EMPLOYEES

7. Staff: What is the planning of staff and departments in the company? What is the planning of staff in every store? Does every store has a manager and every employee has certain task? Or all of them circulate in various positions such as customer service? How many employees are in each store? Does this depend to size of store or location? Do employees circulate in many stores or they have one base? Where are the central offices?
8. How you hire employees? From central offices or each store? Do you train them? Do you have extra motivation such as percentage in sales? What do you do for the staff to bond, such as yearly parties?

BASIC COMPONENTS OF RETAIL - STORE OPERATIONS / FORECASTING

9. Is there a department to decide for new collections? How do you achieve having merchandise in all stores? Do you keep data and statistics for sales? How you forecast upcoming sales?
10. Who is in charge of Inventory and stock management? What program do you use?
11. IT- support. What kind of software you use for stocking and warehouse? Is it online with the cashier?

BASIC COMPONENTS OF RETAIL - LOCATION STRATEGY

12. Store location, in details: how many stores are there in every city? Where are they (shopping streets, malls)? Are there rules to open a store such as location or size? What is the size of stores?

BASIC COMPONENTS OF RETAIL - SUPPLY CHAIN MANAGEMENT

13. Where do you find textiles? Do you have standard suppliers for the fabrics?
14. You have one factory?

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - CUSTOMER SERVICE / CUSTOMERS

15. What is the target group of costumers?
16. How is this achieved in relation to store location?
17. Does target group of customers affects the staff you hire? For example you hire only women? Do you have an age window or sex window? What is the image you want to show through the staff?

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - CUSTOMER SERVICE / CUSTOMER RELATIONS MANAGEMENT

18. Customer Service. Do you have newsletter? Do you have social media?
19. What is the policy for changes?

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL – MERCHANDISE

20. What is the merchandise of «Toi&moi»?
21. Merchandise. Who designs the clothes/accessories? What is the process?

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - PRICE

22. Is there a pricing policy for merchandises? Do you have a standard price? Do you do offers and sales?

BASIC COMPONENTS OF OPERATIONS MANAGEMENT IN RETAIL - PROMOTION / ADVERTISEMENT

23. Does advertising plays a major part of your operations? Is there an advertising department? Do you do television/radio advertisements? Do you give your clothes for TV shows or to famous to wear them?

ESHOP / SITE

24. E-shop. When you started sales online? How the e-shop functions? Is it one for all countries? How you deliver? Is it user friendly? Does it compete with sales from store?
25. Site, the image of the company. Who is in charge of the site? How often you renew it?

APPENDIX 2 – MARKET DATA 2014

(SOURCE: www.inr.gr)

ΕΠΩΝΥΜΙΑ	TOTAL ASSETS	±%	% Market Share	SALES	NET PROFIT
AXF ΑΕ ΕΝΔΥΜΑΤΑ - ΥΦΑΣΜΑΤΑ	56478	3	5.455	32575	55
LAPIN HOUSE ΣΤ ΠΑΠΑΪΩΑΝΝΟΥ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	19463	-2	1.88	24602	85
BLUE POINT Σ Ν ΑΡΓΥΡΟΣ ΑΕ ΕΝΔΥΜΑΤΑ	24058	15	2.324	19594	-1061
BODYTALK ΑΕ ΕΝΔΥΜΑΤΑ	15198	1	1.468	16555	1576
ΓΚΛΙΑΓΙΑ Ν ΑΦΟΙ ΑΒΕ ΓΟΥΝΑΡΙΚΑ	21363	7	2.064	16185	915
SUPERIOR UNDIES ΑΒΕΕ ΚΑΛΤΣΕΣ - ΕΝΔΥΜΑΤΑ	15438	-10	1.491	15345	-1378
ΠΕΤΣΑΣ ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΕΣΩΡΟΥΧΩΝ	12637	-19	1.221	14544	-364
DIMIS ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	10534	-24	1.018	14505	1003
TOI & MOI ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	16162	-4	1.561	13084	-21
MERCURY CORPORATION ΕΞΑΓΩΓΙΚΗ ΕΝΔΥΜΑΤΩΝ ΑΒΕ	6616	39	0.639	12717	1226
ΜΑΝΤΖΙΑΡΗΣ ΑΒΕΕ ΓΟΥΝΙΝΑ ΕΝΔΥΜΑΤΑ	11281	23	1.09	12524	17
ΦΡΑΓΚΟΣ - MANDARINO ΑΕ ΠΑΙΔΙΚΑ ΕΝΔΥΜΑΤΑ	19674	7	1.9	12432	-407
UNION 3 FASHION ΕΠΕ ΕΙΔΗ ΕΝΔΥΣΕΩΣ	2544	-12	0.246	12394	291
ΜΙΝΕΡΒΑ ΑΦΟΙ Ι & Β ΛΑΔΕΝΗΣ ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΠΛΕΚΤΙΚΗΣ	2788	-4	0.269	11815	-2507
COTTON FASHION ΑΕ ΕΝΔΥΜΑΤΑ	4783	-30	0.462	11492	289
EVA JO !!! ΑΕ ΕΝΔΥΜΑΤΑ	4039	32	0.39	10801	1271
ΜΠΕΤΤΙΝΑ - ΕΙΔΗ ΠΛΕΚΤΙΚΗΣ ΑΒΕΕ	17113	-9	1.653	9914	-261
ΚΟΜΟΤΕΧ ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΕΣΩΡΟΥΧΩΝ	16257	1	1.57	9901	234
ALOUETTE ΕΤΑΙΡΕΙΑ ΠΑΙΔΙΚΩΝ ΕΝΔΥΜΑΤΩΝ ΑΕ	15126	-26	1.461	9685	-5586
ΚΡΑΝΙΑΣ ΓΟΥΝΑΡΙΚΑ - AVANTI FURS ΑΕΒΕ	9396	-24	0.908	9166	80
ΚΑΛΕΣΤΕΣΙΑ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	4775	-13	0.461	8283	77

DIEN ΚΑΤΑΣΚΕΥΑΣΤΙΚΗ & ΕΜΠΟΡΙΚΗ ΕΝΔΥΜΑΤΩΝ ΑΕ	414	29	0.04	7971	615
ΓΕΩΡΓΟΥΔΑΚΗΣ Α - NEW AGE ΑΒΕΕ ΕΝΔΥΜΑΤΑ	3678	-6	0.355	7854	325
RAXEVSKY ΑΕΒΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	18956	-18	1.831	7486	-4228
EXPOPEL ΕΛΛΗΝΙΚΗ ΕΞΑΓΩΓΙΚΗ ΓΟΥΝΟΠΟΙΙΑ ΑΕ	14232	24	1.375	7415	68
Π-Κ-Ζ ΓΟΥΝΑΡΙΚΑ ΑΒΕΕ	4461	27	0.431	7191	186
ΣΑΚΕΛΛΑΡΗΣ Μ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	7345	-3	0.709	6951	-60
ΠΕΡΒΕΝΗΣ Α ΑΒΕΕ ΕΝΔΥΜΑΤΑ	2134	7	0.206	6852	102
SARAH LAWRENCE ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	8183	4	0.79	6831	-258
EMBROTEX ΤΟΓΚΑΣ ΑΕ ΕΙΔΗ ΕΝΔΥΣΗΣ - ΚΕΝΤΗΜΑΤΑ	2441	24	0.236	6794	417
ΣΙΑΜΙΔΗΣ Κ ΑΕ ΥΦΑΣΜΑΤΑ - ΕΝΔΥΜΑΤΑ	14139	2	1.366	6251	6
ANEL ΑΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	3462	-3	0.334	6111	18
FOREL ΑΕΒΕ ΕΝΔΥΜΑΤΑ	7427	-2	0.717	5985	154
ΤΣΟΥΚΑ ΑΦΟΙ ΒΙΟΜΗΧΑΝΙΑ ΓΟΥΝΑΡΙΚΩΝ ΑΕΒΕ	12131	-6	1.172	5941	-689
COTTON HOUSE ΑΕ ΕΝΔΥΜΑΤΑ	2193	24	0.212	5882	177
ERTON GROUP Π ΚΩΣΤΟΠΟΥΛΟΣ ΑΒΕΕ ΓΟΥΝΟΠΟΙΙΑ	14674	-17	1.417	5719	-891
ΠΡΕΤΤΟ ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	4594	26	0.444	5542	134
ACCESS ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	3818	11	0.369	5429	163
B&F ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	54282	-4	5.243	5421	1416
ΜΑΣΣ ΦΑΣΙΟΝ ΑΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ ΜΑΚΟ	2877	-3	0.278	5367	127
ΣΑΛΑΓΙΑΝΝΗΣ Γ ΑΒΕΕ ΓΟΥΝΑΡΙΚΑ	13981	5	1.35	5285	-394
EDWARD ΕΝΔΥΣΗ ΑΒΕΕ	4499	-3	0.435	4954	21
ACTIVE ΑΕΒΕ ΓΟΥΝΑΡΙΚΑ	6008	-16	0.58	4644	377
PRESTIGE ΑΕΒΕ ΥΦΑΣΜΑΤΑ - ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	6235	5	0.602	4602	2
ΛΕΓΓΕΡΑ Γ Κ - NICE - TEXTILE ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	1939	-15	0.187	4575	43

ΣΠΥΡΟΠΟΥΛΟΣ Π & ΥΙΟΙ - ΓΟΥΝΑΡΙΚΑ ΑΕ	11987	15	1.158	4491	6
AGELINA - ΠΑΠΑΚΩΝΣΤΑΝΤΙΝΟΥ Α ΑΕ ΕΝΔΥΜΑΤΑ	3863	-11	0.373	4345	88
ΧΑΛΙΜΟΥ ΑΦΟΙ ΑΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	3039	4	0.294	4326	53
ΚΩΦΙΔΗΣ Σ & ΣΙΑ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	2958	3	0.286	4245	72
ΓΙΩΡΑΣ - ΓΟΥΝΑΡΙΚΑ ΑΕ	13849	6	1.338	4196	22
ΠΑΛΚΟ ΑΕ ΦΑΝΕΛΛΟΠΟΙΙΑ	10154	1	0.981	4177	13
ΓΚΟΤΖΑΜΑΝΗΣ Ε - JOYCE ΑΒΕΕ ΕΝΔΥΜΑΤΑ	3037	14	0.293	4124	579
ΚΥΡΙΑΚΟΥ Ι ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	3162	3	0.305	4096	35
ΧΡΙΣΤΟΠΟΥΛΟΙ ΑΦΟΙ ΑΒΕΤΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	11744	-9	1.134	4082	-979
ΕΛΒΙΤΕΞ ΕΞΠΟΡΤ ΑΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	4769	0	0.461	4008	70
VERTIGO FASHION ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	898	26	0.087	4003	96
ΧΗΡΑΣ Γ & ΥΙΟΙ ΑΕ ΚΑΤΑΣΚΕΥΗ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	2483	14	0.24	3975	184
ΗΛΙΟΣ ΒΙΟΜΗΧΑΝΙΑ ΠΛΕΚΤΙΚΗΣ ΑΒΕΕ	10201	-4	0.985	3971	-184
ΓΡΑΒΑΣ Γ Μ ΕΠΕ ΓΟΥΝΙΝΑ ΕΝΔΥΜΑΤΑ	6339	-13	0.612	3913	134
ΔΟΥΡΟΣ ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	9709	-7	0.938	3776	-738
ΤΡΑΞ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	6227	5	0.601	3617	740
VAMP ΑΒΕΕ ΠΙΤΖΑΜΕΣ - ΕΣΩΡΟΥΧΑ - ΜΑΓΙΟ	3597	-10	0.347	3595	116
ΛΑΓΓΙΩΤΗΣ ΑΕ ΠΑΡΑΓΩΓΗ ΕΙΔΩΝ ΓΟΥΝΟΠΟΙΙΑΣ	5675	4	0.548	3538	47
ΝΤΕΡΠΟΥΛΗ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΣΗΣ	6561	-5	0.634	3373	91
ZIC ZAC ΑΒΕΕ ΠΑΡΑΓΩΓΗ ΕΝΔΥΜΑΤΩΝ	1743	2	0.168	3229	28
ΒΙΟΧΑΡ - MATOU FRANCE ΑΕ ΠΑΙΔΙΚΑ ΡΟΥΧΑ	3669	1	0.354	3229	-46
ΜΑΝΕΤΤΙ ΑΕ ΠΑΡΑΓΩΓΗ ΕΙΔΩΝ ΕΝΔΥΜΑΣΙΑΣ	3834	13	0.37	3163	234
DAY ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2664	2	0.257	3044	27

ΒΑΡΝΗΣ ΓΟΥΝΑΡΙΚΑ ΑΒΕΕ	5804	-15	0.561	2905	86
ΣΤΑΜΑΤΗΣ Γ ΑΕΒΕ ΕΙΔΗ ΕΝΔΥΜΑΣΙΑΣ	3475	3	0.336	2868	253
ΣΤΑΥΡΟΠΟΥΛΟΣ Γ & ΣΙΑ - ΑΒΟΤΙS ΕΠΕ ΕΝΔΥΜΑΤΑ	2007	31	0.194	2868	58
ΣΦΥΓΜΟΣ ΜΟΔΑΣ ΑΕ ΒΙΟΤΕΧΝΙΚΗ ΕΝΔΥΜΑΤΩΝ	158	2	0.015	2787	70
ΟΡΕΣΤΙΑΣ ΓΟΥΝΑΡΙΚΑ ΑΒΕΕ	6725	10	0.65	2766	20
ΣΟΥΛΗΣ - ΚΙΟΥΝΙΣ ΑΒΕΕ ΚΕΝΤΗΜΑΤΑ	9202	-3	0.889	2762	-64
ΕΛΒΕ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	22703	-20	2.193	2736	5892
ΜΕΛΤΕΜΙ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2141	13	0.207	2628	49
ΚΟΥΣΤΕΝΗ Ν ΑΒΕΕ ΕΝΔΥΜΑΤΑ - ΕΠΟΧΙΑΚΑ ΕΙΔΗ	5465	-23	0.528	2547	-597
ΑΘΛΟΤΕΧΝΙΚΗ ΑΒΕΕ ΑΘΛΗΤΙΚΑ ΕΙΔΗ ΕΝΔΥΣΗΣ	4382	-15	0.423	2531	-108
ΚΑΡΑΛΗΣ ΑΕΒΕ ΕΝΔΥΜΑΤΑ	2364	5	0.228	2494	129
ΛΟΛΑ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	5695	0	0.55	2359	-354
ΑΣΗΜΑΚΟΠΟΥΛΟΣ Γ ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	1545	-1	0.149	2334	8
ΚΑΡΑΤΖΑΣ ΑΕΒΕ ΠΡΟΪΟΝΤΑ ΓΟΥΝΑΣ	6551	31	0.633	2288	-12
ΜΠΟΥΡΤΖΟΥ Κ ΑΦΟΙ ΑΕ ΓΟΥΝΟΠΟΙΙΑ	3896	139	0.376	2257	13
ΤΟΚΟΣ Α - Χ ΠΑΡΑΣΚΕΥΟΠΟΥΛΟΣ ΒΑΦΕΙΑ ΑΒΕ	3371	-1	0.326	2177	136
ΚΟΛΙΟΣ Σ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	948	-4	0.092	2174	34
ΜΑΤΘΑΙΟΠΟΥΛΟΥ Α - UNITEX ΕΠΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	493	-23	0.048	2151	14
DMN ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ ΑΕ	2014	-10	0.195	2145	-126
STAFF ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΕΝΔΥΜΑΤΩΝ	52597	-3	5.08	2132	-524
HYPE ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ - ΑΞΕΣΟΥΑΡ	1845	-2	0.178	2125	7
ΜΠΙΘΑΡΑΣ Α ΑΒΕΕ ΒΙΟΜΗΧΑΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	2991	-5	0.289	2104	-174
ΧΙΛΛΕΡ Β - ΟΤΤΙΜΟ ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	823	16	0.079	1874	7
VENER ΑΕ ΕΙΔΗ ΕΝΔΥΣΗΣ	1241	-12	0.12	1731	-166

CBS CLOTHING BUSINESS SERVICES AE ΕΝΔΥΜΑΤΑ	1916	20	0.185	1698	286
ΡΟΔΟΠΟΥΛΟΣ Α ΕΠΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2996	2	0.289	1663	39
HIGH FASHION AE ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2822	1	0.273	1662	11
ΑΣΠΙΣ ΕΛΛΑΣ ΑΒΕΕ ΕΙΔΗ ΑΤΟΜΙΚΗΣ ΠΡΟΣΤΑΣΙΑΣ	5822	7	0.562	1635	29
ΚΑΡΑΚΟΥΛΑΚΗΣ Φ - ΓΟΥΝΑΡΙΚΑ ΑΕ	5879	11	0.568	1629	-3
PALM TEXTILES AE ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	488	4	0.047	1603	5
ΠΑΡΝΑΣΑ Α ΕΠΕ ΕΝΔΥΜΑΤΑ	1186	8	0.115	1601	135
ΜΟΖΑΪΚΑ ΓΟΥΝΑΡΙΚΑ ΕΠΕ	4279	8	0.413	1588	0
ΜΟΡΑΓΛΗΣ - ΒΙΟΜΗΧΑΝΙΑ ΕΝΔΥΣΗΣ ΑΧΑΪΑΣ ΑΕ	3209	-20	0.31	1543	249
ΣΩΤΗΡΟΠΟΥΛΟΣ Ν ΑΕ ΠΑΙΔΙΚΑ ΕΝΔΥΜΑΤΑ	4718	2	0.456	1523	30
ΕΠΙΛΕΚΤΑ ΠΛΕΚΤΑ ΑΕ	1122	-10	0.108	1448	65
ΜΑΣΣΕΛΟΣ - ΝΟΤΑ ΑΕ ΕΙΔΗ ΕΝΔΥΣΗΣ	2175	8	0.21	1445	22
ΠΑΠΑΔΟΠΟΥΛΟΥ Α - ΚΟΝΤΡΑΣΤ ΕΠΕ ΕΝΔΥΜΑΤΑ	297	-13	0.029	1429	22
ΜΠΑΝΤΗΛΑΣ Ε ΕΝΔΥΜΑΤΑ ΑΕ	959	0	0.093	1416	163
ΓΟΥΝΟΒΙΟΤΕΧΝΙΚΗ - 32 ABOVE AE	827	12	0.08	1391	57
GRUPPO BIZZARO ΕΙΔΗ ΕΝΔΥΣΗΣ ΑΕ	5948	4	0.575	1336	-37
ΕΛΛΑΣ ΜΙΝΚ ΦΑΡΜ ΑΕ ΕΚΤΡΟΦΕΙΟ ΖΩΩΝ - ΓΟΥΝΟΠΟΙΙΑ	3592	-9	0.347	1325	-99
ΜΙΧΟΣ ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΕΝΔΥΜΑΤΩΝ	3027	-8	0.292	1324	-124
SEA SHELL AE ΕΞΑΓΩΓΙΚΗ ΕΝΔΥΜΑΤΩΝ	2416	-12	0.233	1318	-154
LAPEL AE ΔΕΡΜΑΤΙΝΑ ΕΝΔΥΜΑΤΑ	4562	2	0.441	1311	2
ΑΜΠΑΤΖΗΣ Χ & ΣΙΑ ΑΒΕΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	976	-11	0.094	1268	-300
ΜΕΝΤΙΤΕΡΑΝΙΑ ΤΕΞΤΙΛ ΕΠΕ ΕΝΔΥΜΑΤΑ	558	23	0.054	1257	81
ΓΙΑΝΝΕΤΟΣ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	3162	1	0.305	1253	-5
VARONIC AE ΕΞΑΓΩΓΙΚΗ ΜΠΛΟΥΖΩΝ	3374	0	0.326	1242	-66
ΡΟΥΣΟΥΛΗΣ Μ ΑΕ ΜΕΤΑΠΟΙΗΣΗ ΓΟΥΝΑΣ	4853	-13	0.469	1228	-275

DKS ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΜΑΤΩΝ ΑΕ	4942	-18	0.477	1203	189
ΧΑΡΙΤΙΔΗΣ Σ ΑΒΕΕ ΠΑΙΔΙΚΑ ΕΝΔΥΜΑΤΑ	3548	-5	0.343	1183	-7
ΜΗΤΡΟΠΟΥΛΟΣ Τ ΔΗΜΙΟΥΡΓΙΑ ΕΝΔΥΜΑΤΩΝ ΑΕ	1636	-19	0.158	1134	-7
ΚΟΛΛΗΣ - ΕΤΑΙΡΕΙΑ ΕΝΔΥΜΑΤΩΝ ΑΕ	961	-2	0.093	1066	34
TRIMAR ΕΠΕ ΒΑΦΗ - ΛΕΥΚΑΝΣΗ ΕΝΔΥΜΑΤΩΝ	699	2	0.068	1035	26
VERSAVI ΓΟΥΝΑΡΙΚΑ ΑΒΕΕ	2247	-20	0.217	1026	16
ΓΚΑΒΟΓΙΑΝΝΗΣ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1485	-1	0.143	997	0
MAESTRI ΕΠΕ ΕΝΔΥΜΑΤΑ ΠΟΛΥΤΕΛΕΙΑΣ	513	32	0.05	993	123
SN FURS ΑΕ ΓΟΥΝΑΡΙΚΑ	3484	-12	0.337	910	-498
ASTROPEL ΑΒΕΕ ΓΟΥΝΑΡΙΚΑ	6472	-1	0.625	906	-326
CALSTA WORK WEAR ΑΕ ΕΡΓΑΤΙΚΑ ΕΝΔΥΜΑΤΑ	2004	-6	0.194	860	-146
GRUPPO PAPARAZZI ΕΠΕ ΒΙΟΤΕΧΝΙΑ ΠΛΕΚΤΩΝ	1297	-1	0.125	836	121
ΑΝΤΩΝΑΚΟΥ ΑΦΟΙ - GENESIS ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1915	-7	0.185	822	-168
FASHIONET ΑΕ ΕΝΔΥΜΑΤΑ	946	12	0.091	808	9
ΜΠΑΖΙΑΝΑΣ Κ & ΣΙΑ ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	675	-10	0.065	774	3
ΑΡΧΟΝΤΗΣ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	1216	10	0.117	745	6
BELLINO ΑΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	1091	-4	0.105	737	41
ΜΟΥΔΙΩΤΗ ΑΦΟΙ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	664	1	0.064	705	19
GELATO ΑΕΒΕ ΕΝΔΥΜΑΤΑ	405	-1	0.039	704	3
LIONS FASHION ΕΠΕ ΕΝΔΥΜΑΤΑ	319	-21	0.031	704	-303
ΔΟΜΝΑ - VERO COLLECTION ΑΕ ΕΝΔΥΜΑΤΑ	2518	-3	0.243	675	3
LUI E LEI ΑΒΕΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	529	-2	0.051	671	74
ΓΚΕΚΑΣ Γ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2418	-6	0.234	650	-139
GTK FASHION ΑΕΒΕ ΕΣΩΡΟΥΧΑ - ΜΑΓΙΟ	825	3	0.08	618	84
ΜΑΚΕΔΟΝΙΚΗ ΕΤΑΙΡΕΙΑ ΚΑΤΑΣΚΕΥΗΣ ΕΝΔΥΜΑΤΩΝ ΑΕ	2792	-10	0.27	615	-119

GEORGY ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	1515	-1	0.146	613	-88
BONACHERO ΑΕΒΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	1018	7	0.098	606	16
ΜΑΝΟΥΕΛ ΕΝΔΥΜΑΤΑ ΑΕΒΕ	515	7	0.05	596	4
MARIO ΑΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	2058	6	0.199	561	-6
ΚΟΜΠΕΛ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	842	1	0.081	560	21
ΒΕΛΟΥΔΑΚΗΣ Χ ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	402	-3	0.039	534	-100
ΠΑΡΘΕΝΗ Ο ΕΠΕ ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	746	16	0.072	531	26
ΤΡΙΚΟΠΛΕΞ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	3987	-3	0.385	521	-128
GOLD FISH ΑΕ ΕΝΔΥΜΑΤΑ	620	1	0.06	513	6
INTERPLEX ΑΕ ΕΦΑΡΜΟΓΕΣ ΠΛΕΚΤΙΚΗΣ	996	-10	0.096	505	-54
ΜΑΣΤΟΡΙΔΗΣ & ΤΟΜΑΣΚΕΣΗ ΕΠΕ ΕΝΔΥΜΑΤΑ	712	-10	0.069	494	6
ELINAL ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1979	-19	0.191	484	-11
ΚΑΚΛΑΜΑΝΟΣ Σ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΜΑΤΩΝ	2837	-5	0.274	465	59
ANORAK HELLAS ΕΠΕ ΑΛΕΞΙΣΦΑΙΡΑ ΕΝΔΥΜΑΤΑ	510	-28	0.049	447	10
ΜΟΥΤΣΙΟΣ Δ ΑΕ ΔΕΡΜΑΤΙΝΑ ΕΙΔΗ - ΓΟΥΝΑΡΙΚΑ	1212	-1	0.117	441	-45
ΚΤΚ ΑΕ ΓΟΥΝΑΡΙΚΑ	5325	-32	0.514	417	-301
MARIA MANOLIA ΑΕ ΕΙΔΗ ΕΝΔΥΣΗΣ	840	3	0.081	396	20
DNA ΕΞΑΓΩΓΙΚΗ ΕΝΔΥΜΑΤΩΝ ΑΕ	442	-34	0.043	396	-91
ΡΕΚΟ ΑΕ ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΜΑΤΩΝ	1653	2	0.16	387	3
ΑΘΗΝΑΙΑ - Μ ΚΑΡΑΜΙΧΑΛΗΣ ΑΒΕΕ ΕΙΔΗ ΕΝΔΥΣΕΩΣ	916	4	0.088	376	20
ΠΑΠΑΓΕΡΙΔΗΣ Δ & ΥΙΟΙ DOLPHIN ΑΒΕΕ ΕΝΔΥΜΑΤΑ	879	-8	0.085	373	-7
ΚΕΝΤΗΜΑ ΑΒΕΕ ΙΕΡΑΤΙΚΑ ΑΜΦΙΑ	743	-2	0.072	358	14
ΚΑΛΟΓΕΡΑΚΗΣ Μ Η ΦΑΝΕΛΛΟΠΟΙΙΑ ΑΕ	2359	0	0.228	343	-67
SPRINT Α ΛΟΥΚΑΡΗ - Β ΚΑΡΑΒΑΣΙΛΗΣ ΑΒΕ ΕΝΔΥΜΑΤΑ	2994	-7	0.289	317	-224

SMART ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2529	-12	0.244	315	-346
ΧΑΡΑΧΟΥΣΗΣ Π ΒΙΟΜΗΧΑΝΙΑ ΓΟΥΝΑΡΙΚΩΝ ΑΕ	1265	2	0.122	295	13
ΚΕΡΑΜΙΔΑΣ ΑΕ ΒΙΟΜΗΧΑΝΙΑ ΕΝΔΥΣΗΣ	606	0	0.059	278	-14
MILO ΣΙΟΥΤΗ ΒΙΟΜΗΧΑΝΙΑ ΕΙΔΩΝ ΓΥΝΑΙΚΕΙΑΣ ΕΝΔΥΣΗΣ ΑΕ	3005	-6	0.29	274	-190
ΙΣΤΟΣ ΕΠΕΝΔΥΤΙΚΗ ΑΒΕΕ ΕΙΔΗ ΕΝΔΥΜΑΣΙΑΣ	698	-16	0.067	268	-39
ΜΠΡΑΝΙΔΗΣ Π ΕΠΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	201	2	0.019	267	35
ΤΟΥΝΤΑ Α ΑΒΕΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	304	-11	0.029	257	-21
KNOW - HOW Γ ΠΑΥΛΑΚΗΣ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1471	-2	0.142	255	-31
ΡΟΗΛ ΑΒΕΕ ΕΝΔΥΜΑΤΑ ΠΡΟΣΤΑΣΙΑΣ	811	4	0.078	248	2
DOM ΑΕ ΠΑΡΑΓΩΓΗ ΕΝΔΥΜΑΤΩΝ	891	-2	0.086	231	8
ΠΑΠΑΔΟΠΟΥΛΟΣ Β & ΣΙΑ ΕΠΕ ΤΙΡΑΝΤΕΣ - ΖΩΝΕΣ	282	6	0.027	224	24
ΜΟΝΤΕΛΙΝΑ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	2855	110	0.276	215	95
ΙΑΚΩΒΑΚΗΣ ΑΕ ΕΝΔΥΜΑΤΑ	1772	2	0.171	170	10
ΤΟΨΗΣ Δ ΕΞΑΓΩΓΙΚΗ ΕΝΔΥΜΑΤΩΝ ΑΕ	1032	10	0.1	156	70
ΛΑΥΡΕΝΤΙΑΔΗΣ Κ ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	1021	-23	0.099	145	-82
ΜΠΑΚΙΡΤΖΗΣ Γ & Χ - ΑΝΘΟΤΕΞ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	941	0	0.091	139	10
ΕΛΛΗΝΙΚΗ ΒΙΟΜΗΧΑΝΙΑ ΔΕΡΜΑΤΩΝ ΑΕ	267	2	0.026	134	2
ΑΝΑΣΤΑΣΙΑΔΗΣ Δ - ΓΟΥΝΑΡΙΚΑ ΑΕ	1114	-15	0.108	133	4
ΤΣΙΛΙΓΓΙΡΗΣ Α ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	486	-38	0.047	131	-14
ΙΝΤΕΡΤΖΗΝΣ ΕΠΕ ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΜΑΤΩΝ	397	-9	0.038	126	1
ZEDA ΔΕΡΜΑΤΙΝΑ ΕΙΔΗ ΑΕ	12303	2	1.188	119	-277
ΤΗΕΙΑ ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	323	-17	0.031	100	-56
ΣΕΛΕΚΤ ΠΛΕΚΤΗΡΙΑ ΑΕ	180	-7	0.017	92	-10
ΝΑΚΟΥ Χ ΑΦΟΙ ΑΕ ΒΙΟΤΕΧΝΙΑ ΓΟΥΝΑΡΙΚΩΝ	3975	21	0.384	84	10
MARIBELLE ΑΒΕΕ ΕΝΔΥΜΑΤΑ ΠΟΛΥΤΕΛΕΙΑΣ	680	-2	0.066	80	-41

ΤΖΙΑΝΙ ΕΠΕ ΓΟΥΝΟΠΟΙΙΑ	551	31	0.053	78	-11
ΑΒΡΑΜΟΠΟΥΛΟΣ - AVRA FURS ΑΕ ΕΝΔΥΜΑΤΑ	441	-5	0.043	58	-5
ΝΑΝΑ ΑΒΕΕ ΚΑΤΑΣΚΕΥΗ ΕΝΔΥΜΑΤΩΝ	989	-6	0.096	49	-120
KASSANDER ΕΞΑΓΩΓΙΚΗ ΒΙΟΤΕΧΝΙΑ ΕΝΔΥΜΑΤΩΝ ΑΕ	587	-41	0.057	48	-229
ΦΑΡΑΣΟΠΟΥΛΟΣ Ν ΑΕ ΕΝΔΥΜΑΤΑ	5171	1	0.499	37	-24
ΜΠΑΡΜΠΑΣ Ν ΑΒΕΕ ΕΝΔΥΜΑΤΑ - ΥΠΟΔΗΜΑΤΑ	4474	-2	0.432	35	0
ΚΩΝΣΤΑΝΤΟΠΟΥΛΟΣ Χ Κ ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	128	-4	0.012	33	10
TERRYLAND ΑΕ ΣΤΡΑΤΙΩΤΙΚΑ ΕΝΔΥΜΑΤΑ	210	-5	0.02	30	-24
LORINE - Π ΠΑΝΤΑΖΗΣ ΑΒΕΕ ΕΝΔΥΜΑΤΑ	232	-30	0.022	25	-119
ΓΝΑΦΑΚΗΣ Μ ΑΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	3955	-1	0.382	22	-181
ΣΑΡΑΝΤΗΣ Α ΑΕΒΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	470	-1	0.045	14	-6
TERLANA EXPORTS ΚΛΩΣΤΟΫΦΑΝΤΟΥΡΓΙΑ - ΕΝΔΥΣΗ ΑΕ	1072	-3	0.104	11	-19
POSITIVO FASHION ΕΠΕ ΓΥΝΑΙΚΕΙΑ ΕΝΔΥΜΑΤΑ	893	-8	0.086	4	-59
EUROFASHION ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1199	0	0.116	3	-6
ΖΕΡΔΕΒΑΣ Α Α FEMALE FASHION ΑΒΕΕ ΕΝΔΥΜΑΤΑ	1544	-2	0.149	3	-35
FREE WAVE ΕΠΕ ΚΑΤΑΣΚΕΥΗ ΕΤΟΙΜΩΝ ΕΝΔΥΜΑΤΩΝ	479	16	0.046	3	-38
TERLANA ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	14584	-2	1.409	2	-947
ΑΡΙΑΔΝΗ ΑΕ ΒΙΟΤΕΧΝΙΑ ΠΛΕΚΤΩΝ ΕΝΔΥΜΑΤΩΝ	652	-3	0.063	0	28
ΠΕΤΒΑ ΕΞΑΓΩΓΙΚΗ ΕΤΑΙΡΕΙΑ ΓΟΥΝΑΡΙΚΩΝ ΑΕΒΕ	625	2	0.06	0	4
VASSOTI ΑΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	561	-2	0.054	0	-7
ΛΕΟΝΤΟΠΟΥΛΟΣ Γ ΑΒΕ ΕΝΔΥΜΑΤΑ ELBA	563	-41	0.054	0	-22
ΔΗΜΗΤΡΑΣ Θ - DIPLEX ΑΒΕΕ ΕΤΟΙΜΑ ΕΝΔΥΜΑΤΑ	1221	0	0.118	0	-23
ΘΕΟΔΩΡΙΔΗΣ Θ ΑΕ ΕΝΔΥΜΑΤΑ - ΥΠΟΔΗΜΑΤΑ	1549	-4	0.15	0	-39

ΑΓΡΟΜΗΧΑΝΙΚΗ ΑΕ ΕΝΔΥΜΑΤΑ	432	3	0.042	0	-52
TOTAL	1035279			665363	