

**The Model of Production and Marketing Operations**  
**(comparative study between DK and UAE)**

**by**

**Haider Abdullah Abdulkarim**

## **Recommendation of the supervisor**

I certify that the preparation of this letter has been completed under my auspices in the Open Arab Academy in Denmark- College of Management and Economics -Department of Industrial Management. This is a part of the requirements of the master's degree in Economic Sciences.

Signature:

Supervisor: Professor Rashid Abbas Al-Jazrawi

Date:

## **Recommendation of the Section**

Based on the recommendations, I transpire this message to the discussion

Signature

Head of the Economy Section

Professor Rashid Abbas

Date:

## Operations management

### The Authorization

I am the student Haider Abdullah Abdulkarim entrust the Arab Open Academy in Denmark to provide copies of my letter to libraries or institutions or bodies or persons upon request.

Signature:

Name:

Date:

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### Commission on the debate

We are seeing members of the debate certify that we had perused this letter "The model of production and marketing operations (comparative study between DK and UAE). The letter was discussed with the student (Haider Abdullah Abdulkarim) in contents and relating to it. We think that it is plausible to obtain a master's degree in Economic Sciences with a grade:

This letter has been approved on:

The discussion members:

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### Authentication of College Board

Ratified by the College Board

Signature:

Name:

Dean of the Faculty of Business and Economics

Date:

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### Dedication

To all immigrants in the land of exile, seeks for science and knowledge in all fields

To all who work hard and active for a better tomorrow

To my father's pure spirit

To my compassionate mother

To my family and friends who supported me throughout my study

To my wife Hoda, who shared me the concerns of studying years and was very patient

To you I dedicate this humble work

The researcher

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## Acknowledgements



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### 1. Introduction

Dairy production is one of the oldest human made productions throughout the time, and since the discovering of the agriculture by human being for more than 10000 years ago, the human being has previously experienced the pet with him, such as poultry and the livestock such as sheep and cows and other animals such as donkeys and horses. Since that time, the human being learned how to convert the overproduction of milk into products which can be warehoused such as butter and cheese and so on. This converted overproduction was swapped with other products as animal breeders needed some other kinds of agriculture products such as seeds, either for their animals or for their own use. In this way they started producing dairy products and marketing it in order to fulfil their needs of energy and health.

Over the years, the need for dairy products increased and this has necessitated increased production through the development of the foundations for the small dairy plants within the same family or a collection of some families within a village.

This industry was one of the most important agricultural industries, which developed rapidly, especially after the Industrial Revolution in the eighteenth century by creating steam, which doubled the mechanization of production and thus increased distribution and storage for a longer time. But in the modern era, there are specialized and advanced labs to the dairy industry in the countries and cities and even in villages. Thus, the dairy industry is now continuing with the other sciences, such as health, social, agricultural, economic, administrative and even political.

Accordingly, governments have focused on developing it so that the milk-producing is being directly connected to the country of production like Nido powder milk with the Netherlands and Kraft cheese with Australia and yogurt with Turkey and Greece and white cheese with the Arab homeland.

As in Denmark, the dairy industry is a humanitarian, such as all other industrial counterparts in the world have been accompanied by the venom of Lurpak and crème cheese.

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Because of this huge milk overproduction which is about 4.5bln litres per year (this is the allowed quantity)<sup>1</sup>, and which exceeds the farmers' ability to convert it to cheese that can be able to be warehoused. Thus, the company Arla foods was established.

As Arla foods is one of the most developed companies, within dairy products, in Europe and has many sites in different parts of the world, the researcher wanted to take two models of the activity of this company in order to see how successful this company is, in the range of dairy products. The two models are Denmark and United Arab Emirates.

The researcher have conducted field visits to both companies and collected much data which give me the ability to get a result of the research around the company.

### 1.1 Outline of my study

Human activity since ancient times ... falls within the production and the trade of goods for the purpose of marketing and consumption, from the collection of natural commodities and the exchange of other surplus goods. This is the essence of human action until the present time, with the difference in the way of goods collection, to the production techniques and to modern techniques in the distribution, for the purpose of consumption according to the humanitarian needs.

Within the competition, and monopolies of the companies producing these goods, the purpose of financial markets is to look for markets and deliver goods in the time specified in order to satisfy the wishes of their customers. The two things together would be a high qualified logistical operation on time and increased production.

This is what the researcher refers to in his study, which will be presented to get master degree, a logistical study of production, processing and distribution between two far apart geographically areas, Denmark in Europe and the United Arab Emirates in the Middle East.

The Danish company Arla, which is famous in the dairy industry will be the main production side of goods and the areas mentioned (Denmark and UAE), are the logistical side in the receipt and distribution of those commodities. These logistical and marketing

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<sup>1</sup> <http://www.mejeri.dk/Nyheder.aspx?ID=638&PID=1135&NewsID=770>

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activities are the foundation of the daily work in order to increase sales and attract consumers and increase production, thereby increasing profits.

For the purpose of clarifying the agenda of this study, it must clarify the plan in a scientific and academic way to obtain the scientific results of it.

### 1.2 Problem formulation

Regions such as Europe and the Middle East vary in all human resources and production, technological and information revolution and knowledge, so the product from the Danish company will suffer from the dilemma of how to access the appropriate product to the consumer at the right time and the type of product, prices, and processing.

We will see later that the two regions differ in these points, and find the gaps between them, which cause the dilemma of productivity, and marketing of the Danish company Arla.

### 1.3 Purpose

After the appointment of the problem as shown in the research problem, it is important to study the educational and academic case in order to reach a mechanism that would enable us to bridge the gap and overcome the existing obstacles between the two regions for the benefit of consumers, production, and public taste.

### 1.4 Scientific methodology

Within the researcher work at Arla Foods Company and his practical study in Denmark and at the United Arab Emirates, he has gained a tremendous amount of scientific and practical results which will be addressed in the study.

### 1.5 Text of thesis

After the discussion of this study with experts in the Arla Foods Company, it was decided that the writing language of this study should be the English or Danish in order to take advantage of them by the company ... and to give a linguistic understanding, the researcher will add a comprehensive summary in Arabic. The study will be fully covered scientifically and practically within the four chapters which are as follows.

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## • Chapter 1

- Theoretical study on production...marketing and consumer
  - Sub-chapter 1 production management
  - Sub-chapter 2 marketing management
  - Sub-chapter 3 consumer...consuming (satisfy consumer needs)

In this theoretical study ... the researcher will touch on the philosophy of how to produce...to whom we produce....and what do we produce. The researcher will also touch the state of the product, marketing, product development, delivery of the product, processing and distribution in technical ways ... beneficiating of that of how to satisfy the desires of consumers, the study of public taste for the consumer, and what he wants, the way to satisfy his wishes...

## • Chapter 2

- Applied study on Arla Foods dairy
  - Sub-chapter 1... main information of Denmark
  - Sub-chapter 2... Arla Foods- foundation and activities in Denmark
  - Sub-chapter 3... production process in Arla (Denmark)

These sub-chapters will discuss the general information about Denmark such as population, area, economy agriculture, industry...it will also touch the foundation of Arla foods since the establishment and the different development stages until it was called Arla Foods. This chapter will as well include the production process which is called "from cow to consumer", at one of Arla Foods sites namely Holstebro Flødst (HFO) and the warehousing and distribution process.

## • Chapter 3

- Arla's activities in UAE
  - Sub-chapter 1...main information Of UAE
  - Sub-chapter 2...Arla's foundation and activities in UAE
  - Sub-chapter 3...production process in UAE

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These sub-chapters will include the main information about UAE, as in chapter 2, such as population, area, economy, industry... it will give a wide idea about the foundation of Arla foods in The UAE and about the joint venture which was made with the NFPC company... it will describe the warehousing and distribution of the joint venture company ArlaNFPC.

- **Chapter 4**

- Conclusion and recommendations

- Sub-chapter 1... Conclusion
- Sub-chapter 2... Recommendations

The researcher will in this chapter outline the conclusions and since he has a vast amount of information taken from his experience at Arla Foods Company through the different projects which he has been working on during my engineering study. On the basis of these findings he will put a set of recommendations that concern the company's business.



## **2. Chapter 1**

**Theoretical study on production...marketing and consumer**

- **Sub-chapter 1 production management**
- **Sub-chapter 2 marketing management**
- **Sub-chapter 3 consumer...consuming (satisfy consumer needs)**

### 2.1 Sub-chapter 1 (Production management)

#### 2.1.1 Production management

Production, supply and consume are three terms which mostly concern economy and economists.

“Traditionally for many companies the investment has mainly been on product excellence. This is not to suggest that product innovation should be given less emphasis – far from it – but rather that more emphasis need to be placed on developing and managing processes that deliver greater value for key customers<sup>2</sup>”.

Since the first existence of human being on earth, he began to produce either by collecting or producing goods in order to satisfy his needs, especially his organic needs. With time he began to manage and organize his activities.

In the following sup-chapters, the researcher will give a wide explanation about the upper three mentioned terms, Production, supply (Marketing) and consume management.

Production management has been recognized as an important factor in a country’s economy well-being for a very long time.

Production management has a set of different names such as *manufacturing management, production management* and *operations management* all of which describe the same general discipline. The evolution of the term reflects the evolution of modern operations management. The traditional view of manufacturing management began in the eighteenth century when Adam Smith recognized the economic benefits of specialization of labor. He recommended breaking jobs down into subtasks and reassigning workers to specialized tasks in which they become highly skilled and efficient<sup>3</sup>.

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<sup>2</sup> Martin Christopher logistics and supply chain management third edition 2005 page 31

<sup>3</sup> Everett E. Adam, JR and Ronald J. Ebert Production and Operations management fifth edition page 8

## Operations management

The historical summaries of operations management are as shown in table 1.

**Table 2.1 Historical summary of operations management<sup>4</sup>**

Date	Contribution	Contributor
1776	Specialization of labor in manufacturing	Adam Smith
1799	Interchangeable parts, cost accounting	Eli Whitney and others
1832	Division of labor by skill; assignment of jobs by skill; basics of time study	Charles Babbage
1900	Scientific management; time and work study developed; dividing planning and doing of work	Frederick W. Taylor
1900	Motion study of jobs	Frank B. Gilbreth
1901	Scheduling techniques for employees, machines, jobs in manufacturing	Henry L. Gantt
1915	Economic lot sizes for inventory control	F.W. Harris
1927	Human relations; the Hawthorne studies	Elton Mayo
1931	Statistical inference applied to product quality, quality control charts	Walter A. Shewhart
1935	Statistical sampling applied to quality control; inspection samplings plan	H. F. Dodge and H. G. Roming
1940	Operations research applications in World War II	P. M. S. Blacket and others
1946	Digital computer	John Mauchly and J. P. Eckert
1947	Linear Programming	Georg B. Dantzig, William Orchard, Hays and others
1950	Mathematical programming, nonlinear and stochastic processes	A. Charnes, W.W. Cooper, H. Raiffa and others
1951	Commercial digital computers; large scale computations available	Sperry Univac
1960	Organizational behavior; continued study of people at work	L. Cummings, L Porter and others
1970	Integrating operations into overall strategy and policy.  Computer applications to manufacturing, scheduling, and control, material requirements planning (MRP)	J. Orlicky and O. wright
1980	Quality and productivity applications from Japan; robotics, computer aided design and manufacturing (CAD/CAM)	W. E. Deming and J. Juran

Production management became the more widely accepted term from the 1930's through the 1950's. By the 1970's two distinct changes emerged in our views. The most obvious of these, reflected in the new name - *operations management* - was a shift in the service and manufacturing sectors of the economy.

<sup>4</sup> Everett E. Adam, JR and Ronald J. Ebert Production and Operations management fifth edition page 9

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Production is a transformation of resources or input to goods and services. Production takes two types of products:

- **Good** is anything that gives a person utility or satisfaction, such as cars, foods, computers etc...All these products give a personal utility as it concerns the need side of him or as we call it "the behavior of consumers"
- **Bad** are products as well, but it gives a person disutility. The product itself could be a good one, but the misusing of it leads to bad results. On the other hand the how bad or how good the product is, depends on the quality level requested.

People always want the goods which give them utility and satisfaction, so they will ignore the bad ones as it does not live up to their expectations.

*Utility* is the satisfaction, value, or usefulness a user receives from a good or a service.

When you buy an automobile, you give less (in \$s) than the value of the car (to you)...the ability to get you from A to B, safely, in a timely manner etc.

There are four types of utility:

**Form:** production of the good, driven by the marketing function. E.g. Baskin Robbins turns cream, sugar and milk into ice cream.

**Place:** make product available where customers will buy the product, e.g. Food truck at a construction site.

**Time:** make product available when customers want to buy the product, e.g. Pathmark, open 24 hours a day, 365 days a year, has time utility compared to Land hope Farms etc.

**Possession:** once you own the product, do what you want with it, e.g. eat it.

An example of a service that offers all types of utility: 24 Hour pizza delivery service<sup>5</sup>.

Some people, even though they know the dangerous side effects of e.g. smoking, they anyway smoke. This behavior is the trigger of tobacco production.

In past time, as a historical telling, the human being satisfied his needs from the nature. Since there had been limited population, the resources were much more than the needs. Therefore he did not think of increasing the production.

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<sup>5</sup> <http://www.udel.edu/alex/chapt1.html#exchange> 17-01-10 02:35

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Two of the first and most important discoveries of human being are the fire and food making. These two discoveries paved him to learn more about using nature resources so that it can serve his needs.

Later on, the population growth on earth led to fewer resources from nature than human needs. People need more food stuff or water, which are the two main survival means. These needs pushed and forced people to think about resources management so that it can able to meet their needs for as long time as possible.

By the following the researcher will review the means of production management.

Goods do not just appear, it needs a lot of resources to produce these goods. Generally, economists divide resources into four broad categories:

**Land** includes natural resources such as minerals, forests, water and unimproved land e.g. oil, wood etc.

**Labor:** consists of the physical and mental talents people contribute of the production e.g. a person building a house, he/she is using his/her own labor. Labor efficiency =  $(\text{output}/\text{input}) * 100\%$

**Capital:** the term capital has several meanings:

- Capital is the amount of cash and other assets owned by a business.
- Capital can also represent the accumulated wealth of a business, represented by its assets less liabilities
- Capital can also mean stock or ownership in a company.

In general, capital is accumulated assets or ownership. Other associated terms which relate to the term "capital" are:

- Capital gains are the increases in the value of stock and other assets when they are sold.
- The capital structure is the mix of debt and equity in the business balance sheet.
- Capital improvement, which are improvements made to capital assets.

A common cause of business failure is not having enough capital<sup>6</sup>.

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<sup>6</sup> <http://biztaxlaw.about.com/od/glossary/c/g/capital.htm> 13-01-2010 12:53

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**Entrepreneurship** (administration)<sup>7</sup>: refers to the particular talent that some people have for organizing the resources of land, labor and capital to produce goods, seek new business opportunities and developing new ways of doing things.

These four factors are the main means of organizing and coordinating the production. They are the goal of management and it is very important to any producer to share as it is the way to manage a production and give the adequate financially beneficial results.

Recently, the managing of production entered all the factors, among others, market, supply chain, consumer behavior, cost, profit, financial effects.

The main factor rolling within production is the scarcity.

Scarcity principle in psychology, describes the urge to purchase, gather, or obtain something that a person feels that they may not be able to get in the future. Parts of this urge stems from the need to ensure that we have what we need to survive. We also tend to value things either rare or that we cannot have, but the pleasure principal also addresses the need to feel in control. By obtaining something that is difficult to get we demonstrate an ability to control our environment. This need to control is not just about self-worth, but also about "keeping up with the Jones'." So scarcity is the condition in which our needs are greater than the available resources. For this reason, among others, some economists define the economies as the science of scarcity. While economies are the science of how individuals and societies deal with the fact that wants are greater than available resources to satisfy our needs.

Everyone in this world is facing scarcity very often. In order to show that being rich is not the solution to get rid of scarcity, take e.g. the Microsoft founder Bill Gates. He is one of the richest in the world. But in one way or another, he is facing a kind of scarcity. He has money to buy tangible things, but this does not mean that he is satisfied in his life, since he might want more children, more real friends, no disease in the world, peace on earth and hundreds of other things which he does not have sources to fulfill or produce.

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<sup>7</sup> A. Arnold microeconomics south western 9<sup>th</sup> edition 2008

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This example leads to a result that no matter what, people haven't enough available resources and therefore we have to manage what we produce in the right way. To do so, the managers and producers have to answer the following questions:

- What to produce?
- To whom we produce?
- How to produce?
- Production quantity and quality?
- What is the cost and profit?

At the time they get able to answer these questions practically, the production management is being softly. This production/operation/manufacturing management gives us the following important results:

- The utility will be high for all consumers, as well as, the supply and distribution.
- The production cost will decrease.
- The total profit will increase.
- Possibility for better salaries and thereby higher labor efficiency.

### 2.2 Sub-chapter 2 (Supply and marketing management)

#### 2.2.1 Supply and marketing management

In business, "marketing" is the planning of, and steps taken, to bring merchants and consumers together.

Since some people mix the meaning of the two terms, namely, marketing and advertising, it is a good idea to define advertising. "Advertising tells a story about something to attract attention. Advertising is a step in the marketing process".

There are many technical and complicated definitions of both advertising and marketing and the differences between them. But it can be stated rather simply:

market is any one of a variety of different systems, institutions, procedures, social relations and infrastructures whereby persons trade, and goods and services are exchanged, forming part of the economy. It is an arrangement that allows buyers and sellers to exchange things. Markets vary in size, range, geographic scale, location, types and variety of human communities, as well as the types of goods and services traded. Some examples include local farmers' markets held in town squares or parking lots, shopping centers and shopping malls, international currency and commodity markets, legally created markets such as for pollution permits, and illegal markets such as the market for illicit drugs.

In mainstream economics, the concept of a market is any structure that allows buyers and sellers to exchange any type of goods, services and information. The exchange of goods or services for money is a transaction. Market participants consist of all the buyers and sellers of a good who influence its price. This influence is a major study of economics and has given rise to several theories and models concerning the basic market forces of supply and demand. There are two roles in markets, buyers and sellers. The market facilitates trade and enables the distribution and allocation of resources in a society. Markets allow any tradable item to be evaluated and priced. A market emerges more or less spontaneously or is constructed deliberately by human interaction in order to enable the exchange of rights (ownership) of services and goods.



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Historically, markets originated in physical marketplaces which would often develop into — or from — small communities, towns and cities.<sup>8</sup>

Economists often say that there are two sides to each market, the buying and the selling side.

The buying side of a market is usually referred to as the demand side. And the selling side is referred to as the supply side. Supply and demand together establish equilibrium price and quantity.

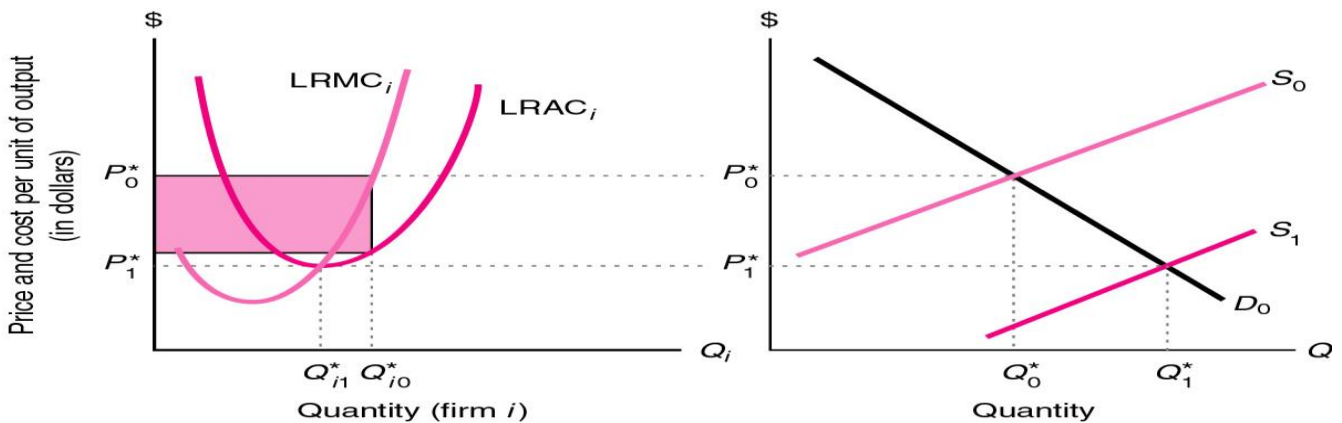


Figure 2.1 the resource is... Smith, Zimmerman, Managerial economics and organizational architecture, fourth edition page 165.

The left panel illustrates the long-run supply decision of firm I, a representative firm in the industry. In the right panel, supply and demand curves (labeled  $S_0$  and  $D_0$ ) determine the market price,  $P^*_0$ . At the price,  $P^*_0$ , the firm produces  $Q^*_{i0}$ . At the price  $P^*_0$ , the firm is earning an economic profit. This economic profit is the profit per unit ( $P^*_0 - LRAC_i$ ) times the total output  $Q^*_{i0}$  and is depicted by the shaded rectangle. Economic profit will motivate other firms to enter the industry. This entry will shift the supply curve to the right and lower the price. Additional entry will occur up to the point where there are no economic profits. This condition occurs at a price of  $P^*_1$ . Here, there are no incentives for firms to enter or leave the industry (incumbents are earning a normal rate of profit and inventories are stable at their desired levels), and the market is in equilibrium. In a competitive equilibrium, firms produce output at the low point on their average cost curves ( $P^*_1 = LRMC_i = LRAC_i$ ). Thus, the equilibrium is associated with efficient production<sup>9</sup>.

<sup>8</sup> <http://en.wikipedia.org/wiki/Market>

<sup>9</sup> Brickley, Smith, Zimmerman, Managerial economics and organizational architecture, fourth edition page 165

### 2.2.1.1 Market structure

The concept of market structure is central to both economics and marketing. Both disciplines are concerned with strategic decision making. In decision-making analysis, market structure has an important role through its impact on the decision-making environment. The extent and characteristics of competition in the market affect choice behavior among the actors<sup>10</sup>.

In general, markets are divided into four different market structures:

### 2.2.1.2 Perfect competition markets

Although few markets are perfectly competitive, many markets closely approximate this description. Moreover, competition establishes a benchmark that yields useful insights into other market settings.

The theory of perfect competition is built on four assumptions:

- Many sellers and many buyers of standardized products, and none is larger than the others in relation to total sales or purchases.
- Each company produces and sells homogeneous products. Each company sells a product that is indistinguishable from all other companies' products in a given industry.
- Buyers and sellers have all relevant information about prices, product quality, sources of supply and so forth. Buyers and sellers take the market price for the product as given-no single participant has any real control over price. If the seller charges more than the market price, buyers simply will purchase the product from other suppliers.
- Firms have easy entering and exit. New firms can enter and exit the market without any barriers.

As mentioned above, we can say that theories of perfect competition has one aim namely, price taker<sup>11</sup>.

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<sup>10</sup> Baumol, William J. 1961. "What Can Economic Theory Contribute to Managerial Economics." American Economic Review 51(2)(May): 142-146.

<sup>11</sup> Price taker = An [individual](#) or [company](#) which is not influential enough to affect the [price](#) of an item.

### 2.2.1.3 Monopoly markets

Monopoly is at the opposite end of the market structure spectrum from perfect competition. Monopoly is a single seller of good with no close substitute. The theory of monopoly is built on two assumptions.

- Profit maximization: suppose that a monopolist charges the same price to all customers. The firm's objective is to choose the price-quantity combination along the demand curve that maximizes profits. This combination occurs where marginal revenue equal to marginal cost.
- Unexploited gains from trade: The upper figure illustrates the price and output decisions of a monopolist.

In the example, demand is  $P = 200 - Q$ . marginal costs are 10\$. The profit maximizing output occurs at 95 units, where  $MR = MC$ . To sell this output, the firm charges a price of \$105. The firm makes \$95 per unit profit for a total profit of  $\$9.025(95 \times 95)$ , as indicated in the area abcd. Some consumers are willing to pay more than the marginal cost of production, yet do not receive the product. The associated loss in potential gains from trade is pictured by the triangle cde. The firm does not lower the price to sell to these consumers because it does not want to lower the price for the other customers

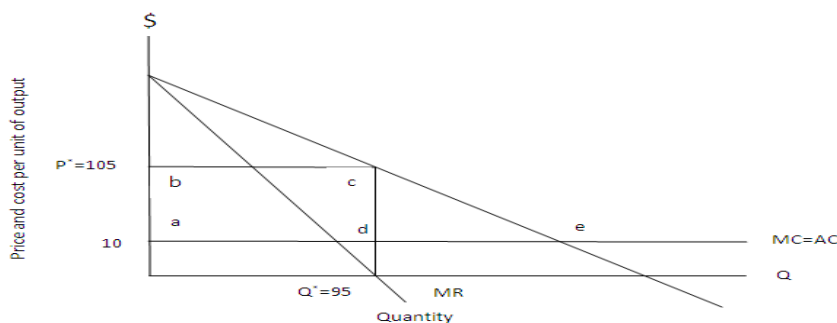


Figure 2.2 monopoly markets... done by the researcher depending on the resource Brickley, Smith, Zimmerman, Managerial economics and organizational architecture, fourth edition page 171

### 2.2.1.4 Monopolistic competition markets

As the name implies, monopolistic competition is a market structure that is a hybrid between competition and monopoly. In this market structure there are multiple firms that produce similar products. There is free exit from and entry into the industry. Yet

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competition does not eliminate market power because the firms sell differentiated products such as toothpaste, golf balls...

### **2.2.1.5 Oligopoly**

Within oligopolistic markets, only a few firms produce most of the output. Examples of oligopolistic industries include automobiles and steel during the 1950's. These industries had important scale economies and other substantial entry barriers<sup>12</sup>.

Oligopoly markets have the following common assumptions:

- A few firms produce most market output
- Products may or may not be differentiated. Cars could be an example.
- Effective entry barriers protect firm profitability. Economics of scale are perhaps the most significant
- Firm interdependence requires ***strategic thinking***

All these four different structures are working in markets, managing and paving the products to be sold in order to get the highest benefit for firms. So the market management takes all the structures in account before producing and launching a new product.

These structures in market are established due to the difference in:

- Number of sellers
- Number of buyers
- Quality and quantity of goods in market
- Nature of cost and profit of products
- Markets have four functions:
- Fixing and limitation of the value of goods and services
- Organizing and managing the production means due to costs means
- Output (production) is divided due to their share in production means
- Limiting the consuming according to production. This will pave to fix prices.

### ***What is meant by marketing management?***

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<sup>12</sup> Brickley, Smith, Zimmerman, Managerial economics and organizational architecture, fourth edition page 172

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Marketing management is the system of complete work activities one to each other, which aim to:

- Planning
- Pricing
- Promotion
- Goods supply

Marketing management goes with the following steps:

**People needs:** the study of this step is very important for producers. It is difficult to predict the need of each one in the market. The solution of this problem will never be 100%, because firstly, this problem depends on forecasting and forecasting is never sure, secondly people needs are not constant. Moreover people are different.

**Prices:** after fixing the needs it is important to fix the price of these needs. Fixing the prices depends on, among others, cost of product, supply and demand and quality and quantity.

**Promotion:** Promotion involves disseminating information about a product, product line, brand, or company.

Promotion is generally sub-divided into two parts:

1. Above the line promotion: Promotion in the media (e.g. TV, radio, newspapers, Internet, Mobile Phones, and, historically, illustrated songs) in which the advertiser pays an advertising agency to place the ad
2. Below the line promotion: All other promotion. Much of this is intended to be subtle enough for the consumer to be unaware that promotion is taking place. E.g. sponsorship, product placement, endorsements, sales promotion, merchandising, direct mail, personal selling, public relations, trade shows

**Supply of goods:** this step is the result of all the before mentioned steps, and is the most important one e.g. if a company produces a good product, with a high quality and make a good promotion for it, but the supply of this product to customer is not as required or not on time, the customer will get upset. The customer could find an alternative in case of repeated lateness in delivery.

### 2.3 Sub-chapter 3 consumer...consuming (satisfy consumer needs)

#### 2.3.1 Consumers and consumption

Like most definitions in economics, there are various competing definitions of the term Microeconomics. Browsing the web or books, we will find various answers to the question: Economic theory is conventionally divided into two parts: (a) microeconomics and (b) macroeconomics. As the names suggest, the names lies in the level of aggregation at which economic phenomena are studied. Microeconomics is concerned with the study of individual 'decision units'- the consumer, households, and firms, the way in which their decisions interrelate to determine relative prices of goods and factors of production, and the quantities of these which will be bought and sold. Its ultimate aim is to understand the mechanism by which the total amount of resources possessed by society is allocated among alternative uses. The central concept in microeconomics is the market. Free market economy; price system<sup>13</sup>.

Microeconomics involves some key players which are:

- Consumers (objectives)
- Business (constraint)
- Factor or resources owners (choices)

Each of these three microeconomics players has an objective or a goal, faces some constraints and has to make choices.

By the following I will briefly discuss each of the upper mentioned terms.

**2.3.1.1 Consumers (objectives):** they buy goods or services produced by a certain company, thereby advancing their objective of trying to maximize their utility or satisfaction. Yet very few people can buy all the goods they might like to consume. Consumer purchases are constrained by their limited incomes and by the positive prices for each good. Each purchase subtracts from the consumer's available income and eventually nothing remains. Given limited purchasing ability, the consumer attempts to gain as much utility as possible from each dollar spent. In practice, this is done by

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<sup>13</sup> Graham Bannock, R. E. Baxter and Ray Rees. The penguin dictionary of Economics page 306.

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choosing to use marginal analysis in making consumption decisions by comparing the additional or marginal costs of each purchase.

**2.3.1.2 Firms (constraints):** firms hire productive factors or resources. They combine them in a certain way to produce a final good, and then sell that good to consumers. In short, firms play two roles in economy:

1. The buyers of factors: when firms hire workers and other productive factors, the objective is to maximize profit, among other things. The objective implies that they will hire a mix of factors that will minimize their cost of producing the desired amount of output. Their hiring decisions are constrained by the positive price of factors and by the need to cover opportunity cost. Firms achieves their objectives by choosing to hire factors that only contribute more at the margin to the firm's output and sales receipts than the additional cost of employing them.
2. The sellers of goods: the objective of this is to maximize profit. In their attempt to maximize profit, firms (as sellers) have to choose what quantity is to be produced and what price is to be charged. The constraints placed on the sellers come from consumers who search for lower prices and good quality, on one hand. On the other hand, it comes from competitors who attempt to undercut prices charged by other sellers or to produce a more desirable good or service.

**2.3.1.3 Factor or resources owners (choices):** factor owners sell the factors or resources to firms in order to produce goods or services. The objective of factor owners is to maximize the income they earn from selling their factors. Since factors are not infinite factors, owners are constrained by the prices paid for their services in the market place and by the finite amount of factors they have to sell.

So as mentioned before, the researcher can say that consumers as (people needs) and firms (profit need) and factor owners (gate income) make their choices not in vacuum but according to market settings, but not all market settings are alike. In other words, the settings or environment in which consumers, firms and factor owners make choices may differ from time to other.

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To illustrate, consumers might make choices in one market settings that has many buyers and many sellers and later make choices in a market setting that have many buyers and only few sellers.

As mentioned above all four factors will fix the real needs of goods and services as utilities for consume by people (consumers), but this utility has a law called the law of diminishing marginal utility which says: "A law of economics stating that as a person increases consumption of a product - while keeping consumption of other products constant - there is a decline in the marginal utility that person derives from consuming each additional unit of that product<sup>14</sup>. "

The law of diminishing marginal utility should not be used to make interpersonal utility comparison. E.g. the law does not say that a rich man receives less or more utility from an additional dollar than a poor man does.

This law leads us to what called consumer equilibrium. "The rule of consumer equilibrium is satisfied when a consumer selects a combination of goods that maximizes utility. With utility maximization, a consumer cannot increase utility by consuming more of one good and less of another. This occurs because the marginal utility-price ratio for each good is the same. In other words, consumers generate the same amount of utility from the last dollar spent on each good<sup>15</sup>". Individuals seek to equate marginal utilities per dollar. e.g. if a person receives more utility per dollars spent on product (A) than on product (B), he/she will reorder his/her purchase and buy more of product (A). And this will lead again to talk about behavioral economics on both consumers as people and consumptions as goods or services. It is as following:

Behavioral economics argue that some human behavior does not fit nearly, at minimum, into the traditional economic framework.

Behavioral economists believe that they have identified human behavior that are inconsistent with the model of men and women as rational, self-interested and consistent.

The behaviors of people as consumers depend on many factors which affects the persons as buyers, such as:

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<sup>14</sup> <http://www.investopedia.com/terms/l/lawofdiminishingutility.asp>

<sup>15</sup> [http://www.amosweb.com/cgi-bin/awb\\_nav.pl?s=wpd&c=dsp&k=rule+of+consumer+equilibrium](http://www.amosweb.com/cgi-bin/awb_nav.pl?s=wpd&c=dsp&k=rule+of+consumer+equilibrium)



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- The nature of the person
- Physiological side of the person
- The income of the person
- The nature of markets
- The nature and prices of goods and services
- Life style
- Traveling time
- Differences in goods and services
- Kind of utilities

All these factors will affect the personal behavior to consume goods or services in a period of time.

## 3. Chapter 2

### Applied study on Arla Foods dairy

- **Sub-chapter 1... main information of Denmark**
- **Sub-chapter 2... Arla Foods- foundation and activities in Denmark**
- **Sub-chapter 3... production process in Arla (Denmark)**

### 3. Chapter 2

This chapter will concern the production process of Arla foods in Denmark. Since Arla foods have a huge portfolio of products, and since the production quality is the same at all Arla sites, at least in Denmark. The researcher will choose one production site, namely Holstebro cream cheese HFO and use it as a model when needed. Regarding WH, he will, as well, choose one export terminal, Vejle Export Terminal VET.

#### 3.1 Sub-chapter 1 (Applied study on Arla Foods dairy)

##### 3.1.1 Main information of Denmark

Since this study will concern the production of the Danish company, it is preferable to give a brief idea about Denmark and then about the company itself.

Denmark population is about 5.5 million and an area of 43094 km<sup>2</sup>. Copenhagen is the capital, 1,094,400. Denmark is a Scandinavian country in Northern Europe and the senior member of the Kingdom of Denmark. It is the southernmost of the Nordic countries, southwest of Sweden and south of Norway, and bordered to the south by Germany. Denmark borders both the Baltic and the North Sea. The country consists of a large peninsula, Jutland (Jylland) and many islands, most notably Zealand (Sjælland), Funen (Fyn), Vendsyssel-Thy, Lolland, Falster and Bornholm, as well as hundreds of minor islands often referred to as the Danish Archipelago. Denmark has long controlled the approach to the Baltic Sea; before the digging of the Kiel Canal water passage to the Baltic was possible only through the three channels known as the "Danish straits".

Denmark is a constitutional monarchy with a parliamentary system of government. Denmark has a state-level government and local governments in 98 municipalities. Denmark has been a member of the European Union since 1973, although it has not joined the Eurozone. Denmark is a founding member of NATO and the OECD. Denmark is also a member of the Organization for Security and Cooperation in Europe (OSCE). As an OSCE participating State, Denmark's international commitments are subject to monitoring under the mandate of the U.S. Helsinki Commission.

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Denmark, with a mixed market capitalist economy and a large welfare state, ranks as having the world's highest level of income equality. Denmark has the best business climate in the world, according to the U.S. business magazine Forbes. From 2006 to 2008, surveys ranked Denmark as "the happiest place in the world," based on standards of health, welfare, and education. The 2009 Global Peace Index survey ranks Denmark as the second most peaceful country in the world, after New Zealand. Denmark was ranked as the least corrupt country in the world in the 2008 Corruption Perceptions Index, sharing a top position with Sweden and New Zealand.

The national language, Danish, is close to Swedish and Norwegian, with which it shares strong cultural and historical ties. 82.0% of the inhabitants of Denmark and 90.3% of the ethnic Danes are members of the Lutheran state church. As of 2009, 526,000 persons (9.5 % of the Danish population) were either immigrants or descendants of recent immigrants. Most of these (54%) have their origins in Scandinavia or elsewhere in Europe, while the remainder originates mainly from a wide range of Asian countries<sup>16</sup>.

### **3.1.1 History**

From 10,000 to 1500 B.C., the population of present-day Denmark evolved from a society of hunters and fishers into one of farmers. Called Jutland by the end of the 8th century, its mariners were among the Vikings, or Norsemen, who raided Western Europe and the British Isles from the 9th to 11th century.

The country was Christianized by Saint Ansgar and Harald Blaatand (Bluetooth)—the first Christian king—in the 10th century. Harald's son, Sweyn, conquered England in 1013. Sweyn's son, Canute the Great, who reigned from 1014 to 1035, united Denmark, England, and Norway under his rule; the southern tip of Sweden was part of Denmark until the 17th century. On Canute's death, civil war tore apart the country until Waldemar I (1157–1182) reestablished Danish hegemony in the north.

In 1282, the nobles won the Great Charter, and Eric V was forced to share power with parliament and a Council of Nobles. Waldemar IV (1340–1375) restored Danish power, checked only by the Hanseatic League of north German cities allied with ports from

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<sup>16</sup> <http://en.wikipedia.org/wiki/Denmark>

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Holland to Poland. Denmark, Norway, and Sweden united under the rule of his daughter Margrethe in 1397. But Sweden later achieved autonomy and in 1523, under Gustavus I, independence.

Denmark supported Napoléon, for which it was punished at the Congress of Vienna in 1815 by the loss of Norway to Sweden. In 1864, the Prussians under Bismarck and the Austrians made war on Denmark as an initial step in the unification of Germany. Denmark was neutral in World War I.

### **3.1.2 Sovereign**

Denmark has had 53 different king and queen starting with Gorm the old who died in 958, followed by Harald 1 Bluetooth (958-986) until the present queen Margrethe 2 who has been queen of Denmark since 1972<sup>17</sup>.

### **3.1.3 Economical feature**

Denmark's mixed economy features efficient markets, above average European living standards, and high amount of free trade. Denmark rank 16th in the world in terms of GDP<sup>18</sup> (PPP) per capita and rank 5th in nominal GDP per capita.

According to World Bank Group, Denmark has the most flexible labor market in Europe; the policy is called flexicurity. It is easy to hire, fire, and find a job. Denmark has a labor force of about 2.9 million. Denmark has the fourth highest ratio of tertiary degree holders in the world. GDP per hour worked was the 10th highest in 2007. Denmark has the world's lowest level of income inequality, according to the UN, and the world's highest minimum wage, according to the International Monetary Fund (IMF). As of June 2009 the unemployment rate is at 6.3%, which is below the EU average of 8.9%.

Denmark is known from the Danish cooperative movement within among others farming, the food industry (Danish Crown), dairy production (Arla Foods), retailing (Brugsen), wind turbine cooperatives (Vestas), and co-housing associations<sup>19</sup>.

The monetary unit in Denmark is the krone, which is about 7.5 euro.

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<sup>17</sup> <http://www.kingsofdenmark.dk/>

<sup>18</sup> GDP= **gross domestic product** ( $GDP = \text{private consumption} + \text{gross investment} + \text{government spending} + (\text{exports} - \text{imports})$ )

<sup>19</sup> <http://en.wikipedia.org/wiki/Denmark#Economy>

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### 3.1.3.1. Energy

Denmark has considerable sources of oil and natural gas in the North Sea and ranks as number 32 in the world among net exporters of crude oil. Most electricity is produced from coal, but Denmark also has a high share of wind power.

To encourage investment in wind power, families were offered a tax exemption for generating their own electricity within their own or an adjoining commune. While this could involve purchasing a turbine outright, more often families purchased shares in wind turbine cooperatives which in turn invested in community wind turbines. By 2004 over 150,000 Danes were either members of cooperatives or owned turbines, and about 5,500 turbines had been installed, although with greater private sector involvement the proportion owned by cooperatives had fallen to 75%. Wind turbines produce 16–19% of electricity demand. Denmark is connected by transmission lines to other European countries.

### 3.1.3.2 Transport

Significant investment has been made in recent decades in building road and rail links between Copenhagen and Malmö, Sweden (the Øresund Bridge), and between Zealand and Funen (the Great Belt Fixed Link). The Copenhagen Malmö Port was also formed between the two cities as the common port for the cities of both nations.

The main railway operator is Danske Statsbaner (Danish State Railways) for passenger services and DB Schenker Rail for freight trains. The railway tracks are maintained by Banedanmark. Copenhagen has a small Metro system, and the greater Copenhagen area has an extensive electrified suburban railway network.

Denmark's national airline (together with Norway and Sweden) is Scandinavian Airlines System (SAS), and Copenhagen Airport is the country's largest airport and also the biggest hub in Scandinavia<sup>20</sup>.

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<sup>20</sup> <http://en.wikipedia.org/wiki/Denmark#Economy>

### 3.1.3.3 Public policy

After deregulating the labor market in the 1990s, Denmark has one of the most free labor markets in European countries. According to World Bank labor market rankings, the labor market flexibility is at the same levels as the United States. Around 80% of employees belong to unions and the unemployment funds that are attached to them, but the percentage is falling. Labor market policies is mainly determined in negotiations between the worker unions and employer unions, and the government only interferes if labor strikes extend for too long.

Despite the success of the labor unions, a growing number of people make contracts individually rather than collectively, and many (four out of ten employees) are contemplating dropping especially unemployment fund but occasionally even union membership altogether. The average employee receives a benefit at 47% of their wage level if they have to claim benefits when unemployed. With low unemployment, very few expect to be claiming benefits at all. The only reason to pay the earmarked money to the unemployment fund would be to retire early and receive early retirement pay (*efterløn*), which is possible from the age of 60 provided an additional earmarked contribution is paid to the unemployment fund.

### 3.1.3.4 Education

The Danish education system provides access to primary school, secondary school, and most kinds of higher education. Attendance at "Folkeskole" or equivalent education is compulsory for a minimum of 9 years. Equivalent education could be in private schools or classes attended at home. About 99% of students attend elementary school, 86% attend secondary school, and 41% pursue further education. All college education in Denmark is free; there are no tuition fees to enroll in courses. Students in secondary school or higher may apply for Student Support which provides fixed financial support, disbursed monthly.

### 3.1.3.5 Agriculture

Denmark is the only country in the Baltic region with a net export of agricultural products, producing 3 times the amount of food it needs for itself. A good percentage of arable land and moderate climate has been conducive to agriculture, but the sector's extremely

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advanced technology and infrastructure are what have made it so productive in recent years. Although agriculture's role in the Danish economy has steadily decreased as industrialization and economic development has progressed, it is still essential as a source of foreign currency, a direct and indirect source of jobs, and as a supply of everyday foodstuffs<sup>21</sup>.

### 3.1.3.6 Industry

Manufacturing has greatly expanded since the end of World War II and now accounts for a far greater share of national income than agriculture does. In 2002, manufacturing (including mining and utilities) accounted for 26% of the GDP, employing 17% of the total working population. In the important food and drink industry, which tends to be relatively stable, the pattern differs for various branches, but meat packing has developed remarkably. The chemical, metalworking, and pharmaceutical industries have made notable progress. Handicrafts remains important, and Danish stone, clay, glass, wood, and silver products are world famous. The industrial share of total commodity exports increased from 31% in 1951 to 50% in 1969 and to 70% in 1992. In the world market, Danish manufacturers, having a limited supply of domestic raw materials, a relatively small home market, and a naturally advantageous geographic position, have concentrated on the production of high-quality specialized items rather than those dependent on mass production. For example, Denmark became the world's largest supplier of insulin, the raw materials for which come from livestock intestines, and, because of a social law creating a large domestic market, Denmark came to produce 20% of the world's hearing-aid spectacles.

Machinery, by far the most important industrial export, includes cement-making machinery, dairy machinery, diesel engines, electric motors, machine tools, and refrigeration equipment. Other important exports are canned foods, chemicals and pharmaceuticals, furniture, metal and paper products, ships, and textiles<sup>22</sup>.

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<sup>21</sup> <http://www.nationsencyclopedia.com/economies/Europe/Denmark-AGRICULTURE.html>

<sup>22</sup> <http://www.nationsencyclopedia.com/Europe/Denmark-INDUSTRY.html>



### 3.2 Sub-chapter 2 Arla Foods (foundation and activities in Denmark)

#### 3.2.1 Profile of Arla Foods

Arla Foods is a Danish-Swedish cooperative based in Århus Denmark, and the largest producer of dairy products in Scandinavia. For many years ago, the name of the company was not Arla Foods. The name is a result of emerging the Danish MD Foods and the Swedish Arla on 17 April 2000. The name Arla derives from the same word as the English word "early" and is an archaic Swedish term for "early (in the morning)".

Arla is a very old and authentic company. They have been through many stages of development.

#### **3.2.1.1 Stages of development**

1882: The first Danish co-operative began in Hjedding, in Jutland.

1963: The concept of a nationwide dairy was aired for the first time.



1970: Mejeriselskabet Danmark (MD) was established on October 1 by four dairy groups and three individual dairies.

1970s and 1980s: Dairies and dairy companies across Denmark joined MD Foods through mergers or acquisitions.

1978/79: Total milk received exceeded 1 billion kg for the first time



1988: The Company changed name to MD Foods

1989: MD Foods International A/S was formed for the purpose of acquiring dairies abroad.

1990: MD Foods International made its first acquisition: Associated Fresh Foods – the UK's fifth largest dairy company.



1992: MD Foods and Denmark's second largest dairy company, Kløver Mælk, signed a financially binding co-operation agreement. MD Foods International made further acquisitions in the UK.

1999: MD Foods merged with Kløver Mælk to gain 90% of the Danish milk production

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In Sweden, the Arla name dates back to 1881 when the first co-operative was formed at Stora Arla Farm in Västmanland under the name Arla Mejeriförening.

1995: MD Foods and Arla began to co-operate

1999: MD Foods and Arla announced merger plans



2000: Arla Foods amba was formed on April 17.

### 3.2.1.2 The Co-operative

Around 8,100 milk producers in Denmark and Sweden are joint owners of Arla Foods. The company takes the form of a representative democracy with one vote for each co-operative member. The company is divided into geographical areas: 24 districts in Sweden and 26 in Denmark. The districts are divided into seven regions, three in Sweden and four in Denmark. Members are elected for two years at a time<sup>23</sup>.

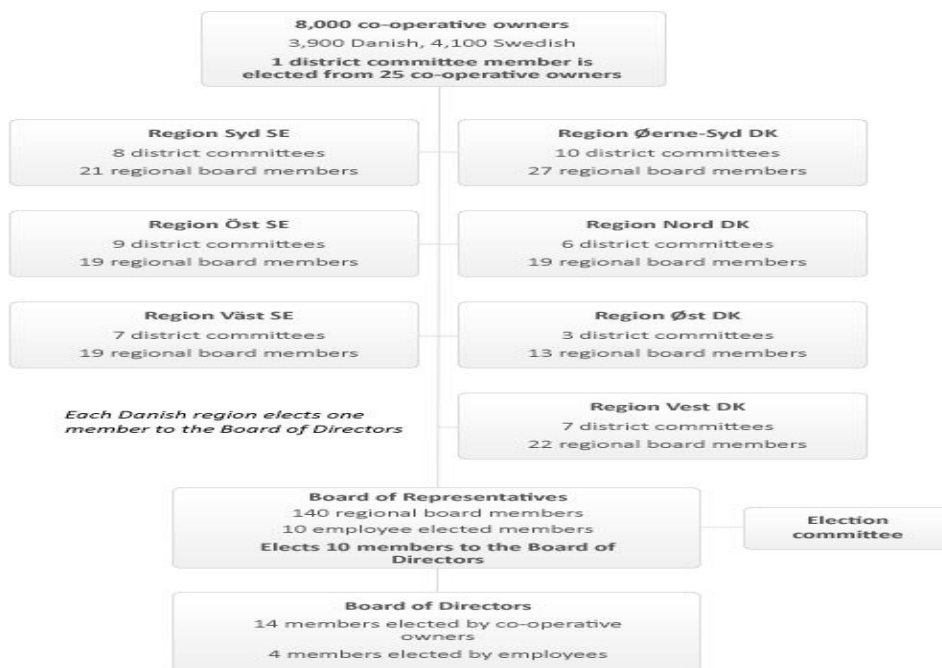


Table 3.2 ....shows the Co-operative members' influence on Arla Foods

<sup>23</sup> <http://www.arla.com/group/organisation/about-the-company/co-operative-shareholder-democracy/>

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### 3.2.1.3 Arla Foods organization

As consumers and customers develop and change, Arla Foods' organizational structure must be able to change accordingly. Consequently, Arla Foods' activities will be centered on four major business areas, Consumer Nordic, Consumer International (including UAE), Consumer UK and Global Ingredients. A new corporate centre to integrate inter-group functions will be also established.

The four business areas will strengthen Arla's positions in the Nordic area and in international markets and thus assure its milk producers of a tenable milk price, now and in the future. The four business areas will be responsible for everything from production to sales and marketing for their respective area.

"Our driving force is in the business. Therefore, as many of our activities as possible should be close to the daily business," says Peder Tuborgh.

He breaks with the former concept of one central head office in favor of a new corporate centre, which will gather together inter-group functions whose geographical location is not a key factor.

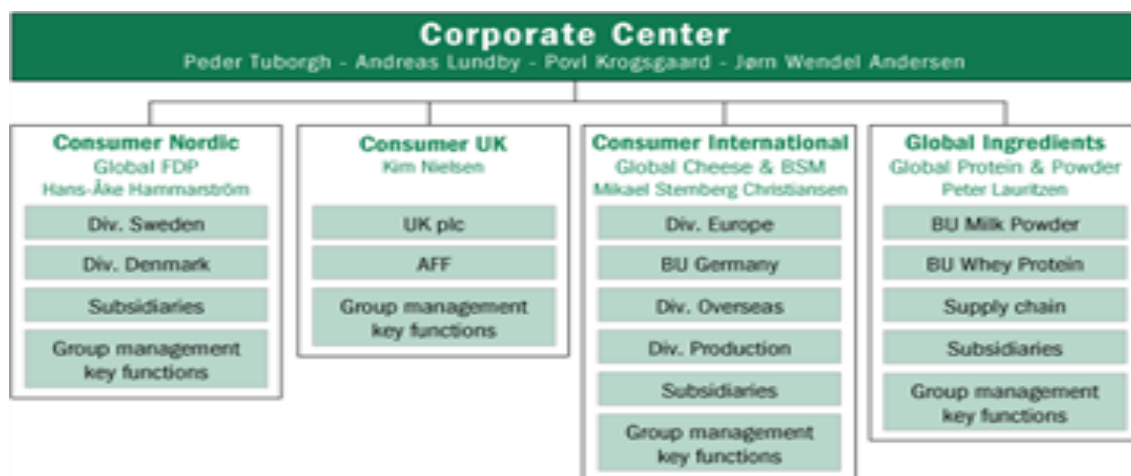


Figure 3.3... shows the 4 basic business areas at Arla Foods. The source is [www.arlafoods.com](http://www.arlafoods.com)

### 3.2.1.4 Consumer International

Arla's sales of cheese and butter outside the three home markets of Denmark, Sweden and the UK will be gathered under Consumer International. The Production Division and, consequently, Arla's production of cheese and butter at the Swedish and Danish plants will also come under Consumer International.

### 3.2.1.5 Consumer Nordic

Home markets, Denmark and Sweden, as well as Finland and Norway, will be gathered under Consumer Nordic. The production of fresh products will also come under Consumer Nordic.

### 3.2.1.6 Global Ingredients

Arla's milk protein and whey protein activities come under Global Ingredients. Production of powder and protein products is the responsibility of Global Ingredients.

### 3.2.1.7 Consumer UK

Consumer UK's activities will incorporate Arla Foods UK plc, Arla Foods' partnership with Fonterra with regard to butter and blends and export activities from Sweden and Denmark to the UK<sup>24</sup>.

### 3.2.1.8 Mission and vision

Arla's mission is to offer modern consumers milk-based food products that create inspiration, confidence and well-being.

The vision is to be the leading dairy company in Europe through considerable value creation and active market leadership.

### 3.2.1.9 Quality policy

Arla has four cornerstones of quality policy which are Milk composition, food safety, Animal welfare and environmental considerations.

- **Milk composition**

Arla strives to achieve a milk composition that ensures the final dairy product meets consumers' needs and requirements

- **Food safety**

Arla strives to offer our consumers safe, milk-based natural food products according to established dairy farm standards.

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<sup>24</sup> <http://www.arla.com/press/archive/new-organisation-in-arla-foods/>

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- **Animal welfare**

Arla strives to meet the animals' basic physiological and behavioural needs in order to optimize their health and welfare

- **Environmental considerations**

Arla strives to encourage environmentally responsible, natural dairy milk production on the farms<sup>25</sup>.

Arla has as well wide environmental policies and objectives, for more information, visit.<sup>26</sup>

### 3.2.1.10 Research & Innovation

Research and innovation is of fundamental importance to them all in Arla Foods, and they constantly strive for adding value to milk by optimising and developing new products, concepts and dairy processes.

Their innovation range covers milk-based products such as milks, yoghurts, desserts, cheeses, butters, spreads, soups, sauces, milk powders and milk-based food ingredients.

Arla Foods employs close to 200 highly qualified persons within the area of innovation ranging from basic research to new product development.

Research activities in Arla Foods are long-term initiatives, which provide the basis for competence development and knowledge transfer to the remaining innovation chain of importance for product and process development as well as marketing and sales.

Arla's research activities are organized within six research platforms, each representing a significant element in the milk value chain. A research platform co-ordinator and key representatives from organisational units in Arla Foods constitute each research platform. The research platforms secure effective internal communication of research-based knowledge and coordination and agreement on research needs.

In the following, you will find the vision and description of each of our six research platforms. Each platform contains specific and complementary research priority areas that

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<sup>25</sup> <http://www.arla.com/closer-to-nature/the-arla-dairy-farm/>

<sup>26</sup> <http://www.arlafoods.com/C1256E9400315C5D/O/E1CFB0A4A6BE4756C1256ED9002D6994>

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constitute our overall research strategy. Within each priority area, we present our research needs and the scientific potential in relation to the overall mission of Arla Foods.

- Milk Composition Flavour and Functionality
- Food Safety
- Consumer Preferences
- Process Development and Control
- Wellbeing<sup>27</sup>

### 3.2.1.11 Home markets and Export markets

Arla Foods regards those markets where we sell liquid milk as our home markets. In 2006, these were the UK, Sweden and Denmark.

Approximately one fourth of Arla Foods' turnover derives from markets outside Denmark, Sweden and the UK. The main exports are cheese, butter, milk powder and ingredients.

#### Sales offices

- 1 Norway, Oslo
- 2 Finland, Helsinki
- 3 Germany, Düsseldorf
- 4 Germany, Harbarnsen
- 5 Holland, Lelystad
- 6 France, Lyon
- 7 Spain, Madrid
- 8 Italy, Cerimido
- 9 Greece, Athens
- 10 Poland, Warsaw
- 11 Argentina, Buenos Aires
- 12 Brazil, São Paulo
- 13 USA, New Jersey

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<sup>27</sup> [http://www.arlafoods.dk/upload/arla%20dk/group/publications/research\\_strategy\\_2012.pdf](http://www.arlafoods.dk/upload/arla%20dk/group/publications/research_strategy_2012.pdf)

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14 Canada, Concord, Ontario

15 Mexico, Leon

16 Lebanon, Beirut

17 United Arab Emirates, Sharjah

18 Qatar, Doha

19 Kuwait, Safat

20 Bangladesh, Dhaka

21 Malaysia, Kuala Lumpur

22 Korea, Seoul

23 China, Beijing

24 Japan, Tokyo

### **Production**

25 Denmark

26 Sweden

27 United Kingdom

28 Germany, Harbarnsen

29 Poland, Goscino

30 Argentina, Portěna

31 Brazil, Cruzeiro

32 USA, Hollandtown, Wisconsin

33 USA, Muskegon, Michigan

34 Canada, Concord, Ontario

35 Canada, Atwood, Ontario

36 Canada, Prince Edward Island

37 Saudi Arabia, Riyadh

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38 China, Hohhot<sup>28</sup>

### 3.2.1.12 Employees and turnover<sup>29</sup>

Table 3.3 below... shows the number of employees. The table is made by the researcher depending on Arla foods web site.

Denmark	7329
Sweden	3264
Great Britain	3059
Finland	457
Other	1818
Total	15927

Table 3.4 shows the Total turnover of Arla Foods. The table is made by the researcher depending on Arla foods web site.

Great Britain	26,8%
Sweden	21,2%
Denmark	18,7%
Rest of EU	1,5%
Asia	3,2%
USA	4,6%
ME	4,8%
Other EU countries	17,9%
Rest of the world	1,3%

Table 2 above shows that Denmark has the highest number of employees; this is because of the high number of production sites in Denmark, about 71 production sites. Since most of these production sites have a certain yearly budget and do not earn money for themselves as individuals, this reflects the reason of having less turnover. Even though Denmark have the highest number of employees, the turnover is only 18.7% of Arla's total turnover, while GB have only 3059 employees and a turnover of 26,8% of Arla's total turnover as shown in table 3.

In GB, Arla foods have the biggest distribution centers where they have the highest market share of about 44% as shown in the following figure.

<sup>28</sup> [http://www.arlafoods.dk/upload/arla%20dk/group/publications/our\\_brands.pdf](http://www.arlafoods.dk/upload/arla%20dk/group/publications/our_brands.pdf)

<sup>29</sup> Arla Foods 2006.



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<b>Asda</b>	<b>100%</b>	<b>0</b>	<b>0</b>
<b>Marks and Spencer</b>	<b>0</b>	<b>0</b>	<b>100%</b>
<b>Morrisons</b>	<b>51%</b>	<b>0</b>	<b>49%</b>
<b>Sainsbury's</b>	<b>0</b>	<b>50%</b>	<b>50%</b>
<b>Somerfield</b>	<b>50%</b>	<b>50%</b>	<b>0</b>
<b>Tesco</b>	<b>40%</b>	<b>60%</b>	<b>0</b>
<b>Waitrose</b>	<b>0</b>	<b>0</b>	<b>100%</b>
<b>Total market share</b>	<b>44%</b>	<b>35%</b>	<b>21%</b>

Figure 3.4...Arla foods market share compared with the two biggest competitors, depending on an introduction presentation slide 9 of Arla Foods in the GB. The presentation is attached the CD following this project.

### **3.2.2 From cow to consumer at Arla Foods**

By the following the researcher will explain and show how the supply chain, from door to door, at Arla Foods works together and gets the best results.

Arla Foods is one of many successful Danish companies. These companies are becoming market leaders, not only in EU but worldwide as well.

To become a market leader is not something happens from day to day, it is a serious work of many years and a result of learning and implementing the new appropriate theories combining them with the best technologies. These theories and technologies have to be available through the whole supply chain, and are decided upon to a certain strategy and policy. The strategy is discussed and studied by the executive board.

In general, supply chain starts from raw materials to the producer to the distributor and finally to consumers in order to achieve the best delivery performance<sup>30</sup>. A successful supply chain is the one which works together like a piece of music, if one musician elevates, the others will hear it, meaning that all parties in the supply chain should march to the same drumbeat.

By the following the researcher will describe the process of from cow to consumer at Arla foods, which begins from strategy and ends at the end user.

<sup>30</sup> Delivery performance is equal to the effort of the supply chain, put together

### 3.2.2.1 Strategy

People understand strategy in different ways and experts have written a set of definitions of strategy. One of these definitions is: "strategy is the coordinated means by which an organization pursues its goals and objectives. It also outlines the means by which a firm intends to create unique value for customers and other important stakeholders<sup>31</sup>"

Strategy could be of different levels, depends on the size of the company. It could be a corporate strategy (what business are we in?), competitive or business strategy (how do we compete?) functional strategy (how do we support the business level strategy?).

As this project concerns Arla Foods, the researcher will give a brief idea about the corporate strategy of the five years 2008-2013.

The five-year strategy 2008-2013, sets out clear global aspirations for the company and builds on Arla's strong positions in Scandinavia and in the UK. It also focuses on its strong brands.

There are five main elements to this strategy, which aims to:

- Deliver the best milk price to Arla Foods' co-operative farmer owners.
- Germany and Poland will join Sweden, Denmark, the UK and Finland as Arla Foods' core markets, resulting in increased activity in those countries
- Investment in product innovation will increase by 100 per cent with a focus on product taste and healthy living to support Arla Foods' growth
- Arla will consolidate its brands into three strong global brands: Castello, Lurpak and a new 'Arla' brand, by investing in their strength. Anchor, Rosenberg, Cravendale, Apetina and Lactofree continue to be priority brands for Arla Foods UK and will continue to have strong levels of marketing support.
- A new target has been set to double sales of whey protein globally.

Arla Foods' presence in more than 80 markets worldwide will be better prioritized. As part of this, the US, Russian and Chinese markets have been designated as special growth markets and will account for a larger share of Arla's investment budget. Certain other markets have been defined as tactical markets. This is where current business levels will

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<sup>31</sup> Mason A carpenter, Wm. Gerard Sanders Strategic Management second edition p. 10

be maintained<sup>32</sup>.

### 3.2.2.2 Raw materials/resources

Since the raw materials are the beginning of any production and on it the quality depends, it is important to choose the right raw materials which fit the quality of that product.

In this Arla Foods case, milk is the raw material and therefore it is important for the company to choose the right milk to the right product, because farms are divided into products and customers, e.g. some customers want their cheese to be produced of a certain milk, this milk must be coming from an exact farm, because the taste of the product will change if the resource of milk changes.

The composition and functional properties of cow's milk are important to dairy farmers, manufacturers and consumers, and can be altered in three ways: by cow nutrition and management, by cow genetics, and by dairy manufacturing technologies. The contribution of fatty acids to milk fat production is dependent upon feed intake, diet composition, and stage of lactation. Some of the most important ways to manipulate the feed intake of the cows are by altering the content of starch relative to fibre in the diet, by altering the amount and composition of long chain fatty acids in the diet, and/or by changing the energy balance in the diet. Especially pasture-based compared to total mixed rations have significant differences in these factors, which leads to differences in milk fat composition (Kolver and Muller, 1998).

### 3.2.2.3 Milk collection and Distribution

Arla has about 700 distribution vehicles in Great Britain, Denmark and Sweden. They deliver products to about 20,300 supermarkets and shops, catering outlets and restaurants.

Every day, Arla's tankers are used to collect milk from farmers, and every day products are transported to supermarkets and shops. Arla's 700 tankers and refrigerated vehicles clock up more than 42 million km every year, so transporting milk accounts for a major percentage of Arla's annual CO<sub>2</sub> emissions.

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<sup>32</sup> Arla Foods web site

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Arla has increased its focus on transport as part of the company's commitment to reduce CO<sub>2</sub> emissions. Like all other companies, Arla must adhere to EU standards which are limits set by the EU for the maximum amount of emissions of nitrous oxide (NO<sub>x</sub>), carbon monoxide (CO), hydrocarbon (HC) and particulate matter (PM) from heavy diesel vehicles. Today, Euro IV standards apply and in October 2009 Euro V standards will come into force. These will tighten up environmental requirements even further, but Arla already only buys vehicles that adhere to the forthcoming Euro V standards. Major environmental benefits can be gained when older vehicles are replaced by new. Arla replaced 55 of its vehicles with new ones in Denmark during 2009; this will result in a reduction of NO<sub>x</sub> emissions by approximately 20 tonnes and a reduction of CO<sub>2</sub> emissions by approximately 160 tonnes<sup>33</sup>.

### 3.2.2.4 Suppliers

To be an Arla supplier is not a simple process. The supplier process is a very complicated one, and the supplier has to be through many stages and evaluations before the supplying company is chosen. Arla foods have a centralised purchasing department (GP)<sup>34</sup> which take the action of evaluating the suppliers and the purchasing process.

### 3.2.2.5 The purchasing strategy

In many companies, purchasing, perhaps more than any other business function, is wedded to routine. Ignoring or accepting countless economic and political disruptions to their supply of materials. Many purchasing manager's skills and outlooks were formed 20 years ago in an era of relative stability and they haven't changed. Now, however, no company can allow purchasing to lag behind other departments in acknowledging and adjusting to worldwide environmental and economic changes. Such an attitude is not only obsolete but also costly<sup>35</sup>. The purchasing strategy consists of three evaluations which are used in relation to each other:

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<sup>33</sup> <http://www.arlafoods.co.uk/closer-to-nature/natural-evolution/our-business-intent/distribution/>

<sup>34</sup> GP= Global Procurement

<sup>35</sup> An article called "purchasing must become supply management" by Mr. Karljic

# Operations management

## A. Sourcing strategy

Is the 1<sup>st</sup> evaluation it is also called "**The Diamond**". The Diamond is divided into 2 parts, left and right side. The left side part is called "exploit buying power", and the right side part is called "create an advantage".



Figure 3.5 shows the diamond division. The figure is made by the researcher depending on the information taken from Arla **Foods**

GP uses these two sourcing strategies in connection with each other. They always start by exploiting their buying power.

As shown in figure 5, the exploiting buying power has 3 phases which are<sup>36</sup>:

### 1. Volume Concentration:

- Reduce/consolidate number of suppliers
- Pool volume across business units
- Create preferential suppliers to improve capacity utilization
- Combine volume among suppliers

### 2. Best Price Evaluation

- Benchmark internal prices
- Use competitive bidding
- Compare total cost among potential suppliers
- Develop long-term contracts

### 3. Global Sourcing

- Expand geographic supply base
- Examine new suppliers
- Optimise counter trade
- Leverage attackers from LCC

<sup>36</sup> I chose to mention only 4 sub points of each phase, but for more information about the rest of points in each phase look encl. 6

## Operations management

GP, turn to use the second half of the diamond when they have studied a supplier long enough, and concluded that the relationship is a long term one. The right side of the diamond is a kind of cooperation between Arla and the suppliers. The right side part of the diamond, Create an Advantage, has three phases as well which are:

### 1. Product Specification Improvement

- Rationalise/standardise/simplify parts
- Substitute materials
- Apply product value analysis
- Examine life cycle cost

### 2. Joint Process Improvement

- Reengineer joint process
- Integrate electronically, e.g. VMI
- Support supplier operations improvement
- Develop long-term contracts

### 3. Relationship Restructuring (GP, almost, do not use this phase)

- Analyse core competencies
- Adjust degree of vertical integration
- Establish joint ventures
- Establish incentives for cost reduction

## B. Kraljic Matrix<sup>37</sup>

Kraljic is the second evaluation

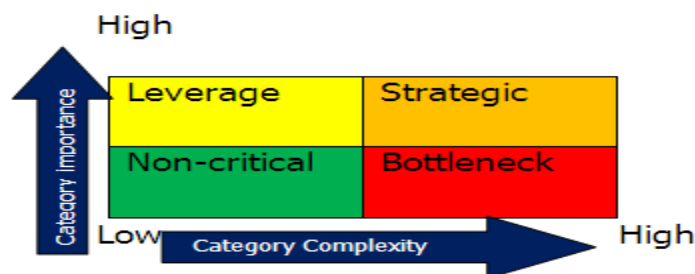


Figure 3.6 shows the Kraljic Model depending on an article called purchasing must become supply management by Harvard college

<sup>37</sup> Kraljic matrix look enclosure 7

## Operations management

The Kraljic matrix can be used to analyze the purchasing portfolio of a firm and it consists of four sections which are:

**Non-critical:** Non-critical items are products that are easy to buy and also have a relative low impact on the financial results.

**Leverage:** Leverage items are products that represent a high percentage of the profit of the buyer. Many suppliers are available, which make it easy to switch. The quality is standardized.

**Strategic:** Strategic items are products that are crucial for the processor product of the buyer. They are characterized by a high supply risk caused by scarcity or difficult delivery.

**Bottleneck:** Bottleneck items that can only be acquired from one supplier or their delivery otherwise unreliable. Have relative low impact on the financial results.

GP, use this model in order to analyse how complex is the needed category and how important is it. In each section they analyse three different issues<sup>38</sup>:

Sourcing group characteristics

Strategy

Techniques

**B. Relationship Matrix or the purchasing portfolio** is the third evaluation.

The purchasing portfolio matrix plots company's buying strength against the strength of the supply market and can be used to develop counterstrategies vis-à-vis key suppliers- an approach called sometimes "reverse marketing"<sup>39</sup>. After defining the importance and complexity of the needed category, and after defining which side of the diamond should be used, GP have to place the supplier in the relationship matrix according to the results of the analysis above mentioned.

As shown beneath in figure 3.7, the matrix has 3 different colors which are green, yellow and red. These colors, corresponds to three basic risk categories.

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<sup>38</sup> More details about each issue in Kraljic model according to GP encl. 8

<sup>39</sup> An article called "purchasing must become supply management" page 5. By Mr. Kraljic. Look enclosure 9

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On the ground where the color is green, the company plays a dominant market role, because supplier's strength rated medium or low. The indicated strategy on the green ground then is "Exploiting".

On the ground where the color is red, the supplier's role is strong and the company's is secondary, therefore the company must go on the defensive and start looking for material substitute or find new supplier. The implicated strategy on the red ground is "diversify".

GP has chosen to put numbers from 1 to 9 in the matrix.

According to GP, non-critical category in Kraljic model will be stated in cell number 4 of the relationship matrix. The leverage category will be stated in cell number 2. The strategic category will be stated in cell number 3 and the bottleneck in cell number 6.

Both, colors or numbers will give the same result. If we look at number 4 and 2, which are non-critical and leverage respectively, they fall in the green area. Number 3, strategic, falls in the yellow area and number 6, bottleneck, falls in the red area. This matrix consists of nine cells distributed as following:

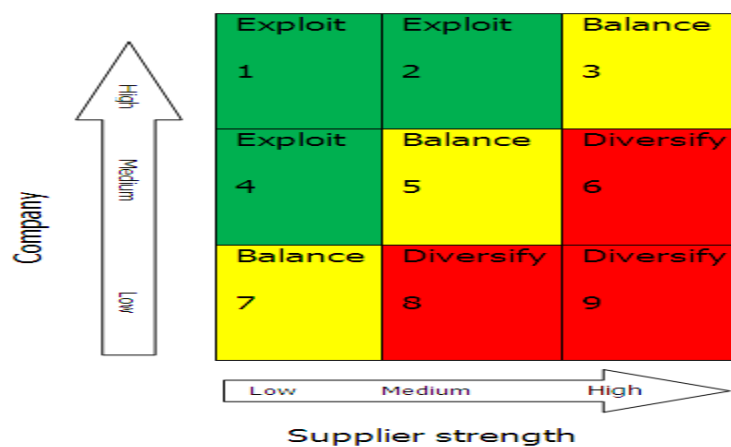


Figure 3.7 is the relationship matrix depending on Kraljic the article "purchasing must become supply management."

### 3.2.2.6 The purchasing process

At the organization, GP, a constant model is used when they have to select a new supplier. This model is called the 9 steps model. A detailed description of the model will follow.



## Operations management

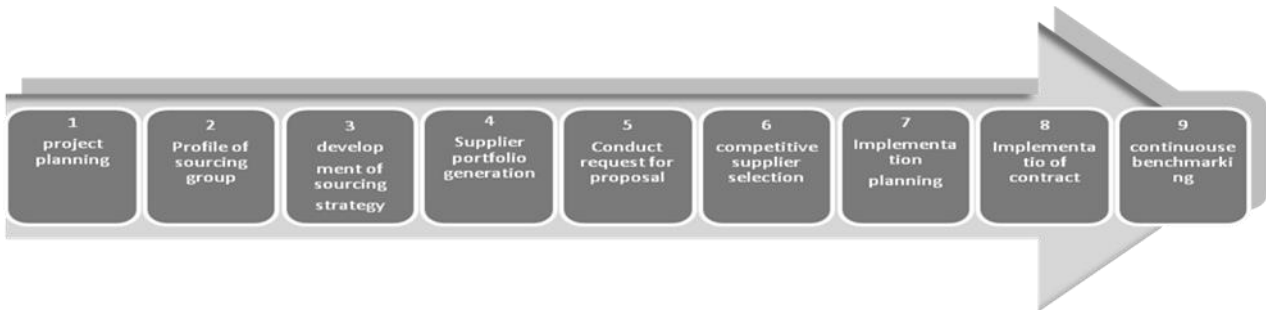


Figure 3.8..... Shows the different steps of the purchasing process, the figure *is made by the researcher depending on a description from the company*

**Step 1:** When it is decided to have a new supplier, GP establishes a group of employees. The group consists of some employees who can take an immediately decision if needed and represent the different departments which are going to use that product from the future selected supplier.

**Step 2:** This step is the one that takes longest time to finish. At this stage, the group starts defining the product, for instance how many departments are going to use this product? How much are they going to use, either Kg or units? They collect information about the existing product and about the existing supplier.

The conclusion of this step is a clear picture of the situation at present time.

**Step 3:** It is time to choose which strategy is to be used.

GP have two sourcing strategies as mentioned above in the sourcing strategy part:

- Exploit buying power
- Create an advantage

### **Step 4:**

The established group of employees, start making a long list of suppliers who possibly can meet the requirements, this list, which is called *Request For Information RFI* will be send to all Relevant suppliers. The main aim of this list is to know everything needed about the suppliers and have some written documents. This incoming information will be the basement of selecting *the short list of suppliers*.

### **Step 5:**

## Operations management

Short list of suppliers is selected. GP determines at this stage what do they wish to buy; therefore they develop a *Request For Product RFP* which includes the terms, conditions and code of conduct. Later on the RFP is collected.

### Step 6:

This is the analyzing step of suppliers bids based on evaluation criteria. After analyzing, GP, starts developing metrics to evaluate suppliers and savings on each.

Preparing for the negotiation, negotiation and selecting suppliers come in a rank and ends with developing and signing a contract or a letter of content<sup>40</sup> including KPI`s and reports.

### Step 7 and 8:

These 2 steps are to ensure that the contract will come into life, because if the process stops at step 6, diaries or other end consumers, will not start buying from that supplier according to the specifications we agreed on. There are a set of conditions that should be fulfilled. For instance

- All relevant end users should know about the existence of the agreement
- End users should show acceptance to use that new agreement/ new supplier/ and deal according to the new conditions
- End users should order products at that supplier according to the current conditions and through the concerned system like SAP or ettBUY.

### Step 9:

Is the last step of the purchasing process, it is a periodically re-evaluation of supplier performance. It maintains competitive price and track savings. In general this step is to ensure quality, compliance, savings and continuous improvement.

### 3.2.2.7 Production and quality control at HFO

Since Arla Foods is a global company and has many different brands and many customer own label brands, it is normal to have many different sites around the world to produce these brands.

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<sup>40</sup> It is a kind of temporary contract to assure the cooperation between the two parts until the final contract is made.

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The used strategy at Arla Foods is a full production process of any product, meaning that there is no production site, collection site and packaging site. Even the warehousing is centralised as well. Warehousing process will follow in an individual paragraph. This full production process of the product made Arla Foods a professional in their production and in quality control as each site produces a certain kind of cheese or butter or milk powder etc...

Since the project have limited time and number of pages, the researcher will by the following give an example about the production process of crème cheese at Holstebro Flødeost (HFO) and how do they control the quality.

Since the researcher is going to describe the production process of Crème cheese at HFO, it is recommended to give the reader a brief idea about that production site.

The following time line shows the different stages of HFO's development

1932	1952	1980	1988	1999	2000	2001	2005	2007
BUKO starts production of processed cheese	BUKO starts production of cream cheese	BUKO builds Holstebro Cream Cheese Dairy	BUKO becomes a part of MD Foods	MD Foods merges with Danish dairy Kløver	MD Foods amalgamates with the Swedish Arla	introduce "the 14-days concept"	SAP R3 is implemented (ERP)	R/O system to concentrate our whey

Table 3.5 stages of development of HFO. The table is made by the researcher depending on Arla foods web site

Currently there are 240 employees at HFO, divided into white and blue collared workers. They are divided on production departments and other areas of responsibility. Finished products (FV)<sup>41</sup> are 354 items, producing about 50000 tons/year. This amount of produced Cream cheese is divided into seven different types of Cream cheese, which are, 70+, 60+, 50+, 45+, 20+, 15+ and 0+<sup>42</sup>.

<sup>41</sup> FV= færdig varer

<sup>42</sup> For instance 70+ mesans fat percent in dry matter (fedt i tørstof).

### **3.2.3 Activity and information flow**

At HFO there are two different ways to produce cheese, either ultra filtration (UF) or centrifugal separation. Since UF accounts more than 90% of the production, the researcher will only concentrate on the UF production process.

The UF production process is a very long and complicated one. In order to understand it well, the researcher will by the following describe the production process at HFO. The description will include both activity and information flow.

#### **3.2.3.1 Activity flow**

The Production flow consists of three steps which are:

- Production
- Filling
- Packaging

The milk is being collected 365 day a year and 11 million litres per day using 70 day and night vehicles. Arla Foods Holstebro Butter dairy (HBD), which is located very close to HFO, is responsible for milk reservation to HFO.

Planning department at HFO has the responsibility of milk reservation from Holstebro Butter dairy HBD. Monday morning, the planner at HFO sends a milk reservation<sup>43</sup> to HBD which, should be in HBD hands a week before delivery time.

At HFO there are 15 big tanks used to the ultra filtration (UF) plant, with a total capacity of about 22000 tons of milk and 6 tanks used to the centrifugal separation plant, with a total capacity of 500 tons of milk.

#### **3.2.3.2 Production process**

- **Pre-treatment at HFO**

All milk of cheese production must by law be minimum low pasteurized. This corresponds to a heat treatment at 27°C for 15 seconds. Hereby bacterial content in milk is reduced,

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<sup>43</sup> Look encl. 10 milk reservation

## Operations management

while all other possible pathogenic bacteria with warranty are killed. Buttermilk to HFO will always be high pasteurized at 95°C for 5 minutes and immediately cooled down to approx. 20°C.

- **Milk receiving**

HFO receives the standardised milk into the different acidification tanks with a capacity of about 200 tons per tank. After milk receiving into tanks, control samples of milk are taken. These samples are analyzed for fat and protein percentage, and to check if the fixed factor is observed.

- **Fermentation**

Before milk receiving, the employee calculates how many tones there should be in the tank, because he/she has to put the appropriate and correct weight of bacteria culture before receiving begins. HFO uses a DL-culture which consists of Lc. Lactis, Lc. Cremoris, Lc. Diacetylactics and Leuc. Cremoris.

Fermentation happens at 20°C. Acidification process takes about 18-20 hours where the PH falls to the right value 4.7.

- **Stirring**

The soured milk has been increased viscosity, and in order to mix the content a stirring is activated.

- **Cooling**

In order to stop the acidification process, the finish soured milk is cooled to 5°C

- **Ultra filtration**

When the cooled soured milk is to be used, the employee has to control the PH<sup>44</sup> and taste the milk. The milk is collected in a buffer tank 1 before it goes through a warm plate which heats the milk to 50°C, thereafter; the milk is pushed through the UF machine.

The soured milk is not cheese yet; therefore some whey has to be filtered out. This whey is pumped into a tank where the dry matter is standardised from 5% to 6.3% and then

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<sup>44</sup> PH= [pH scale](#) ((from potential of Hydrogen) the logarithm of the reciprocal of hydrogen-ion concentration in gram atoms per liter; provides a measure on a scale from 0 to 14 of the acidity or alkalinity of a solution (where 7 is neutral and greater than 7 is more basic and less than 7 is more acidic) (<http://wordnetweb.princeton.edu/perl/webwn?s=pH> Friday 21/08-09 07:43))

## Operations management

sold to farmers as animal feed. The cheese is pumped into a buffer tank 2 after adding salt into it.

From the UF machine, the cheese ends into 4 big buffer tanks 3.

- **Pasteurization**

Cheese in the buffer tank 3 is not ready yet, because it is not pasteurization as low says. Therefore it has to be pasteurization at 72°C if it is 0+, 15+ or 20+ fat in dry matter (fedt i tørrestof) and at 78°C if it is 45+, 50+ and 70+. At this stage it is not possible to use a warm plate, but a Scrape heat exchanger<sup>45</sup>.

The pasteurized cheese is pumped with a high vacuum pressure from the Scrape heat exchanger into pumps then from pumps into pipes<sup>46</sup>. There are two pumps which pump in two different directions through the factory and meet at the same point and then back to the Scrape heat exchanger. The reason for this journey through the factory is that the cheese has to be on continuous circulation. In case that a stop on a collection machine happens, the cheese will not burn.

Each pipe has some valves. These valves give the collection department the ability to subscribe to a certain line and start bottling.

### 3.2.3.3 Filling

By each valve there is a warm buffer tank 4. When the employee wants to use that valve, the warm buffer tank 4 is firstly filled. From this tank the cheese runs through a homogenisation machine in order to crash the fat globules in the cheese and then into a buffer tank 5, in order to be mixed with ingredients if needed.

When the cheese runs from buffer tank 5 towards the bottling machine, it runs through a metal and glass detector.

At the top of the bottling machine there is a little buffer tank 6. The cheese is being bottled at 68°C in order to sterilize the plastic cup. When the cup is filled, wafer of film is welded and covered with a plastic transparent cover.

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<sup>45</sup> SVV scrapvarm veksler

<sup>46</sup> Each pipe is a line. At HFO there are 13 lines

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When the cup comes out of the bottling machine, it goes through a little machine called vision. The vision machine checks whether the transparent cover matches the cup or not. After that, it goes through a printer which types the expiry date and other information. The air cylinder pushes the cups which are less than the accepted weigh after running through a weighing machine.

Two samples are taken each one hour, one to quality control, such as PH, salt %, water %, fat % and another to be hold at laboratory.

The step before the last step of the bottling process is the sticker machine. This step is used if the customer has a kind of campaign and asks for a special sticker on the cup.

The last step at this stage is the cooling. The cheese runs through a circular band called cooling tower for about 30-40 minutes in order to cool the cheese down to about 40°C.

### 3.2.3.4 Packaging

From the cooling Tower, the cheese continues the journey on a long band about 100 meters. The band is divided into 4 lines at the end of it. These 4 lines make the same process. Each of these 4 lines collects two ranks of cups with eight in each rank and with a height of 3, 4 or 5 cups, depends on the cup height. These two ranks run into a metal cage. The cage have 10 shelves of 320 cups on each. When the cage is full, it continues on a band where a barcode is printed and put on it. A forklift driver moves the metal cage to a Temporary place where the product cannot be moved further in the process, until it is approved by the lap employee. It stays there for about one day. When the product is approved, the forklift driver moves the product to the area of approved products so that it can be put in cases. Cases are put on pallets and wrapped with cling film. The employee put a barcode on it and drives it to the warehouse where it stays about one day before it gets moved to Vejle.

In order to get a successful production process, activity and production flow have to follow each other step by step. The following section will concern the activity flow from door-to-door and the information flow.

## Operations management

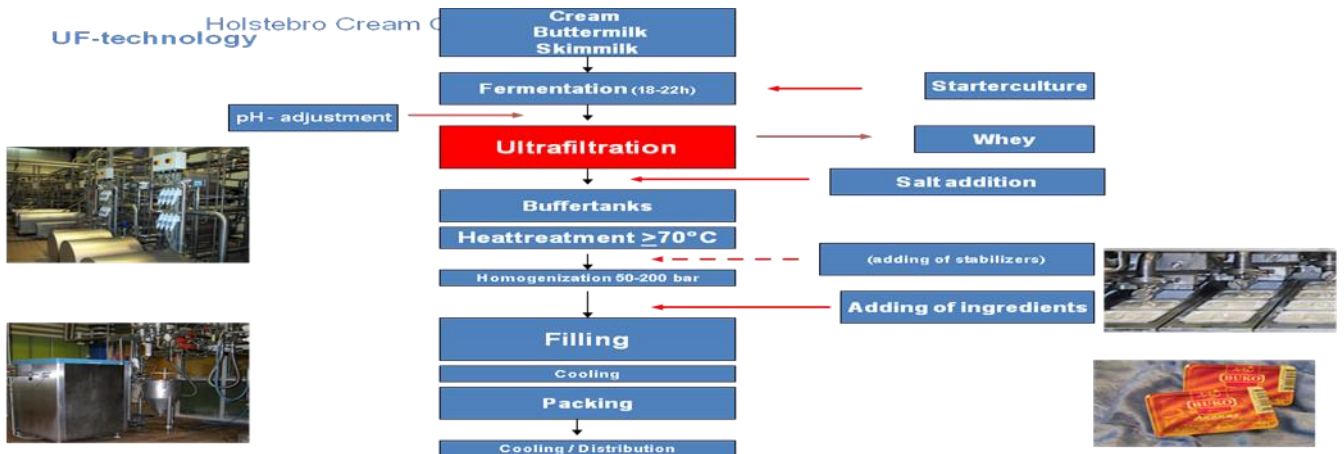


Figure 3.9 ... depicts the production process from milk to temporary warehousing. the source is an Arla foods presentation

### 3.2.3 Information flow (Planning and Packing ordering)

- **Planning**

Planning department at HFO has the responsibility of milk reservation from Holstebro Butter dairy (HBD) which is located close to HFO. Monday morning, the planner at HFO sends a milk reservation to HBD which, should be in HBD hands a week before milk delivery time. At HFO there are 15 big tanks used to the ultra filtration (UF) plant, with a total capacity of about 22000 tons of milk.

Planning department is intermediate point that connects the whole process together. The planning department release the orders of Monday of e.g. week 31 on Friday of week 30 before 9:00 which is the morning meeting time.

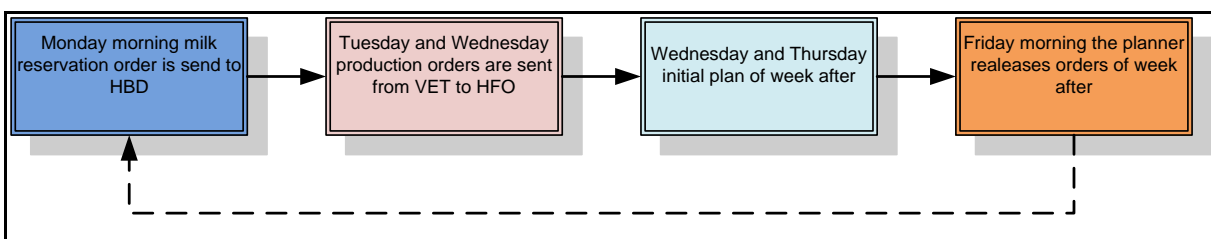


Figure 3.10 order cycle at planning department depending on information from planning department at HFO. the figure is made by the researcher

- **Packing ordering**



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About 98% of orders are VMI<sup>47</sup> and about 2 % by Fax. Viby order cardboard from SCA<sup>48</sup>, for example 10 millions box of different kinds according to forecasting and thereby SCA deliver to HFO according to a VMI contract.

Regarding plastic suppliers, Novoplast and superfoss, About 89% of the orders are by EDI<sup>49</sup>, around 10% by fax and around 1% by e-mail. Planning department at HFO orders to all product items, but not to private label<sup>50</sup>.

The following is the activity and the information flow model which is my own creation:

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<sup>47</sup> VMI = Vendor managed inventory

<sup>48</sup> SCA = Svenska Cellulosa Aktiebolaget

<sup>49</sup> EDI = Electronic Data Interchange

<sup>50</sup> Private label=at Arla Foods any customer can have his own label, but he has to pay the extra cost of it.

Indsæt activity chart

### **3.2.4 Production Capacity at HFO**

At HFO, there are 13 production lines, producing about 1000 tons/week.

The theoretical production capacity of these lines is:

Line number	Capacity cups/ hour (theoretical)	Accepted efficiency percentage (practical)	Cup size
01	7200	65 – 90	100 g, 125g, 150g, 200g
02	475	70 – 75	1,8 kg
03	10080	70	50 g
04	1670	75	6 x 20 g
06	9600	65 – 90	100 g, 125g, 150g, 200g
09	10800	65 – 90	200 g
10	10800	65 – 80	100g, 125g, 150g, 200g rounded
12	4320	70 – 90	300 g, 200 g
13	3840	70	50g ufo
14	10800	50 – 85	125g, 150g, 200g, 300g
15	125	80	16 kg, 25 kg
16	10800	50 – 85	125g, 150g, 200g, 300g
17	720	80 – 90	1 kg, 1.5 kg, 3 kg

Table 3.6 theoretical machines/filling lines capacity depending on information from HFO. the table is made by the researcher

As shown in the upper table the filling capacity and the accepted efficiency percentage of some lines depends on cup size or the item number.

***Theoretical capacity cups/hour*** is the maximum number of cups the machine can fill in one continuous filling hour without any kind of stops or allowances.

***The accepted efficiency percentage*** is a limit put by HFO for each Item number in case a machine is working constantly for one hour e.g. if the accepted efficiency of a certain item number is 90%, and the capacity is 7200 cups/hour, the minimum number of cups produced should be:  $(90 \times 7200) / 100 = 6480$  cups per hour, but if the machine produces e.g. 5443 cups/hour, the machine exploitation is not 90% but 84%.

### **3.2.5 Packaging**

Planning department does not plan for packaging department since they plan for their own. The department has 4 packaging lines. At this department there are two kinds of set up:

1. Item number batch change set up:

This kind of set up is divided into two as well:

- Box with one item number products: This set up is done each time there is a batch change at the production department.
- Box with mixed item numbers.

2. Size change set up: this kind of set ups happen when there is a size change, e.g. when they have to pack a box with 20 cups instead of 40 cups.

This department has problems with big and small order size, big orders because they will shorten stands and small orders because of set up times. The company had started a new project in order to solve this problem asap, and came up with two solution proposals:

1. Divide the biggest orders into two production orders, so that the number of cups is divided into two batches
2. Buy some new stands

When the project is done, it will probably show which of the two solutions is the most financially beneficial.

### **3.2.6 Inbound and outbound Logistics**

The crème cheese products at HFO stays for 24 hrs in a temporary WH, thereafter it is moved to a centralized WH in Vejle called Vejle Export terminal (VET), which is one of four big warehouse terminals in Denmark.

Vejle Export Terminal (VET) is an Arla foods distribution center located in Vejle since 2006. Before 2006 it was located in Kolding and before that in Haderslev. Recently, because of lack of space the terminal was moved to Kolding.

VET is a big warehouse, 16.000 m<sup>2</sup>, with a space for 11000 pallets. VET can have stocks for 11 calendar days of sales on average including 3 days of safety stock.

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Number of employees at VET is 46 workers at the warehouse, three of them are white collared and the rest are blue collared. There are three employees working on economy, salary and quality, five employees at disposition department and two terminal leaders.

Warehousing activities are those of holding and handling goods in a warehouse (store).

The Principles of warehousing are:

- Load utilization
- Best use of space
- Minimize movement
- Control of stock movement
- Safety/Security/Environment
- Minimum total cost

Warehousing moves materials into storage, and takes care of them until they are needed. Many materials need special care, such as food, milk, drugs, chemicals that emit fumes.

Basic activities of that are generally included in warehousing:

- Receiving goods from upstream suppliers.
- Identifying the goods, matching them to orders and find their intended use.
- Unloading materials from delivery vehicles.
- Doing any necessary checks on quantity, quality and condition.
- Labeling materials so they can be identified.
- Sort goods as needed.
- Moving goods to bulk storage area.
- Holding them in stock until needed.
- When necessary, moving materials from bulk storage to a smaller picking store.
- Picking materials from this store to meet orders.
- Moving the materials to a marshalling area.
- Assembling materials into orders.
- Packing and packaging as necessary.
- Loading delivery vehicles and dispatching the order.

## Operations management

- Controlling all communications and related systems, such as inventory control and finance<sup>51</sup>.

Distribution (or **p**lace) is one of the four elements (the 4 Ps) of marketing mix. An organization or a set of organizations involved in the process of making a product or service available for use or consumption by a consumer or business user<sup>52</sup>.

The other three parts of the marketing mix are **p**roduct, **p**ricing and **p**romotion.

There are at least three interpretations of the word "distribution"

- Distribution as the activities that bridge the gap between producer and user.
- Distribution as physical delivery
- Distribution as a network<sup>53</sup>.

Distribution and intermediaries have become increasingly significant over time, and their importance become clearer. Distribution provides the logistics element of a supplier's offering and provides adaptations to other elements of an offering in product, service, advice and logistics.

Warehousing and distribution process at Arla Foods go through several stages from the minute of goods in until goods delivery to customers, and the Warehouse Management system at the terminal gives Arla Foods the full visibility from Cow 2 Consumer (C2C).

### 3.2.6.1 QR and Bar coding

Quick response (QR) is the use of electronic information technologies between retailer trading partners to reduce purchasing order lead time and finished goods inventory<sup>54</sup>.

The basic idea behind quick response (QR) is that in order to reap the advantages of time-based competition it is necessary to develop systems that are responsive and fast. Hence QR is the umbrella term of the information and the logistic system that combine to provide "the right product in the right place at the right time"<sup>55</sup>.

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<sup>51</sup> Donald Waters logistics an introduction to Supply Chain Management page 286

<sup>52</sup> [www.google.co.uk](http://www.google.co.uk)

<sup>53</sup> Managing business relationships 2nd edition (David Ford)

<sup>54</sup> <http://www.techexchange.com/thelibrary/acronyms.html>

<sup>55</sup> Logistics and supply chain management martin cristopher third edition page 190

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Some elements have helped the possibility of QR like the development of information technology and the rise of internet-enabled data exchange, **Bar Coding**.

The barcode symbols are to identify an item. Bar coding is the most common form of automatic identification used in automatic data-capture technologies. And bar codes track virtually everything: from retail goods to medical records, and machinery to human beings<sup>56</sup>.

Since Arla Foods delivers Day One for Day Two to their customers, they need a quick response system. Therefore Arla Foods uses the RF<sup>57</sup> *radio frequency* scanning technology throughout the warehouse.

RF is commonly used in the wireless communications industry to describe equipment using *radio frequency waves* to transmit sounds and data from one point to another. In computer net working, RF is used to describe network devices (hubs, bridges, etc.) that transmit data signals using radio waves instead of data cables or telephone lines.

Some could think that RF is the same as RFID, but there is a difference between these two technologies.

RFID<sup>58</sup> contains a silicon chip that carries an identification number and an antenna able to transmit the number to a reading device.

Cost of RFID will be more expensive than bar codes, and it is affected by moisture and metal. This means that tags might be unable to be read if there is metal or liquids within packaging or the environment<sup>59</sup>.

At Arla Foods warehouse, there are some access points (AP) or as called Ariel and one at the manager room, few cabinets and a server (the number of access points and cabinets depends on the size of the warehouse). The APs are connected by hidden wires to the cabinets in a way that could cover all the warehouse area. The cabinets are as well connected to the server by hidden wires<sup>60</sup>. In each scanner pistol there is a radio card and it has its own IP number. IP is an Internet Protocol - a standard that allows for the

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<sup>56</sup> <http://www.businessdictionary.com/definition/bar-coding.html>

<sup>57</sup> RF = Radio Frequency

<sup>58</sup> RFID= Radio Frequency Identification

<sup>59</sup> Purchasing and supply chain management 7<sup>th</sup> edition page 322

<sup>60</sup> As described in table 2.2

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transmission of data across networks. Every machine that is on the internet has a unique IP number<sup>61</sup>. In other words it works like a wireless net connection.

The RF works through pistols carried by the WH employees and the access point could work with up to 200 scanners or pistols (licenses) at the same time.

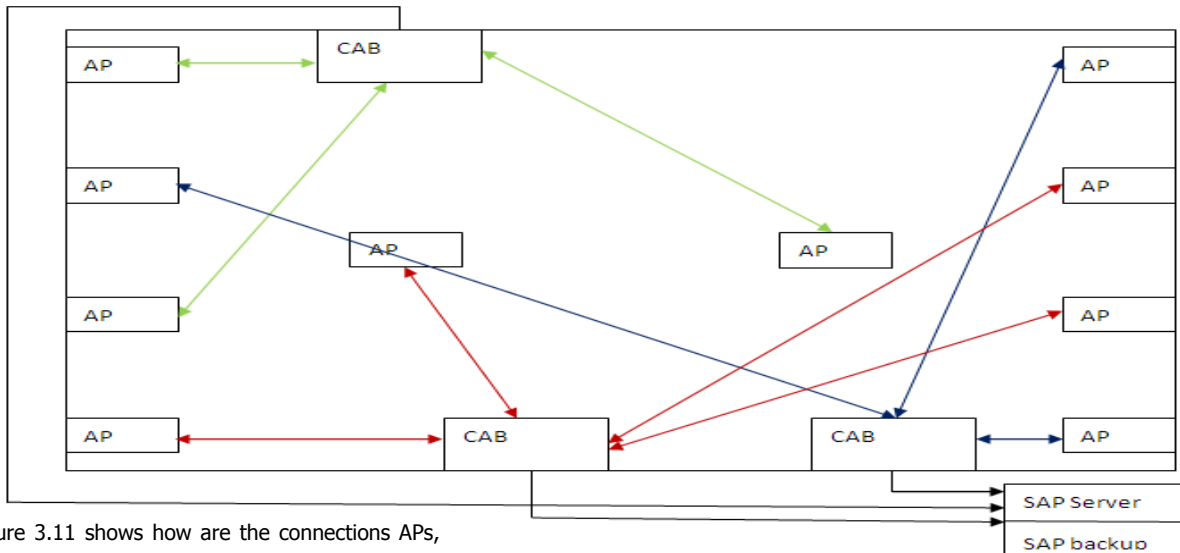


Figure 3.11 shows how are the connections APs, CABs and the server. made by the researcher

### 3.2.6.2 Goods into VET

When a vehicle arrives to the WH, the security gate guard calls the goods in department and gives them the company name and a shipping number. The Goods in team checks the time of arrival and gives a pay number, informing the driver when he will be tipped.

During unloading, pallets are checked for quantity, damage label matching products and temperature.

In order to be sure that all pallets have the appropriate temperature, the employee takes some samples (pallets) during unloading and checks its temperature, which has to be between 1 and 5 degrees Celsius.

When the last pallet is unloaded and everything is ok, the employee confirms and signs the papers for the driver. If not accurate the employee will mark the paperwork short, report it before the paper work is returned back to the driver. The next they do is to pick

<sup>61</sup> <http://e-research.pbworks.com/Glossary>



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pallets from goods floor and scan each pallet in order to know where to place them. SAP<sup>62</sup> tells the employee where the best placing of the pallet is<sup>63</sup>.

### 3.2.6.3 Planning at VET

Orders are received through Arla Foods sales organizations. These orders are checked and released to the vehicle planning team for load planning.

When the order is on the load planning screen, employees start making a plan of what is to be loaded and prioritize according to distance and delivery time at the customer. After making the plan they release the orders to the pickers so that they can go on loading.

### 3.2.6.4 Pick release issue

Before any orders are released to the warehouse, it is important the stock integrity is accurate. Each morning the warehouse team will count pick face stock and complete an empty location report, ensuring that all pallets are located in the correct bin area.

Incorrect figures may result in excess stock being ordered or an order for not enough stock being placed, resulting in unnecessary waste.

The first thing people at the pick release issue do in the morning is to go into the system and check what orders are released by the night shift and the stock availability. The SAP system shows if there is any shortage on stock. In case of shortage, the central planning team is contacted to be asked about the stock and the arrival time.

They start running (printing) the orders to pick face location according to time of delivery and the collection time.

### 3.2.6.5 Picking and Dispatch

At this stage the pickers will start picking the products and put it on pallets.

The picker gets an order sheet from the pick release issue department, and scans the bar code on it by a scanner which is connected to an AP<sup>64</sup>. The scanner shows all the

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<sup>62</sup> Systems, Applications, products

<sup>63</sup> Look enclosure 11

<sup>64</sup> For more information about scan process look 3.11 QR and bar coding

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information written on that sheet order<sup>65</sup> and where to find each case e.g case 1 is to be found on B118A, where B<sup>66</sup> is the lane or racking, 118 is the pin number<sup>67</sup> and A is the height (A level is the floor level). In case of scanning the wrong product, the scanner (pistol) will release an alarm.

When the picker collects the order, he wraps the pallet with cling film. Upon completion of a pallet the operative has request an outbound dispatch label. This label will show the receiving customer what they should expect to find on their pallet, including Arla Code, Customer own code, Product description, best before date and quantity. SAP system will then find the pallet a marshalling location depending on the route that pallet will be delivered on. When placing the pallet in the bin location where SAP has decided, the picker has to scan the bar code on that pin. When the order has been completed they take the paper order sheet to the pick release issue office and get issued their next instruction.

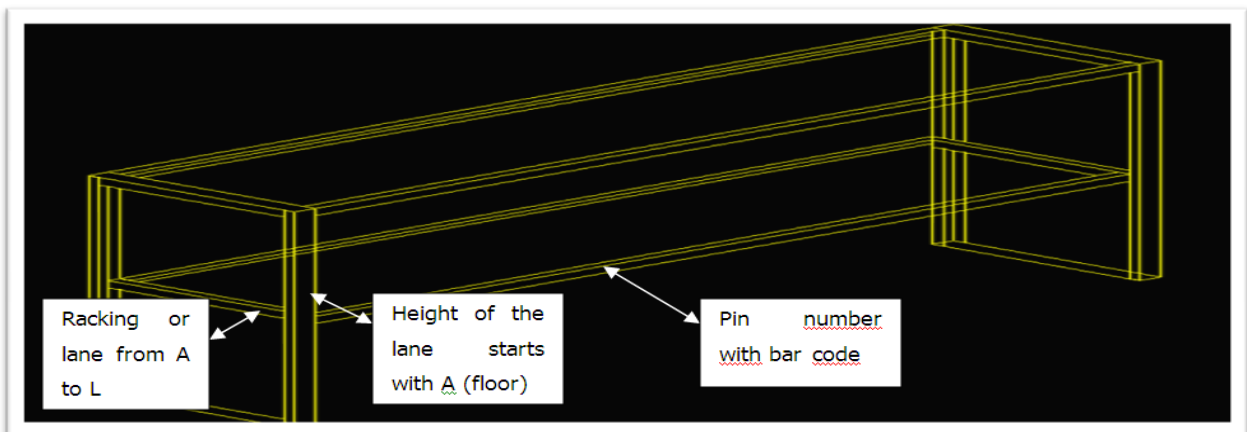


Figure 3.12 shows a part of a lane and where the racking letter and the pin number are placed. made by the researcher

### 3.2.6.6 Loading Hall

Workers at the loading hall get a load manifest<sup>68</sup> from transport office (planning). Before start loading the trailer, the driver delivers the keys of the lorry to the worker for safety reasons.

<sup>65</sup> Look enclosure 12

<sup>66</sup> At the ware house there are 12 lanes starts with A to L

<sup>67</sup> Each lane is divided into pins and each pin has a bar code

<sup>68</sup> Enclosure 13 load manifest

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On the sheet, there is a point called comments. It tells if there are any special requirements of this load. If no special requirements then the temperature of the trailer is checked and it has to be between 1 and 5°C.

The operative scans the bar code on the order sheet and the system SAP shows where to find the different pallets. When the trailer is loaded, the worker closes the door and gives the manifest sheet to the driver in order to finish his paper work.

The operative also enters the trailer condition and vehicle temperature. Company assets such as physical wooden pallets are controlled through this method.

### 3.2.6.7 Back to Planning

The manifest is now returned back to the transport office in order to check that the products loaded on trailer, to ensure that the outbound deliveries for goods issue screen are the same as the ones on the manifest. If they are identical, the system prints a delivery note and a copy of what is being loaded on the trailer, to customer. The delivery notes must be signed by the driver of the vehicle, taking ownership of the product. All deliveries on this route must be fully completed and fully loaded with this being true the Goods Issue process will fail and the automatic print of delivery notes will not happen highlighting to the transport team that the load is not fully picked and loaded.

### 3.2.6.8 Transporter

The driver gets a lorry check sheet, where he has to check everything on the lorry (light, diesel, flash, etc). The driver comes back to the transport office and gets the sheet signed.

For safety reasons, there is a display on the door of the trailer. The driver receives a separate sheet with the number written on the display (seal number); the same number should be on the display when the driver arrives to delivery point. If the door of the trailer is opened, the display number will disappear and never back again.

Before leaving the WH, the lorry has to pass the security gate where the employee there writes down the name of the driver, reg. number, trailer number, seal number (number on display), the furthest destination place and signs the sheet with seal number.

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The next the driver does is to weight the lorry and the weight checks the number of axels and gets a print for this in case the police stop him.

At the security gate of delivery point, the employee there will check the seal number, and tells the driver about the pay number.

### **3.2.7 Forecasting**

The importance of forecasting is that it enables the companies to respond to their customer's needs more quickly. Forecasting can be done by using qualitative models, *Delphi method*<sup>69</sup> or quantitative *simple average*<sup>70</sup> among others.

"Forecasting as defined in production and operations management is an estimate of a future event achieved by systematically combining and casting forward in a predetermined way data about the past<sup>71</sup>".

Arla Foods Sales employees located in different countries make their weekly forecasting of all of Arla foods customers in the country of his/her existence. They use a system called APO<sup>72</sup>; APO sends the information into SAP in Kg. At VET<sup>73</sup>, the employees are able to see the total forecasting per country per item number per week. Relying on this forecasting and on the current inventory level at the warehouse, they order products from production sites, mostly from HFO<sup>74</sup>. In general, the process between VET and production sites is that VET orders due to forecast and production sites produce due to order.

### **3.2.8 Delivery performance and customer service**

Delivery performance, as defined previously, is equal to the effort of the supply chain, put together.

When talking about delivery performance, some important issues are to be taken in consideration, e.g. warehouse management which was discussed previously, customer order cycle and on time in full (OTIF).

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<sup>69</sup> Delphi method = questions panel of experts for opinions

<sup>70</sup> Averages past data to predict the future based on that average

<sup>71</sup> Everett E. Adam and Ronald J. Ebert Production and Operations Management Fifth edition page 78

<sup>72</sup> APO = Advanced Planning and optimization

<sup>73</sup> VET= Vejle Export Terminal which is one of Arla Foods warehouses located in Vejle Denmark

<sup>74</sup> HFO= Holstebro Fløde ost which is one of Arla production sites located in Holstebro Denmark

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- **On time in full**

“OTIF measures the success at delivering exactly what the customer ordered on the day it was supposed to be delivered<sup>75</sup>”. Delivery performance can be measured as the percentage of customer orders delivered “on time and in full” (OTIF). On time is either the date when the customer want to have the goods (requested date) or when the customer and supplier have agreed upon a date (commit date). In full is when the supplier delivers all the items that the customer has ordered. The reason why there are two different definitions on which date the delivery should be executed is that the supplier might not be able to deliver when the customer would like to have the order. To calculate OTIF to *customer commit date*, you calculate by take the total number of orders delivered on time and in full to customer commit date divided with the total number of customer orders. To calculate OTIF to *requested date* you use the same model but use request date instead of commits date. Of course the delivery performance is better when companies’ measure commit date instead of request date. Another definition of delivery performance is perfect order delivery. Perfect order delivery adds to OTIF other essential components as perfect invoicing (right quantity, right price and right item number) and perfect receipt (correct bill of lading and packing slip).

Delivery service at VET is relatively high as the following diagram shows<sup>76</sup>.

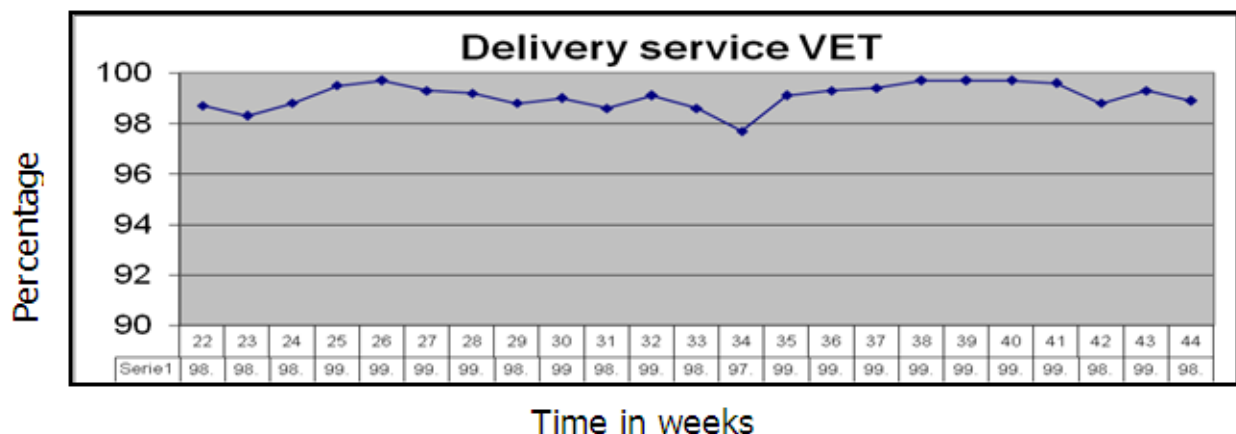


Figure 3.12 delivery performances at VET depending on information from VET.

There are two reasons for not delivering in full:

<sup>75</sup> <http://kpilibrary.com/kpis/on-time-in-full-otif-2> 9/11-09 02:18

<sup>76</sup> The full information about delivery performance is attached on the CD following this project under leveringservice 2009

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1. Rejected orders: is an order coming from one of the sales organisations to the export terminals e.g. VET. VET can see in forehand that they cannot deliver this order on time because of, for instance, out of stock.
2. Reduced or deleted orders: occurs when the export terminal accepts a certain order relying on production site delivery, but because of, for instance, machine breakdown or deviation in production, the production site does not deliver or maybe deliver partially.

- **Customer service**

One of the biggest mistakes in the business world is to assume that you know what your customer needs are or what your customer wants.

“It has been suggested that the role of customer service is to provide ‘time and place utility’ in the transfer of goods and services between buyer and seller”<sup>77</sup>. The process results in an added value to the product or service exchanged which might be short term as in a single transaction or longer term as in a contractual relationship. The value added is also shared, in that each of the parties to the transaction or contract, are better off at the completion of the transaction than it was before the transaction took place.

Production sites and export terminals at Arla foods have no direct communication to Arla’s customers. It is between the sales organisations and the customers. This doesn’t mean that production sites and export terminals shall be careless, since customer service begins from raw materials through the whole chain to the customer. To give the customer the requested quality, the right raw materials should be purchased and produced due to customer’s specifications then delivered at the right place, time, price and state.

Arla foods, want to gain competitive advantage and reduce inventory related costs. This will give Arla the possibility of differentiation:

1. To give the same service with less costs and be a cost leader
2. To give a better service with the same cost and be a service leader
3. To give better cost and service and be cost and service (market) leader

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<sup>77</sup> Martin Christopher *Logistics and Supply chain management third edition page 48*

## Operations management

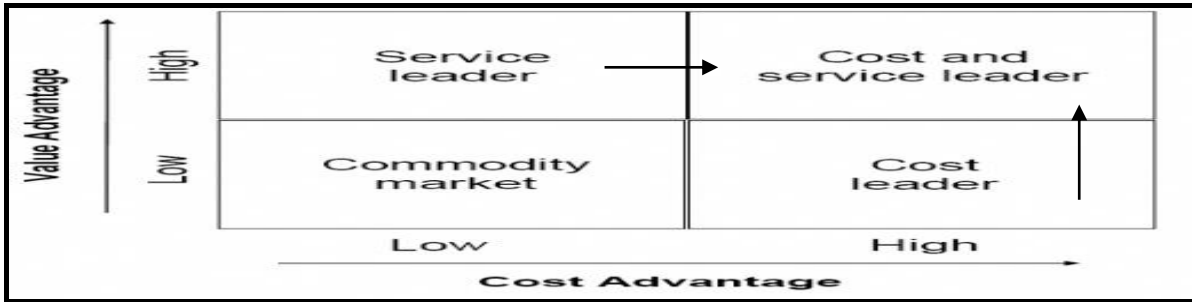


Figure 3.14 logistics value and cost advantage depending on the following resource: Logistics and Supply chain management written by Martin Christopher, third edition page 10.

### Customer order cycle

“The customer order cycle includes all of the elapsed time from the customer’s placement of the order to the receipt of the product in an acceptable condition and it’s placement in the customer’s inventory. The typical order cycle consists of the following components<sup>78</sup>”:

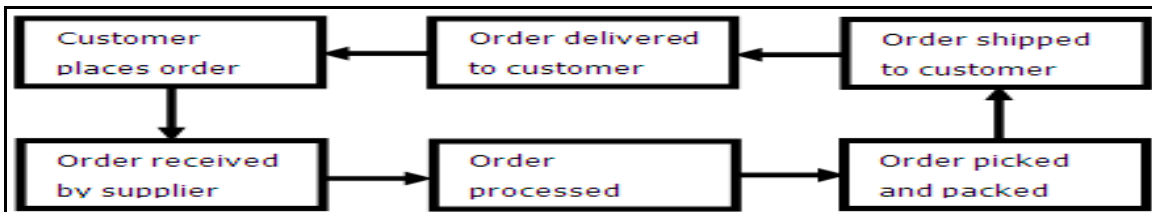


Figure 3.15 Total order cycle depending on the following resource: Logistics and Supply chain management written by Martin Christopher, third edition page 150

At Arla foods there are 8 sales organizations. They receive orders from customers e.g. Germany, Netherlands. Export terminals receive orders from these organizations. Dead line of order receiving is daily afternoon which will be ready to sending next day. SAP adds transport time depends on the location of the customer. Transport inside Denmark is done by Arla Foods whilst transport to abroad is being outsourced to a 3PL<sup>79</sup> companies such as Andreasen. Delivery orders are sent from the sales organizations to Andreasen, after Export Terminal’s confirmation on it, so that they can make a transport plan, thereafter Andreasen sends it back to ET. ET confirms the deliveries and sends it back to Andreasen. In general, as most of the dairies are specialized, many of the products are transported to one of Arla’s terminals or a central warehouse (owned by the customer), where they are packed for the respective stores.

<sup>78</sup> David Grant, Douglas Lambert, James Stock and Lisa Ellram. Fundamentals of logistics management Eu edition page 69.

<sup>79</sup> 3PL = third-party logistics

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Cheese and chocolate milk are often supplied directly to the customer's central warehouse while milk, yoghurt, fats etc. are almost always shipped to the stores directly from Arla's terminals. Fermented products, for instance, are only produced in Brabrand and Slagelse and must be transported to the terminals in Hobro, Christiansfeld and Ishøj.

- **Distribution to stores**

Vehicles leave the terminals at approx. 02.00. By noon, the last shop has received its products. Approximately 70% of stores will, however, have received their products by 09.00. Arla's drivers not only transport Arla products to the stores, but approx. 30% of the volumes supplied include goods handled on behalf of third parties, e.g. meat, fish, poultry, eggs, sliced cooked meats, fruit and vegetables. Common to them all is that they pose considerable demands on the chilled chain and/or frequent store deliveries due to their short shelf-life. This type of distribution agreement benefits both Arla and their partners.

### **3.2.9 The environment all the way**

- **Water**

The dairies use large amounts of water for cleaning to ensure the highest standards of hygiene. Through a range of measures, Arla Foods has, for instance, succeeded in reducing water consumption at its plants. The target is to reduce water consumption by a further 7.5%.

- **Emissions to air**

Arla Foods' objective is to limit CO<sub>2</sub> emissions by 5% and NO<sub>x</sub> emissions by 10%. To achieve these targets, a number of measures have been introduced, including a biomass fuel plant using wood pellets. Milk transportation also impacts on the environment. To limit CO<sub>2</sub> and NO<sub>x</sub> emissions, Arla is currently preparing common environmental targets for all transport. Specific training of drivers is one of the projects that will contribute to limiting diesel consumption and, therefore, reducing emissions.



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- **Energy**

The most energy-demanding processes are evaporation and drying of milk. However, chilling and cleaning require substantial amounts of energy. Through, e.g., energy management and planning in connection with construction and production, substantial savings have been achieved. The target is to reduce energy consumption by a further 5%.

- **Chemicals**

Chemicals are used both at the farms and in production for cleaning etc. In order to protect both the working and external environments, it is essential to limit the amount of chemicals used and to choose the most environmental and health-friendly products. The target is for all chemicals used at the Group's plants to be assessed in relation to their effect on health and the environment.

- **The working environment**

Arla Foods consistently endeavours to improve its working environment. For several years, considerable effort has been directed at reducing industrial accidents by reviewing and analysing the causes of such accidents.

- **Environment and working environment management**

The objective is for all production plants in Denmark and Sweden to be ISO 14001 environmentally accredited

- Distribution is one of the main corner stones to support environment, and therefore Arla is working on reducing pollution from the high number of vehicles they have, therefore Arla decided to raise awareness of tanker drivers' fuel consumption in 2005. The initiative resulted in a six per cent reduction in fuel consumption in 2006. The secret behind the results was sharper focus by individual drivers on fuel economy, courses in "eco-driving", and a simple computer in vehicles.
- Transport is one of the main areas of focus in Arla's climate strategy. Arla's many vehicles drive many thousands of kilometers each year when taking milk from farm to dairy and from dairy to supermarket. A series of initiatives have been employed to reduce fuel consumption. Arla's drivers are trained in "eco-driving", a style of driving that saves diesel. There have been investments in new, more

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environmentally-friendly vehicles, and drivers' routes are planned so they are as efficient as possible

### **3.2.10 Human resources**

In the above section, the researcher discussed and analyzed Arla Foods from the moment of making a strategy and all the way until the moment of delivering products to customers. He mentioned as well how do they collect milk, choose a supplier, produce, package, warehousing and deliver. The researcher has even spoken about environment and the future targets of protecting environment. One important element is still missing, namely, *Human Resource and Human resource management*, which is the most important element since human being is the one who carries out all of the above mentioned activities. Therefore, finding the right human resources and managing these resources will be the issue of the next section.

#### **3.2.10.1 Human resource management**

**Human resource** is a term with which many organizations describe the combination of traditionally administrative personnel functions with performance, Employee Relations and resource planning.

The more common usage within corporations and businesses refers to the individuals within the firm, and to the portion of the firm's organization that deals with hiring, firing, training, and other personal issues.

Human resource management serves these key functions:

- Selection
- Training and Development
- Performance Evaluation and Management
- Promotions
- Redundancy
- Industrial and Employee Relations
- Record keeping of all personal data.
- Compensation, pensions, bonuses etc in liaison with Payroll

## Operations management

- Confidential advice to internal 'customers' in relation to problems at work
- Career development<sup>80</sup>.

By the following the researcher will describe the way of managing Human resources at Arla foods.

In April 2007, Arla Foods launched a new strategy called ONE. This strategy is not a nice to do one, but it is a fundamental part of how they will work going forward. The characters of this strategy are **Lead, Sense, and Create**. This strategy has four main sections. **Our people**, is one of them. Our People consist of 3 sections again which are *communication, barometer and training and development*, and has 3 purposes which are: benefits for organization, managers and employees.

### 3.2.10.2 Our leadership is a part of our people

Our leadership is a part of our people in the ONE strategy. It describes the behavior Arla Foods require from their leaders and is applicable globally. It is developed from the character and therefore it supports directly the three strategy characters lead, sense and create.

Effective leaders in Arla Foods are characterized by their ability to:



There are 12 leadership competencies in total and each competency has been defined at four levels. The competencies and the levels are described below.

	 ENVISION	 ENGAGE	 DELIVER
 LEAD	<ul style="list-style-type: none"> <li>- Create direction</li> </ul>	<ul style="list-style-type: none"> <li>- Living the change</li> </ul>	<ul style="list-style-type: none"> <li>- Exceed expectations</li> <li>- Be decisive</li> </ul>
 SENSE	<ul style="list-style-type: none"> <li>- Global mindset</li> <li>- Organisation understanding</li> </ul>	<ul style="list-style-type: none"> <li>- Integrity and judgement</li> </ul>	<ul style="list-style-type: none"> <li>- Enable the team</li> </ul>
 CREATE	<ul style="list-style-type: none"> <li>- Intellectual capability</li> </ul>	<ul style="list-style-type: none"> <li>- Build positive relations</li> <li>- Build commitment</li> </ul>	<ul style="list-style-type: none"> <li>- Develop self and others</li> </ul>

<sup>80</sup> <http://en.wikipedia.org/wiki/HR>

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Figure 3.16 assessment Matrix depending on leadership competency model of Arla foods 09 which is included in the CD attached this project

**Create direction** Arla managers define and communicate clearly on short, medium and long term goals. They prioritize and focus on the most important courses of action and make decisions to deselect those with lesser impact.

**Global mindset** Arla managers work towards the greater good by applying a broad global perspective and by approaching the world with openness and curiosity. Arla managers show strong external orientation and understand the consumer, customer and competitors in order to seize opportunities for commercial and profitable advantage.

**Organization understanding** Arla managers possess detailed knowledge of Arla Foods' business model and organizational capability, and they apply this knowledge to work effectively within Arla Foods' decision making processes and structures. They tie together short-term initiatives with longer term strategies and values, applying objective analyses, forward thinking and long-term business planning.

**Intellectual power** Arla managers demonstrate intellectual power by using both analytical and creative thinking. They investigate, understand and process relevant data in order to identify patterns, and from these they develop key points and conclusions. They generate and explore new ideas to create original concepts. They solve complex problems and deliver solutions on time and in full.

**Live the change** Arla managers approach change in an open and positive manner and lead the way by their own example. They recognize the possibilities and opportunities that change can offer for business and people – and they encourage different and new ways of doing things. Arla managers possess the stamina to work effectively through the frustrations that change can bring, and they also enthuse others around them to deal with these.

**Show integrity & judgment** Arla managers behave consistently in an open, honest and authentic manner. They can and do apply sound judgments based on personal and corporate values.

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**Build positive relationships** Arla managers build strong personal and business relationships within the company and with external stakeholders. Arla managers care for their employees. They have a genuine interest in the views and opinions expressed by others and they show this through their actions.

**Build commitment** Arla managers create intellectual and emotional commitment to support their business objectives. They consult actively on proposals, and build on contributions from others. They communicate clearly and passionately to ensure that the business benefits of any initiative are fully understood.

**Exceed expectations** Arla managers coach employees to exceed business expectations, and lead them to strive for continuous improvements in performance. They use their own positive energy in creating the momentum across the organization to achieve stretch targets.

**Be decisive** Arla managers are decisive, using personal authority and self-confidence to support competent, firm and timely business decisions. They are persistent in following through on decisions, accepting necessary flexibility while never losing focus on delivery against business targets.

**Enable the team** Arla managers make sure that their teams have the necessary authority, resources and control to deliver success for the business. They understand how to use empowerment effectively and they delegate tasks whenever appropriate in order to increase organizational efficiency.

**Develop self & others** Arla managers embrace their self-development and actively seek out all opportunities to learn. They also take responsibility for the effective development of their employees and teams, facilitating their learning and supporting them with constructive feedback. They apply their own development and that of others to build team capability and deliver improved business results.

In order to evaluate each leader fairly and place him/her in the correct place in the assessment matrix, 4 stages of performance management should take place:

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**Action plan and review** – Following discussions with their managers, every leader sets out their agreed actions, milestones and measures. When establishing individual action plans, this should be referred to:

- business strategy
- performance contract for your function
- team plans/ priorities
- relevant job profile
- barometer results

**Development plan and review** – Agreed personal development needs and actions are recorded and later reviewed. This is also where the leadership competencies are reviewed.

**Overall summary of performance and behavior** – Following discussion, you record the individuals positioning on the performance and behavior assessment matrix along with a clear explanation as to the rationale for their positioning.

**Career Aspirations** – The individual and their line manager have the opportunity to discuss realistic career aspirations.

The next step is to go through the *assessment for development planning*. The manager knows the required level prior to the assessment. The candidate will receive a grade for each competence. The average grade should be placed in the *performance and behavior matrix*<sup>81</sup> shown below.

Behavior (How)	Above average	4	7	9
	Average	2	6	8
	Below average	1	3	5
		Below average	Average	Above average
		Performance (what)		

Figure 3.17 the performance behavior table depending on a slide from Arla foods.

<sup>81</sup> Enclosure 4 *performance and behavior matrix*

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To arrive at a rating for the individual follow the steps:

**Step one** Review progress against objectives set out in the *action plan* and agrees whether the overall level of performance is:

- Below average
- Average
- Above average

**Step two** Reviews behavior over the last 12 months against our leadership/ *assessment for development planning* and agree whether the overall level of behavior against the standard is:

- Below average
- Average
- Above average

**Step three** Using the matrix agree the individuals overall performance and behavior rating for the last year and record this.

All the information about employees ratings are sent once a year to the HR head office in Denmark, where they have a special program for level 9<sup>th</sup> senior managers.

Arla Foods holds a special talent program for middle managers. They are using this program at the moment to discover people on level 7<sup>th</sup> and 8<sup>th</sup>. In this way they can start developing them and get the chance not to lose these competencies.

The purpose of this process is to develop their managers to average and above. Managers in 7<sup>th</sup> and 8<sup>th</sup> levels are talent; they must be developed to 9<sup>th</sup>. And managers on 9<sup>th</sup> are top talent.

### 3.2.10.3 Shop floor workers

Regarding shop floor workers, they all have to go through the assessment matrix<sup>82</sup>, in order to be evaluated and placed correctly in the matrix.

Positions at Arla Foods are very clear regarding competency management and performance. An employee at Arla foods has a 13 weeks probationary period. During this

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<sup>82</sup> Look figure 3.16

## Operations management

period a one to one meeting is held every second week between the employees and their managers in order to review and follow up. If the employee does not achieve an acceptable level he/she will get another 4 weeks. E.g. a picker at the warehouse has to pick 230cases/hr, which is the acceptable level.

When an employee is qualified through the probationary period, one to one meetings are held with his/her manager once every 6 months.

Before the meeting, the manager collects all the information about the employee e.g. absences, history, performance, pick average (in case the candidate is a picker) and assesses the employee through the matrix.

The manager should identify whether the employee has improved during the last period or not and what development they may need.



## 4. Chapter 3

### Arla's activities in UAE

- **Sub-chapter 1...main information Of UAE**
- **Sub-chapter 2... Arla's foundation and activities in UAE**
- **Sub-chapter 3... production process in UAE**

### 4. Chapter 3 (Arla's activities in UAE)

This chapter will concern the activities and production means of Arla foods in the Arab United Emirates (UAE). Since Arla foods have no production site in the UAE, this chapter will only discuss warehousing, marketing and distribution process

#### 4.1 Sub-chapter 1 main information of United Arab Emirates (UAE)

By the following, the researcher will give a brief idea about the country and the company there.

##### 4.1.1 Main information of UAE

The United Arab Emirates is situated in Southwest Asia, bordering the Gulf of Oman and the Arab Gulf<sup>83</sup>, between Oman and Saudi Arabia; it is in a strategic location along southern approaches to the Strait of Hormuz, a vital transit point for world crude oil.

It shares a 530-kilometer border with Saudi Arabia on the west, south, and southeast, and a 450-kilometer border with Oman on the southeast and northeast. The land border with Qatar in the Khawr al Udayd area is about nineteen kilometers in the northwest; however, it is a source of ongoing dispute. The total area of the UAE is approximately 77,700 Km<sup>2</sup>. The country's exact size is unknown because of disputed claims to several islands in the Persian Gulf, because of the lack of precise information on the size of many of these islands, and because most of its land boundaries, especially with Saudi Arabia, remain undemarcated. Additionally, island disputes with Iran and Qatar remain unresolved.

The largest emirate, Abu Dhabi, accounts for 87% of the UAE's total area (67,340 square kilometers). The smallest emirate, Ajman, encompasses only 259 square kilometers.

The UAE coast stretches for more than 650 kilometers along the southern shore of the Arabian Gulf. Most of the coast consists of salt pans that extend far inland. The largest natural harbor is at Dubai, although other ports have been dredged at Abu Dhabi, Sharjah, and elsewhere. Numerous islands are found in the Arabian Gulf, and the ownership of some of them has been the subject of international disputes with both Iran and Qatar. The smaller islands, as well as many coral reefs and shifting sandbars, are a menace to

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<sup>83</sup> Some geographical references call it Persian golf

## Operations management

navigation. Strong tides and occasional windstorms further complicate ship movements near the shore. The UAE also has a stretch of the Al Bāṭinah coast of the Gulf of Oman, although the Musandam Peninsula, the very tip of Arabia by the Strait of Hormuz is an enclave of Oman within the UAE.

South and west of Abu Dhabi, vast, rolling sand dunes merge into the Rub al-Khali (Empty Quarter) of Saudi Arabia. The desert area of Abu Dhabi includes two important oases with adequate underground water for permanent settlements and cultivation. The extensive Liwa Oasis is in the south near the undefined border with Saudi Arabia. About 100 kilometers to the northeast of Liwa is the Al-Buraimi oasis, which extends on both sides of the Abu Dhabi-Oman border<sup>84</sup>.

The monetary unit in UAE is the Dirham, which is about 4.90 Euro.

- **Population**

In 2009, the UAE's population was estimated at 6 million, of which just fewer than 20% were UAE nationals or Emiratis, while the majority of the population was expatriates, the most numerous being of South Asian origin.

- **Recent History**

After the 9/11 terrorist attacks on the United States the UAE was identified as a major financial center used by Al-Qaeda in transferring money to the hijackers (two of the 9/11 hijackers, Marwan al-Shehhi and Fayed Ahmed Bannihammad, who crashed United Flight 175 into the South Tower of the World Trade Center, were UAE citizens). The nation immediately cooperated with the U.S, freezing accounts tied to suspected terrorists and strongly clamping down on money laundering.

The UAE supports military operations from the United States and other Coalition nations that are engaged in the war against the Taliban in Afghanistan (2001) and Saddam Hussein in Iraq (2003) as well as operations supporting the Global War on Terrorism for the Horn of Africa at Al Dhafra Air Base located outside of Abu Dhabi. The air base also supported Allied operations during the 1991 Persian Gulf War and Operation Northern

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<sup>84</sup> [http://en.wikipedia.org/wiki/United\\_Arab\\_Emirates](http://en.wikipedia.org/wiki/United_Arab_Emirates)

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Watch. The country had already signed a military defense agreement with the U.S. in 1994 and one with France in 1995.

On 2 November 2004, the UAE's first president, Sheikh Zayed bin Sultan Al Nahyan, died. His eldest son, Sheikh Khalifa bin Zayed Al Nahyan, succeeded as ruler of Abu Dhabi. In accordance with the constitution, the UAE's Supreme Council of Rulers elected Khalifa as president. Sheikh Mohammad bin Zayed Al Nahyan succeeded Khalifa as Crown Prince of Abu Dhabi.<sup>[35]</sup> In January 2006, Sheikh Maktoum bin Rashid Al Maktoum, the prime minister of the UAE and the ruler of Dubai, died, and Crown Prince Sheikh Mohammed bin Rashid Al Maktoum assumed both roles.

- **Sovereign**

The President is the Head of State of the United Arab Emirates. Because the current ruler of Abu Dhabi customarily also holds the presidency of the UAE, the office is de facto hereditary. The President is also Supreme Commander of the UAE Armed Forces and Chairman of the Supreme Council and Supreme Petroleum Council.

The current President is Khalifa bin Zayed Al Nahyan. Nahyan became president on 3 November 2004, following the death of his father, Zayed bin Sultan Al Nahyan.

Since the government is a new born one only three presidents have been on the head of the state:

Zayed bin Sultan Al Nahyan

Maktoum Bin Rashed Al Maktoum

The current President is Khalifa bin Zayed Al Nahyan.

- **Economical feature**

UAE's economy, particularly Dubai, was badly hit by the financial crisis of 2007–2010. In 2009, the country's economy shrank by 4.00%.

- **Energy**

Petroleum and natural gas exports play an important role in the economy, especially in Abu Dhabi. A massive construction boom, an expanding manufacturing base, and a thriving services sector are helping the UAE diversify its economy. Nationwide, there is

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currently \$350 billion worth of active construction projects. Such projects include the Burj Khalifa, which is the world's tallest building, Dubai World Central International Airport which, when completed, will be the most expensive airport ever built, and the three Palm Islands, the largest artificial islands in the world. Other projects include the Dubai Mall which is the world's largest shopping mall, and a man-made archipelago called The World which seeks to increase Dubai's rapidly growing tourism industry. Also in the entertainment sector is the construction of Dubai land, which is expected to be twice the size of Disney World, and of Dubai Sports City which will not only provide homes for local sports teams but may be part of future Olympic bids.

- **Transport**

On December the 5<sup>th</sup>, General Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, announces that studies will begin on connecting all of the emirates in the United Arab Emirates by rail for both passenger and intermodal freight transport. The 7,007 kilometres (4,354 mi) proposed route would connect Abu Dhabi, Dubai, Sharjah, Ras Al Khaimah and Fujairah with Ruwais and Ghowaifat. Officials hope to create a public-private partnership in order to build and operate the proposed railway. The project is part of a wider plan and a requirement of the Gulf Cooperation Council's plan to connect all Arab states by rail

In Dubai the construction work on the red and green lines of the Dubai Metro network has already started with the new addition of the blue and purple lines. There are also 3 yellow lines to serve the sand islands, and a coastal black line representing the tram system. The first phase of the project {red and green lines) are now operating. They are all standard gauge<sup>85</sup>.

Regarding highways there are a total of 1,088 km of highway roads in the UAE<sup>86</sup>.

- **Education**

A rapid rise in population has necessitated a considerable investment in education. Today, the UAE offers a comprehensive education to all male and female students from kindergarten to university, with education for the country's citizens being provided free at all levels. There is also an extensive

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<sup>85</sup> [http://en.wikipedia.org/wiki/Transport\\_in\\_the\\_United\\_Arab\\_Emirates](http://en.wikipedia.org/wiki/Transport_in_the_United_Arab_Emirates)

<sup>86</sup> [http://www.currencysource.com/tables/AED/1X\\_AED.htm#](http://www.currencysource.com/tables/AED/1X_AED.htm#)

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private education sector, while several thousand students, of both sexes, pursue courses of higher education abroad at Government expense.

Much has been achieved since the early 1970s but efforts are now being made to improve the educational environment for all pupils, in line with a re-evaluation of the role of government. In particular, Abu Dhabi Education Council (ADEC), is spearheading privatization of the education sector in Abu Dhabi.

Ninety-five per cent of all females and 80 per cent of all males who are enrolled in the final year of secondary school apply for admission to a higher education institution in the UAE or study abroad. Nationals can attend government tertiary-level institutions free of charge, and a wide and rapidly increasing range of private institutions, many with international accreditation, supplement the public sector. The Al Ain-based United Arab Emirates University (UAEU) continues to be the country's flagship national institution of higher education, whilst newer institutions such as Zayed University (ZU), which has campuses in Abu Dhabi and Dubai, were established in 1998 by the Federal Government to educate national women and prepare them to actively participate in society. The Higher Colleges of Technology (HCT), on the other hand, offer a more technically oriented education in 12 well-equipped colleges spread throughout the United Arab Emirates. HCT, in conjunction with its commercial arm, the Centre of Excellence for Applied Research and Training (CERT), prides itself on responding quickly and effectively to current needs in the regional and international workplace.

Notable private institutions include the American Universities of Sharjah and Dubai, Sharjah University and the Ajman University of Science and Technology. Recent entrants to the educational marketplace include Abu Dhabi University, Al Hosn University in Abu Dhabi and an Abu Dhabi chapter of the Sorbonne. Dubai is also setting-up a 2.33-million-square-metre, multi-university complex, Dubai Knowledge Universities (DKU), in the heart of its 'Academic City'. The UAE also has several vocational and technical educational centres for those seeking practical training in their chosen careers.

Indeed, now that the educational infrastructure is in place, the focus is on ensuring that the youth of the country are ready to meet the challenges of the twenty-first century workplace. In addition, to ensure that there are enough jobs for these emerging graduates, emiratization of the workforce is being encouraged by the Government, especially in the private sector, where UAE nationals

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account for a very small percentage of the total workforce. Some progress has already been made in banking, insurance and human resources<sup>87</sup>.

- **Agriculture**

Only about 81,000 hectares (200,000 acres) of land are cultivated. About 24% of cultivated land is used to grow vegetables, 30% fruit, 10% feed crops, and 36% for other uses. The most productive region is Ra's al-Khaimah, which receives underground water supplies from the nearby mountains of Oman and which enjoys the most plentiful rainfall. The main crops are tomatoes, melons, and dates.

The Digdagga Agricultural Trials Station in Ra's al-Khaimah is central to all agricultural research and training efforts in the UAE. Abu Dhabi has two large wheat farms at Al 'Ayn, and experimental farms at Rawaya and Mazaid (near Al 'Ayn) are designed to encourage local Bedouins to take up settled farming. The Abu Dhabi Arid Land Research Center on Sadiyat Island produces vegetables through special irrigation and hydroponic techniques. In 1999, UAE agriculture produced 1,055,000 tons of vegetables and melons, and 358,000 tons of fruit. Produce includes citrus, mangos, tomatoes, celery, potatoes, cucumbers, lettuce, melons, peppers, and fodder crops.

The Ministry of Agriculture and Fisheries reported a 48% increase in vegetable production between 1992 and 1995. Dates, traditionally grown on oases by nomads, are becoming less important because of vegetable and fruit production. In 1999, the UAE produced 295,000 tons of dates. The UAE currently satisfies about 60% of its domestic fruit and vegetable demand; bans on imports of certain vegetables and government incentives and subsidies are used to encourage domestic production. Roses and chrysanthemums are grown for export to Europe<sup>88</sup>.

- **Industry**

Diversification of the economy away from dependence on oil has led to rapid industrial development. First class facilities, low labor and energy costs, favorable tax laws and political stability have also contributed to the growth of manufacturing.. Major products include cement, building materials, aluminum, fertilizers, foodstuffs, garments, furniture,

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<sup>87</sup> <http://www.uaeinteract.com/education/default.asp>

<sup>88</sup> <http://www.nationsencyclopedia.com/Asia-and-Oceania/United-Arab-Emirates-AGRICULTURE.html>

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plastics, fiberglass and processed metals. In December 1999, there were 1,695 factories employing more than 145,000 people, with investment of over US \$3.8 billion. The largest number of factories, mainly for light industry, is in Sharjah, followed by Dubai, Abu Dhabi and Ras Al Khaimah. Smaller units include numerous garment factories in Ajman. Cement production is one of the oldest industries, with Ras Al Khaimah being a major producer. Fertilizers are produced by Ruwais Fertilizer Industries, FERTIL, in Abu Dhabi and in the Jebel Ali Free Zone. The Ras al-Khaimah-based Gulf Pharmaceutical Company (Julphar) exports throughout the region. Projects established under the innovative UAE Offsets Program, linked to purchases of military equipment, include a shipyard, agri-business projects and manufacture of air-conditioning units.

The discovery of oil ushered the UAE into the industrial age. This process of industrialization gathered momentum following the formation of the Federation. During the last two decades, with the Government's increasing emphasis on diversification and basic components such as capital and energy readily available, the manufacturing sector has made significant progress in the UAE. Free zones have played an instrumental role in attracting manufacturing industries (see section on Business Environment) and today, hundreds of factories covering a wide range of manufacturing are distributed throughout the country. Cement, building materials, aluminum, chemical fertilizers and foodstuffs industries top the list, followed by garments, furniture, paper and carton, plastics, fiber glass and processed metals<sup>89</sup>.

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<sup>89</sup> <http://www.uae.gov.ae/Government/industry.htm>



### 4.2 Sub-chapter 2...ArlaNFPC (Arla's foundation and activities in UAE)

Arla foods have signed a joint venture (JV) contract with National Food Product Company (NFPC) in 2001. The new JV is called ArlaNFPC. The partners agreed on, NFPC owns more than Arla foods of the new company namely, ArlaNFPC.

Arla Foods UAE organization chart:

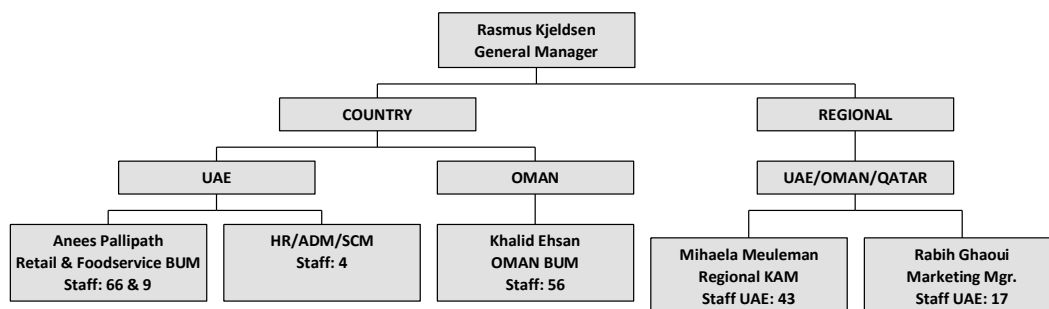


Figure 4.1... shows the organization chart of Arla foods UAE/Oman. The resource is depending on an Arla presentation, which is included in the CD attached to this project called supreme meeting march 09, slide 17.

Arla are trying to localize the staff as much as possible. The total number of employees is 195. In the UAE the staff number is 137, but none of the employee is an UAE citizen. In Oman the number of employees is 58. The number of Omanis citizens is 22.

In general the staff origins from different countries, such as, Denmark, India, Pakistan, Rumanian, Lebanon, Sri Lanka, Netherlands, Egypt, Bangladesh, Kenya, Nepal, Philippines, Sweden, etc.

#### 4.2.1 The joint venture and the division of responsibilities

A **joint venture** (often abbreviated **JV**) is an entity formed between two or more parties to undertake economic activity together. The parties agree to create a new entity by both contributing equity, and they then share in the revenues, expenses, and control of the enterprise.

- Internal reasons
- Build on company's strength
- Spreading costs and risks
- Improving access to financial resources

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- Economies of scale and advantages of size
- Access to new technologies and customers
- Access to innovative managerial practices
- Competitive goals
- Influencing structural evolution of the industry
- Pre-empting competition
- Defensive response to blurring industry boundaries
- Creation of stronger competitive units
- Speed to market
- Improved agility
- Strategic goals
- Synergies (cooperation)
- Transfer of technologies/skills
- Diversification<sup>90</sup>

When the JV was formed in 2001, the responsibilities were divided between the two companies as following:

### **NFPC's responsibilities:**

- Warehousing process is NFPC's responsibility towards a certain charge of the total of ArlaNFPC's turnover.
- Human resources(HR)
- Administration
- Trucks incl. maintenance and rental agreements. NFPC rents ArlaNFPC the trucks they need. The rent is 12500AED for 3.5 tons truck and 9750AED for 1 ton van.

### **Arla Foods:**

- Marketing
- Promotions
- Advertisements
- Expiries and damages

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<sup>90</sup> [www.en.wikipedia.org](http://www.en.wikipedia.org)

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- Trade activities

### **4.2.2 NFPC**

As the reader doesn't know the company NFPC, the researcher will give a brief idea about that company.

NFPC is a Lebanese company located in UAE. The company consists of four different sub-companies excluding, ArlaNFPC, which are:

**Milco:** Founded in 1973 and produces Juice, Laban, Yoghurt, Fresh milk, Labnah and cheese.

**Lacnor:** became part of NFPC in 1981 and produces Juice and Nectars, Drinks, Milk and Tomato paste.

**Oasis:** The Oasis Water Company was founded in 1984, as the bottled water division of National Food product Company (NFPC).

**Milco Plastic:** was established in 1977 as part of the National Food Products Company (founded in 1971) based in Abu Dhabi. Milco Plastic produces cups, containers, Bottles and Closures<sup>91</sup>.

### **4.2.3 Arla's Brands sold in The UAE**

Arla food is to be found in different countries in the ME. One of the most important is the production site they have in Saudi-Arabian. Danya Foods in Saudi-Arabian is the name of Arla foods there. The site is a total supply chain including local production and export to the whole Golf region.

The next in importance is the Arla Foods, UAE/Oman, where they made a Joint venture sales and distribution (as mentioned above). The other sites are Arla Foods, Libanon Joint venture sales and Distribution and Arla Foods, Kuwait Joint venture sales and distribution Arla Foods, Qatar Joint venture sales and distribution.

The main four brands are Lurpak, the three cows, Puck, The strong cow. These brands include some other sub products. The sub products are sold in e.g. jars, bricks etc...

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<sup>91</sup> <http://www.nfpcgroup.com/>

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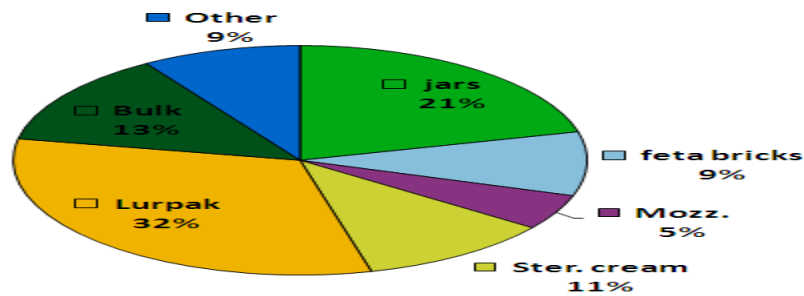


Figure 4.2 shows the sales split of ArlaNFPC in UAE by volume and product 2008. The resource depends on the presentation, supreme meeting march 09.

As shown in the above figure, Lurpak alone counts for 32% of the sales of ArlaNFPC in the UAE, while Puck jars counts for 21%.

### **4.2.4 Arla's competitors in the ME**

The competition among the companies is in increasing, especially during the last two years, because of the financial crisis.

No business is an island. For success, the business will need to deal with customers, suppliers, employees, and others. In almost all cases there will also be other organizations offering similar products to similar customers. These other organizations are competitors.

And their objective is the same - to grow, make money and succeed. Effectively, the businesses are at war - fighting to gain the same resource and territory: the customer.

And like in war, it is necessary to understand the enemy:

- How he thinks;
- What his strengths are;
- What his weaknesses are;
- Where he is vulnerable;
- Where he can be attacked;
- Where the risk of attack is too great....

Like in war, the competitor will have secrets that can be the difference between profit and loss, expansion or bankruptcy for the business. Identifying these secrets is thus crucial for business survival. But all this is not new...

So, who is a competitor in business?

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Business competitors are:

- Other organizations offering the **same** product or service now.
- Other organizations offering **similar** products or services now.
- Organizations that could offer the **same or similar** products or services in the future.
- Organizations that could **remove the need** for a product or service.

Almarai and Kraft are the two main competitors in the ME.

### 4.2.4.1 Almarai

Almarai is the largest integrated dairy foods company in the Middle East. The company was established in the Kingdom of Saudi Arabia in 1976 as a partnership between the Irish agri-foods pioneer Alastair McGuckian and his brother Paddy, and HH Prince Sultan bin Mohammed bin Saud Al Kabeer. HH Prince Sultan bin Mohammed bin Saud Al Kabeer, who continues to lead the company, recognized the potential to transform traditional methods of dairy farming to serve the needs of the rapidly expanding Saudi Arabian market. The company is based in Riyadh.

In the early 90's Almarai entered into a restructuring phase moving away from a decentralized to a centralized structure. The first Central Processing Plant was commissioned replacing 5 decentralized plants. Almarai also established four large dairy farms in the Central area replacing ten decentralized small farms.

Since then, the company has continued to invest heavily in technologically advanced production facilities and equipments. A second and larger Central Processing Plant incorporating a new cheese plant was commissioned in late 2005. A new super farm has been commissioned and a second one is currently under construction.

In 2005, Almarai moved from being a privately-owned company to a publicly listed company and today has over 90,000 shareholders<sup>92</sup>.

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<sup>92</sup> <http://en.wikipedia.org/wiki/Almarai>

### 4.2.4.2 Kraft Foods

The other competitor of Arla foods is an international one. The company's core businesses are in beverage, cheese and dairy foods, snack foods, confectionery, and convenience foods.

The firm today known as Kraft Foods was formed on 10 December 1923 by Thomas H. McInnerney with financing provided by Goldman Sachs, Lehman Brothers and Tobey & Kirk. The firm was initially set up to execute on a rollup strategy in the fragmented United States ice cream industry. Through acquisitions it expanded into a full range of dairy products. By 1930, eight years after it was founded, it was the largest dairy company in the United States and the world, exceeding Borden.

McInnerney operated the Hydrox Corporation, an ice cream company located in Chicago, Illinois. In 1923 he went to Wall Street to convince investment bankers there to finance his scheme for consolidating the United States ice cream industry. He initially found "hard sledding" with one banker saying the dairy industry "lacked dignity." He convinced a consortium including Goldman Sachs and Lehman Brothers to finance a roll-up strategy.

As a result of his efforts, National Dairy Products Corporation was formed in 1923 in a merger of McInnerney's Hydrox with Rieck McJunkin Dairy Co of Pittsburgh, Pennsylvania. The resulting firm was then listed on the New York Stock Exchange with the offer of 125,000 shares having been oversubscribed<sup>93</sup>.

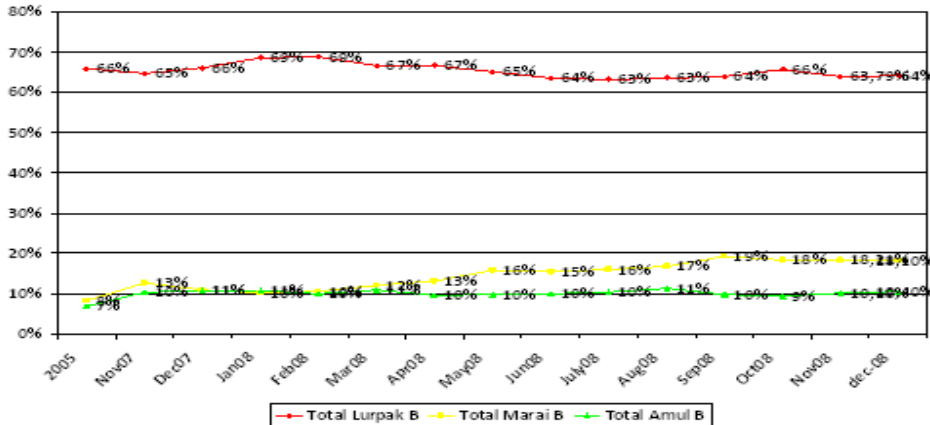
The following two tables are to show the butter and jars total sales among Arla foods, Almarai and Kraft from 2005-2008.

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<sup>93</sup> [http://en.wikipedia.org/wiki/Kraft\\_Foods](http://en.wikipedia.org/wiki/Kraft_Foods)

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Butter MS(1), Sales (Kgs), Total UAE



Total Jars MS(1), Sales (Kgs), Total UAE

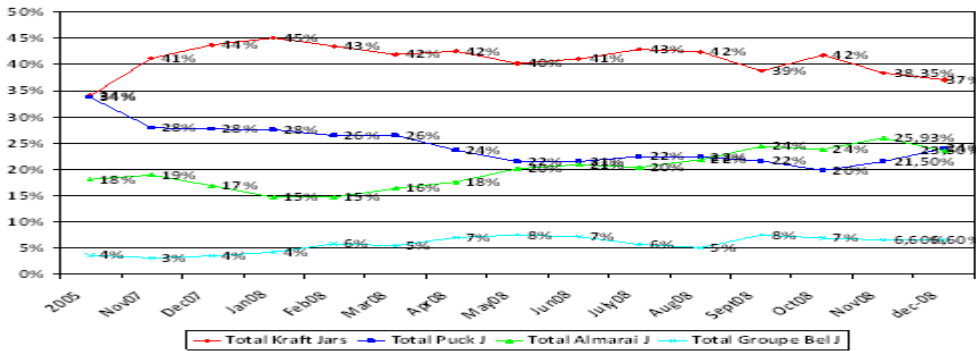


Table 4.1 is made by Arla foods UAE depending on a presentation supreme meeting march 09.

## 4.2.5 Warehousing

Since NFPC is the responsible of WH, and not Arla foods, this section and the following sections will describe how did NFPC administrated there part of ArlaNFPC.

### 4.2.5.1 Warehousing process at NFPC

NFPC has 4 different warehouses. They are located in Sharjah, Al Ain, Tarif and Abu Dhabi. The main warehouse is located in Abu Dhabi near by the port. The products of Arla foods like Lurpak, Puck the three cows... arrives to the port of Abu Dhabi.

Tarif and Alain are two small warehouses and their turnover is not more than 11%-13%. Therefore the researcher will concentrate on the process in Abu Dhabi and Sharjah.

## Operations management

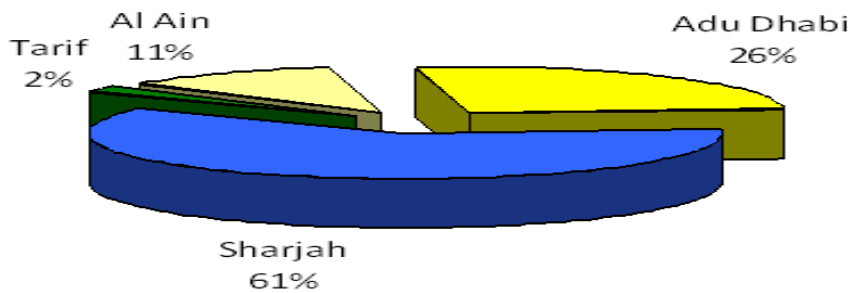


Figure 4.3 shows the distribution set up in of ArlaNFPC in the UAE. The resource is depending on the presentation supreme meeting march 09

### 4.2.5.2 Sharjah

The warehousing process in Sharjah is managed only by NFPC's workers. At the WH there are only two WH keepers, one forklift operator and five pickers. The store is about 7100ft<sup>2</sup>. From this store all the products of Dubai, Sharjah and Ajman are distributed. Dubai market is the biggest in the UAE. The process is as following:

- **Goods in**

The WH keeper in Sharjah sends a requisition to the main WH in Abu Dhabi about the quantity and the categories needed. He doesn't use any program or any forecasting or estimations to find the need of the next period. He uses his experience to estimate the safety stock.

The requested products take about 24 hrs to reach the Sharjah warehouse. The driver delivers a delivery note to the WH. the worker checks the quantity, quality, damage and temperature. The temperature has to be between 5°celsius and 10° Celsius for chilled products and between -10° and -14° Celsius.

Receiving products at any WH has to follow a certain procedure. The procedure has to be put somewhere so that everybody can see it when needed.

WH keeper in Sharjah has a procedure regarding receiving products, but it is mailed to him and still in the memory of the computer. It has never been printed.

During the unloading process, the worker checks the expiry date and puts the products in the warehouse.



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In order to use FIFO<sup>94</sup> method, the workers have to move the current stocks forward to make space for the coming products. This process is a time consuming one, as the worker has to move the same product twice in order to place the new arriving products in the back row of the WH.

- **Goods out**

Customers are divided into 3 categories: Retailer, food service and Key account.

**1. retailers**, deliver to small groceries, and divided into *van sales* and *retail key account*.

- **Van sales:** there are 10 sales vans. WH keeper gets every day evening stock recovers from van sales men. The van sales men make the order manually at the customer. WH workers palletize the order at the same evening.

The WH workers use no kind of quick response (QR) systems, which is the use of electronic information technologies between retailer trading partners to reduce purchasing order lead time and finished goods inventory<sup>95</sup>. They have made their own system by ranking the products in a way so that they can remember the placement of the different Stock Keeping Units (SKU) which is 68 SKUs.

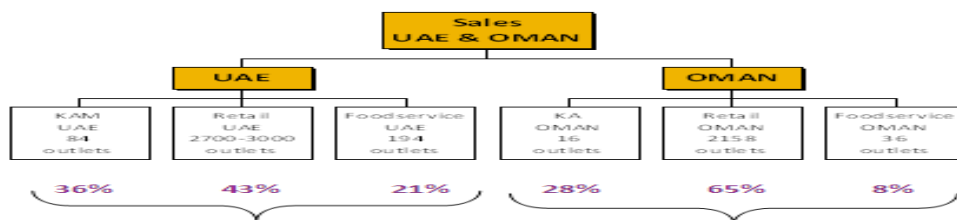


Figure 4.4... describes the number of outlet related to each of the three categories mentioned before. The resource depends on a presentation, supreme meeting march 09.

- **Retail key customer** has 3 trucks of 3.5tons. The three trucks are to cover Dubai, Sharjah, Fujairah and Ras elkhaimah.

The sales men make a manual order at the super market. They get the order confirmed by super market manager.

All sales men should come back, in the afternoon, to the head office in order to feed the order into a JD system. Before feeding the order into the system, the order must be

<sup>94</sup> FIFO= First In First Out

<sup>95</sup> <http://www.techexchange.com/thelibrary/acronyms.html>

## Operations management

confirmed by a sales supervisor. By 5:30, all the orders should be approved and typed manually into the system, so the WH keeper can see all the retail key customer's orders. WH keeper prints the picking orders and gives it to the WH workers to start picking.

After the picking is done, WH people make a shipment confirmation. This confirmation is done because sometimes there isn't enough stock in the WH. During the day, WH workers send ordered products with drivers out to the different customers. The sent amount will not be withdrawn from the inventory system before the drivers are back from their route in the evening and deliver returned products to be put in the system again. This means, the system shows a wrong number of items during the day until the system is updated at evening.

After clearing the shipment confirmation, the WH keeper prints a delivery note and finally prints an invoice.

As shown in the figure above, the retail key customer delivers to 2700 to 3000 different outlets and counts 43% of the total turnover of ArlaNFPC in the UAE. These customers are usually the medium size outlets.

**2. Food service**, have two trucks of 3.5 tons load and they deliver to restaurants, hotels and likewise. They follow the same procedure as retail key customers.

The food service delivers to 194 outlets, and counts 21% of the total turnover of ArlaNFPC in the UAE. Food service delivers to restaurants and hotels.

**3. Key account**, they have four trucks of 3.5 tons load and deliver to the big super markets. They follow the same procedure as retail key customers.

A common problem is the small number of trucks or the size of the trucks. This problem forces the driver, sometimes, to divide the load into two because the truck of 3.5 tons is not big enough.

Key account delivers to 84 outlets, and counts 36% of the total turnover of ArlaNFPC in the UAE. These outlets are the hyper markets.

In general the number of outlet in UAE and Oman is 5338 outlets with a turnover of 210 million AED.

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### 4.2.5.3 Abu Dhabi

At the WH in Abu Dhabi, there is only one store keeper, one forklift operator and three pickers even though the store is about 16685ft<sup>2</sup>.

- **Goods in**

To the port of Abu Dhabi, Arla foods ship the products. And therefore, the main store of ArlaNFPC is located there.

The head office of ArlaNFPC is located in Dubai. By the arrival of a shipment coming from Denmark to the company, head office (Arla Foods employees) in Dubai faxes a packing list to the main department in Abu Dhabi. The list includes all the needed information about the container number, order number, expected date of arrival etc.

NFPC have an agent at the port. He is responsible for the clearance and transport from port to warehouse. NFPC tells the agent which container to be delivered first to the warehouse.

When the container arrives to the store, the worker checks the container number and starts unloading. The products are in cases; therefore they are put in an anteroom to be separated into quantity and date.

The different products are not placed at the same place, for example, if they have Puck jars on the left side of the room, the new shipment of puck jars next time could be placed on the right side of the room. This happens because there is not enough space neither for chilled nor frozen.

Some products need authorization confirmation from the municipality before it can be distributed. The authorities take some random samples from different cases to check it. The products are to be confirmed/ released some days later if everything is okay.

- **Goods out**

The goods out process in Abu Dhabi happen exactly as in Sharjah and with the same level of recourses.

### Part conclusion

As there is only one forklift related to ArlaNFPC at the warehouse, the chance of lacking a forklift, if the current one breaks down, is big. In this case WH workers need to borrow a forklift from NFPC workers, if they have an available forklift or the products will be delivered late to customers.

The time of repairing a forklift could be one hour or sometimes month, as happened in Abu Dhabi warehouse. On the other hand there is only one operator with a forklift license. If one day he gets sick, there is no spare driver.

The WH keeper in Sharjah relies on his experience to re-order from main warehouse. This is because he lacks the knowledge of warehouse management methods like Kanban system or JIT. Having experience is a good thing, but it is not enough.

At the goods in Sharjah WH, there is a procedure including steps of goods receiving. The procedure is sent to him by mail and still in the computer. The procedure should be in a place where all employees can easily find it and use it when necessary.

The lack of knowledge about how to use the JD Edwards ERP system, and only use it to receive an order from key account or food service, makes the lead time of the process much longer. This will affect the accuracy of the current stock in the WH during the day, because the worker does not know how to dispatch the order from the system or because he is not the one who has to do it.

JD Edwards's system, can easily manage inventory and many other functions, than being a post box.

### **4.2.6 Distribution**

The customer will be upset, no matter how good the quality of a certain product is and no matter how good the distribution planes are, if he doesn't get his products on time to the right place in the right state. This depends on the means of distribution, namely trucks.

The following section will describe the state of the trucks used by NFPC to distribute the ArlaNFPC products.

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### 4.2.6.1 Trucks

Distribution (or **p**lace) is one of the four elements (the 4 Ps) of marketing mix. An organization or a set of organizations involved in the process of making a product or service available for use or consumption by a consumer or business user<sup>96</sup>.

The other three parts of the marketing mix are **p**roduct, **p**ricing and **p**romotion.

Distribution and intermediaries have become increasingly significant over time, and their importance become clearer. Distribution provides the logistics element of a supplier's offering and provides adaptations to other elements of an offering in product, service, advice and logistics.

As mentioned before, NFPC rents the needed trucks and vans to ArlaNFPC for a certain monthly charge of 3.5 tons and 1 ton load. This rental charge includes, among other costs, maintenance of vehicles, cost of diesel, and insurance, monthly wages of driver salesman, monthly wages of driver and monthly wages of helper.

It is written, as well, in the JV agreement, technical agreement, obligations of NFPC, § 3.1 C and D that NFPC should:

Keep the warehouses and the vehicles and each and every part thereof in good and substantial repair and working order free from any defects, and procure that all of the warehouses shall use their best endeavors to comply with the Company's (Arla Foods) requirements.

Ensure that the vehicles and the warehouses are operated and maintained in a skilful and proper manner.

ArlaNFPC, has made an evaluation of the trucks and vans<sup>97</sup>. It showed that 82% of the thermo kings implemented in vans are poor and 7 old trucks, from 1992-1998 models, must be changed immediately because of poor engine and poor thermo kings.

Number of vehicles is 25 trucks of 3.5 tons load and 11vans of 1 tons load, divided into Key account, Retail and food service. None of these trucks has an A/C in the driver cabin.

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<sup>96</sup> www.google.co.uk

<sup>97</sup> For details look encl. 14

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The A/C in a truck or van in the UAE is very important as the temperature is very high. The driver will be wet of sweat when he arrives to the customer.

Each of these three areas has a number of vehicles depending on the distribution volume and area. Each truck and van has a route for the whole day.

2008	Value in AED	Volume kg	Value%	Volume %
Sharjah	99741326	4648010	65.7%	65.7%
Abu D.	35889311	1656028	23.6%	23.4%
Tarif	2577102	124672	1.7%	1.8%
Al Ain	13715728	640716	9.0%	9.1%
Total	151923467	7069426	100%	100%

Table 4.2 shows the value and the volume which were distributed in 2008. The table is made by the researcher depending on the company's resources.

Actually not all trucks and vans are on road and this is of course because, some of them are under reparation.

Even though the rest of the trucks and vans are in full time, most of time, sometimes they have to replace the ones under reparation. And they have to deliver the same quantity as if there are no trucks or vans under reparation. Some examples are taken from a complaint data which, was made by (BD) Business Development department. And each table includes the complaints of the same vehicle<sup>98</sup>.

The number of claims recorded by BD is more than 200 claims. Most of the claims are because of bad reparation which, results with re-visiting the garage.

On the other hand, Key Account department didn't make a data like BD did, but they have a huge number of emails written to the workshop, because of long repairing time and no replacement of the broken vehicles. Examples of the emails which were sent by Key Account manager to the workshop are to be found in Enclosure 5.

<sup>98</sup> Enclosure 15 is an example of the complaints, the full complaints are attached the CD following this project under logbook truck

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### *Part conclusion*

NFPC's garage workers are not performing according to the truck rental agreement between Arla and NFPC. This performance has, sometimes, serious consequences. The garage worker e.g. tried to save money for the NFPC Company by not changing the tire, in figure 2.2 and didn't take in consideration the consequences of tire blasting which could be:

- An accident and somebody could get killed or injured
- Longer time to deliver the vehicle to the garage in order to repair it
- In case of accident the cost will be much higher than just changing a tire
- Late delivery to our customers
- Dissatisfied customers

Most complaints are because the vehicles are repaired but after few days, the same error happened again and again until the part is changed. This is a time consuming performance, as the worker has to visit the garage many times because of the same error. These repetitive visits will affect firstly, the image of the company (ARLA) and secondly put extra load on other drivers and planners. The result will be less customer service or late deliveries.

The main reason for these repetitive garage visits is the poor reparation or the carelessness.

On summer time, the temperature in UAE gets close to 45° Celsius, it is worth to mention that there is not A/C in any of the trucks, Not even in the new ones.

### **4.2.7 Gap analysis for warehousing and Trucks**

GAP analysis is the study of the differences between two different information systems or applications, often for the purpose of determining how to get from one state to a new state. A gap is sometimes spoken of as "the space between where we are and where we want to be"<sup>99</sup>.

The researcher want to perform a GAP analysis in order to illustrate the gaps between what is currently provided by NFPC and what is agreed on according to the joint venture contract. This means that the researcher wants to discover where we are and where we should be according to the JV contract.

Gap analysis will include five performance objectives: quality, speed, dependability, flexibility and cost.

The following table and interpretations were sent to five different employees who have high knowledge about the warehousing and the trucks state. Two of them are regional managers, one area sales manager and two super visors.

The employees were asked to give each of the five performance objective a grade from 1-5, where 1 is the worst and 5 is the best.

- **Quality:** how do you evaluate the quality level of the warehouses and trucks?

Interpretation: how do you evaluate the warehousing management, service, staff, space, cooling, freezing, maintenance, general condition etc?

How do you evaluate the general state of the trucks? (I know that some of them are new, others are middle and others are old. What the researcher wants is your general point of view)

- **Speed:** how do you evaluate the speed of the warehousing process and trucks service level?

Interpretation: in case of unloading and loading of the trucks and in case of receiving products, e.g. the speed of finding an alternative for a broken forklift or any other equipment.

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<sup>99</sup> [http://searchsmb.techtarget.com/sDefinition/0,,sid44\\_gci831294,00.html](http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci831294,00.html)



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How long time does it take to repair a broken truck and the speed of finding an alternative truck?

- **Dependability:** how do you evaluate the level of dependability at the WH and trucks?

Interpretation: Do you think that the WH staffs are using the FIFO method (first in first out) and how much can you depend on this?

What is the level of mistakes of sending wrong products to the customers or to the wrong customers?

- **Flexibility:** how do you evaluate the flexibility level at the WH and trucks?

Interpretation: in case of high seasons, how flexible are they to find more equipment, trucks and enough number of workers with the required skills.

As I know, there is only one forklift in Sharjah and one in Abu Dhabi, and there is only one operator for each. What will happen if this operator suddenly gets sick? (This question is both for dependability and flexibility)

- **Cost:** as ArlaNFPC and NFPC agreed on the cost of warehousing and trucks rent, it is logical that it is on number 5 if the other conditions are on the right level, because ArlaNFPC wants to get as much as possible of their investment. Therefore, cost level depends on the level of quality, speed, dependability and flexibility. I took the average of the five results and got a final result.

	ArlaNFPC requirements	Warehousing	Trucks
Quality	5	3	2.4
Speed	5	3.4	1.8
Dependability	5	2.8	1.8
Flexibility	5	3.8	2
Cost	5	3.2	2

Table 4.3: average results of the GAP analysis. The table is made by the researcher depending on a gap analysis made at the company

A useful way of representing the importance of showing the actual performance of NFPC's trucks and WH is by a Polar representation. The measuring which represents the importance of each performance objective has the same origin. The lines from the origin describe the relative importance of each performance objective.

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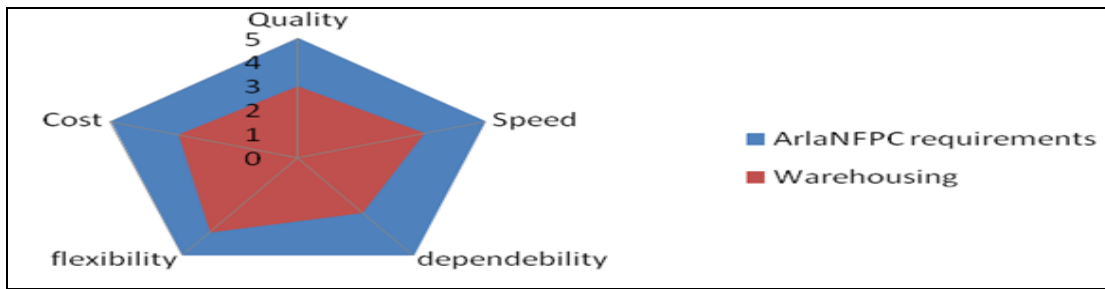


Figure 4.5: shows the Gaps between ArlaNFPC requirements and warehousing actual performance. The figure is made by the researcher

As shown in the above diagram, there is a GAP in each of the five performance objectives between ArlaNFPC requirements and NFPC's actual performance of warehousing, staff, equipments, space and cost.

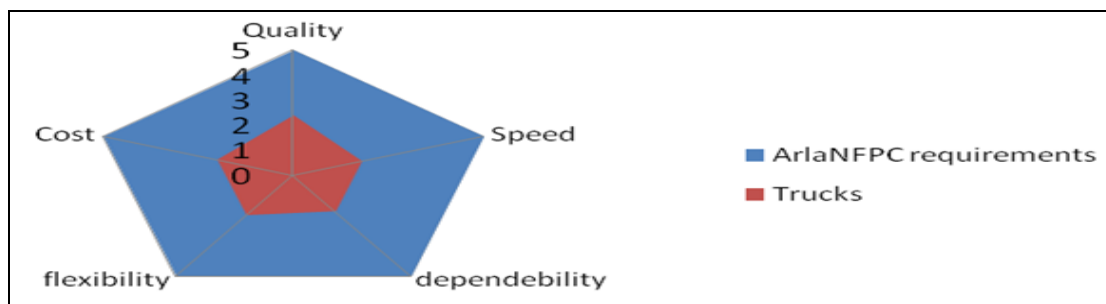


Figure 4.6: shows the Gaps between ArlaNFPC requirements and trucks actual performance. Charts are made by the researcher.

The GAP analysis shows that the performance of trucks is much worse than it in warehousing. The highest performance objective namely, quality, scored 2.4. This result is less than the half of what ArlaNFPC expects and requires from NFPC.

### **Part conclusion**

The scores of warehousing and trucks were too low. This means that there are some gaps between expected performance and actual performance.

According to poor thermo kings and poor reparation, the scores of trucks came very low.

### **4.2.8 Resources and capabilities**

The main issue of making this analysis is to show the resources and capabilities of the warehousing and trucks which are provided by NFPC.

Resources are the inputs that firms use to create goods or services. They could be tangible and intangible or both at the same time. Capabilities refer to a firm's skill in using its resources (both tangible and intangible) to create goods and services.

#### **4.2.8.1 Intangible resources:**

- Distribution solution over the UAE.
- Credit facilities.
- ISO standards (not ArlaNFPC).
- Pick Accuracy (no data).

#### **4.2.8.2 Tangible:**

- Four warehouses (Sharjah, Abu Dhabi, Al Ain and Tarif).
- Fleet of 35 trucks and vans.
- Ambient, chilled and frozen.
- Facilities (packaging, in Abu Dhabi one forklift, two electric small lifter and one forklift in Sharjah).
- Store deliveries.
- Invoice facilities for some customers.

#### **4.2.8.3 Capabilities:**

- Sharjah WH, 750 racked pallet locations, Abu Dhabi 2100 racked pallet location and two other small warehouses.
- Employs 16 staff – excluding drivers and driver's helpers.
- One shift – 6 Day operation.
- Annum dispatched cases (no data).
- JD Edward ERP system.
- A number of drivers and helpers operating a fleet of 35 Trucks and vans.
- 3560 Delivery Locations in 2008 delivering a volume of 7069.4tons.

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- Hand held terminal (minicomputer) for immediate invoicing, used by cash salesmen.

### ***Part conclusion***

Intangible resources are on a low level. Even though we deliver all over the UAE, we have no kind of data that can provide us the picking accuracy or delivery accuracy.

In peak times, the warehouses are not large enough. In Abu Dhabi, they move some of the products to Tarif warehouse to provide some extra space. And they only have one forklift

Most of the fleet's vehicles are 4-7 years old. This increases the probability of breakdowns. One of the two small electric lifters has been in reparation for 5 months ago and the other is an old one.

There are a number of WH workers who have been there for some years, but with no kind of WH management training.

The JD Edward system is not exploited as it has to.

In general, the poorness of resources and capabilities explains the GAP analysis results.

### **4.2.9 Human Resources**

William R. Tracey, in the human resources glossary defines human resources as: "The people that staff and operate an organization... as contrasted with the financial and material resources of an organization. It is the organizational function that deals with the people.

These human resources need somebody to manage them. Human resource management is the function within the organization that focuses on recruitment of, management of, and providing the direction of the people who work in the organization.

Human Resource Management is the organizational function that deals with issues related to people such as compensation, hiring, performance management, organization development, safety, wellness, benefits, employee motivation, communication, administration, and training.

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### **4.2.9.1 How do NFPC manage Human resource?**

NFPC is the one who is responsible about HR for some time ago. And the process of electing a new employee, if ArlaNFPC has a required position, NFPC finds a person and sends him/her to ArlaNFPC. This way of hiring people made some problems at ArlaNFPC, because they had to accept what is sent to them. NFPC chooses the ones with the best qualifications for themselves and send the second hand workers or the good ones in some cases if they, NFPC, do not need them, to ArlaNFPC.

ArlaNFPC overtook the recruitment process. In case of a required position, they receive the CVs from the different candidates. The HR employee at ArlaNFPC shortlist it and make interviews.

The initial interview is made telephonically, just to hear whether the candidate is good to English, as English is the common language among workers, or not. The quality of the candidate depends on the required position. HR employee together with the business manager chooses the appropriate candidates to interview them.

NFPC takes care of the paper work of the new employee, such as issuing a visa and other official papers.

If the position is a junior level one like e.g. warehouse picker, the induction period is very short and is given by another warehouse picker.

If the position is between junior and senior level one e.g. merchandiser, the induction period is 3-4 days, and is given by a super visor.

If the position is a senior level one, a program of two weeks induction period is given to the employee. The induction period includes, among other things, a visit to departments at the head office, warehouses and supermarkets.

Six months later, an appraisal takes place in order to evaluate the new employees. It is done both for new junior and senior employees.

HR department tells the business manager 2-3 days before the date of assessment of performance in case of junior worker, while the senior employees are assessed by the General Manager.

A yearly assessment of performance is made for all employees and workers.

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To each supermarket a certain merchandiser is related. He is the one who put the products on the shelves and ensure that there are no expired products. The merchandiser has a schedule about how long time should be given to each supermarket. He reports to a sales rep.

The sales rep. manually takes orders from the supermarket and ensures that the merchandiser does his job satisfactory. He reports to the supervisor rep.

The supervisor rep. reports to the senior supervisor and the senior supervisor rep. reports to the department manager.

### Part conclusion

There is no kind of training programs for the new employees at the warehouse. A new WH worker is being trained for some days by another untrained WH worker; this will increase the probability of making faults.

During the 6 months of the induction period, no one to one meetings happen in order to follow up how the worker development is. After 6 months it could be too late to do something, because he/she got used to the way of doing his/her job, probably the wrong way.

Merchandisers and sales reps. are the image of the company; they are the ones who have a direct contact to customers and consumers. Therefore they should have a certain level of knowledge about customer service and display techniques.

The high hierarchal process of reporting which, goes through 5 levels before it reaches the department manager, make the piece of information unsure or maybe unreliable.

## 5. Chapter 4

### Conclusion and recommendations

- Sub-chapter 2... Conclusion
- Sub-chapter 3... Recommendations

## **5. Chapter 4**

This chapter will include the conclusion of this study and the recommendations seen from the researcher point of view.

### **5.1 Sub-chapter 1 (Conclusions and recommendations)**

#### **5.1.1 Conclusion**

From the upper mentioned facts throughout the project, it is becoming very clear that there is a huge gap of general performance between Arla foods in Denmark and Arla foods (ArlaNFC) in the UAE. This gap will be illustrated by making a comparison showing the production process on both sides. The comparison will only include the Warehousing, distribution, HR management, resources and capabilities and purchasing, since Arla Foods have no production in UAE. But the researcher will consider the production process at Arla foods HFO in Denmark.

Comparison is the act of comparing or the state or process of being compared; an evaluation of the similarities and differences of two (or more) things; the state of being similar or alike.

<b>Arla foods HFO in DK</b>	<b>ArlaNFC</b>
<p><b>1. Production</b></p> <ul style="list-style-type: none"> <li>• 340 employees both white and blue colored</li> <li>• 13 production lines, producing about 1000 tons of cheese per week</li> <li>• Use of new technologies in production control.</li> <li>• Control on production capacity, where some lines are able to produce more than 10000 cups/hr.</li> </ul>	<p><b>1. Production</b></p> <ul style="list-style-type: none"> <li>• In the UAE the staff number is 137</li> <li>• Arla have no production site in UAE</li> </ul>
<p><b>2. Warehousing and capabilities</b></p> <ul style="list-style-type: none"> <li>• Four big warehouse terminals in Denmark, VET is one of them.</li> <li>• 46 workers at the VET warehouse</li> <li>• VET is a big warehouse, 16.000 m<sup>2</sup>, with a space for 11000 pallets.</li> <li>• VET can have stocks for 11 calendar days of sales</li> </ul>	<p><b>2. Warehousing and capabilities</b></p> <ul style="list-style-type: none"> <li>• 4 warehouses located in Sharjah, Al Ain, Tarif and Abu Dhabi</li> <li>• The warehousing process in Sharjah is managed only by NFPC's workers</li> <li>• 16 workers at the 4 warehouses</li> <li>• The store in Sharjah is about 7100ft<sup>2</sup> and 16685ft<sup>2</sup> in</li> </ul>



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<ul style="list-style-type: none"> <li>Arla Foods uses the RF <i>Radio frequency</i> which is a scanning technology throughout the warehouse.</li> </ul>	<p style="text-align: center;">Abu Dhabi</p> <ul style="list-style-type: none"> <li></li> </ul>
<p><b>3. Warehousing process</b></p> <p><i>3.1 Goods in and out of VET</i></p> <ul style="list-style-type: none"> <li>There is a security gate employee for safety reasons at each WH</li> <li>The security employee checks the time of arrival of each incoming lorry.</li> <li>The WH worker checks Pallets for quantity, damage, label, matching products and temperature</li> <li>Samples are taken in order to be sure that all pallets have the appropriate temperature, which has to be between 1 and 5°C</li> <li>SAP system tells the employee where to put the incoming pallets</li> <li>Determined lane or racking of the products</li> </ul>	<p><b>3. Warehousing process</b></p> <p><i>3.1 Goods in and out</i></p> <ul style="list-style-type: none"> <li>Poor usage of incoming procedure, since it is not hard copied.</li> <li>At the WH in Abu Dhabi, there is only one store keeper, one forklift operator and three pickers</li> <li>The WH keeper in Sharjah sends a requisition to the main WH in Abu Dhabi about the quantity and the categories needed.</li> <li>Experience is the used criteria to estimate safety stock.</li> <li>The driver delivers a delivery note to the WH. the worker checks the quantity, quality, damage and temperature. The temperature has to be between 5°celsius and 10° Celsius for chilled products and between -10°and -14.</li> <li>Current stocks in the WH are moved forward to make space for the new incoming products (Difficulty in using the FIFO method).</li> <li>No determined lane or racking of the products</li> </ul>
<p><i>3.1.1 Pick release issue</i></p> <ul style="list-style-type: none"> <li>Each morning the warehouse team will count pick face stock and complete an empty location report, ensuring that all pallets are located in the correct bin area</li> </ul>	<p><i>3.1.1 Pick release issue</i></p> <ul style="list-style-type: none"> <li>Customers are divided into 3 categories: Retailer, food service and Key account</li> <li><b>retailers</b>, deliver to small groceries, and divided into <i>van sales</i> and <i>retail key account</i>.</li> <li>Van sales: there are 10 sales vans. WH keeper gets every day evening stock re-covers from van sales men. The van sales men make the order manually at the customer.</li> <li>Retail key customer: has 3 trucks of 3.5tons. The three trucks are to cover Dubai, Sharjah, Fujairah and Ras El khaimah.</li> <li>No pick face stock counting</li> <li><b>Food service</b> delivers to 194 outlet restaurants and hotels</li> <li><b>Key account</b> deliver to the big super markets</li> <li>Key account delivers to 84 outlets</li> </ul>
<p><i>3.1.2 Picking and Dispatch</i></p>	<p><i>3.1.2 Picking and Dispatch</i></p>

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<ul style="list-style-type: none"> <li>• <i>Outbound dispatch label which shows the receiving customer what they should expect to find on their pallet, including Arla Code, Customer own code, Product description, best before date and quantity.</i></li> <li>• <i>Arla uses SAP system. SAP shows where to find the different pallets.</i></li> </ul>	<ul style="list-style-type: none"> <li>• No use of labels since no RF system is available</li> <li>• No system to show where the products are placed e.g. SAP system</li> <li>• After the picking is done, WH people make a shipment confirmation</li> <li>• The actual stock in the WH is unknown until afternoon where the system is updated</li> </ul>
<p><i>3.1.3 Loading Hall</i></p> <ul style="list-style-type: none"> <li>• At the loading hall, the driver delivers the keys of the lorry to the worker for safety reasons.</li> </ul>	<p><i>3.1.3 Loading Hall</i></p> <ul style="list-style-type: none"> <li>• No key is delivered to the WH worker</li> </ul>
<p><i>3.1.4 Back to Planning</i></p> <ul style="list-style-type: none"> <li>• Before the driver moves from the site, the planning has to check that the products loaded on trailer are the same as the ones on the manifest</li> </ul>	<p><i>3.1.4 Back to Planning</i></p> <ul style="list-style-type: none"> <li>• No final check</li> </ul>
<p><i>3.1.5 Transporter</i></p> <ul style="list-style-type: none"> <li>• The driver has to check everything on the lorry (light, diesel, flash, etc).</li> </ul>	<p><i>3.1.5 Transporter</i></p> <ul style="list-style-type: none"> <li>• No truck or van check</li> <li>• Small number of trucks</li> <li>• Poor state of trucks</li> <li>• Poor reparation of trucks</li> <li>• None of these trucks has an A/C in the driver cabin in that warm land.</li> </ul>
<p><i>3.1.6 Distribution to stores</i></p> <ul style="list-style-type: none"> <li>• 700 distribution vehicles of 24tons load, in Great Britain, Denmark and Sweden</li> <li>• Arla Foods delivers Day One for Day Two</li> <li>• Deliver products to about 20,300 supermarkets and shops, catering outlets and restaurants.</li> <li>• 70% of stores will, however, have received their products by 09.00.</li> <li>• Arla's drivers not only transport Arla products to the stores, but approx. 30% of the volumes supplied include goods handled on behalf of third parties, e.g. meat, fish, poultry, eggs, sliced cooked meats, fruit and vegetables.</li> </ul>	<p><i>3.1.6 Distribution to stores</i></p> <ul style="list-style-type: none"> <li>• 35 trucks 3.5 ton load and 1 ton load. Actually not all trucks and vans are on road and this is of course because, some of them are under reparation.</li> <li>• The trucks small size, sometimes, forces the driver to divide a customer load into two and deliver the load in two truck load.</li> <li>• ArlaNFPC delivers day one for day two</li> <li>• The sales men make a manual order at the super market. They get the order confirmed by super market manager.</li> </ul>
<p><b>4. Delivery performance and customer service</b></p> <ul style="list-style-type: none"> <li>• Customization, as they choose the right milk to the right customer</li> <li>• On time in full</li> <li>• Arla foods, want to gain competitive advantage and</li> </ul>	<p><b>5. Forecasting</b></p> <ul style="list-style-type: none"> <li>• No kind of forecasting or estimation systems are used.</li> <li>• ArlaNFPC have a process every 2 months where they forecast for the coming 6 months rolling. It is a file where Marketing puts the forecast (as there will be</li> </ul>

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<p>reduce inventory related costs. This will give Arla the possibility of differentiation:</p> <ol style="list-style-type: none"> <li>1. To give the same service with less costs and be a cost leader</li> <li>2. To give a better service with the same cost and be a service leader</li> <li>3. To give better cost and service and be cost and service (market) leader</li> </ol>	<p>some promotions) then the sales team puts their quantities of normal sales at the end there is a kind of agreement between marketing and sales on the quantities and the forecast then gets translated into orders by supply chain</p>
<p><b>5. Forecasting</b></p> <ul style="list-style-type: none"> <li>• Arla Foods Sales employees located in different countries make their weekly forecasting of all of Arla foods customers in the country of his/her existence</li> </ul>	<p><b>6. Resources</b></p> <ul style="list-style-type: none"> <li>• Fleet of 35 trucks and vans. Facilities (packaging, in Abu Dhabi one forklift, two electric small lifter and one forklift in Sharjah, ...).</li> <li>• Store deliveries.</li> <li>• Invoice facilities for some customers.</li> <li>• Sharjah WH, 750 racked pallet locations, Abu Dhabi 2100 racked pallet location and two other small warehouses.</li> <li>• One shift – 6 Day operation.</li> <li>• Annum dispatched cases (no data).</li> <li>• JD Edward ERP system (not fully used).</li> <li>• 3560 Delivery Locations in 2008 delivering a volume of 7069.4tons.</li> <li>• Hand held terminal (minicomputer) for immediate invoicing, used by cash salesmen.</li> </ul>
<p><b>6. Purchasing strategy</b></p> <ul style="list-style-type: none"> <li>• Arla foods have a very good purchasing strategy which consists of three evaluation and they use their buying power in this strategy. The three evaluations are:             <ol style="list-style-type: none"> <li>1. The Diamond</li> <li>2. Kralijic</li> <li>3. Relationship Matrix or the purchasing portfolio</li> </ol> </li> <li>• Arla foods have a very determined purchasing process which consists of 9 steps</li> <li>• Sales employees use APO<sup>100</sup> system which sends the information into SAP in Kg where it can be seen by the warehouses</li> </ul>	

<sup>100</sup> APO = Advanced Planning and optimization

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<p><b>7. Human resource and human resource management</b></p> <ul style="list-style-type: none"> <li>• Training of leaders and shop floor workers</li> <li>• Employee assessment</li> <li>• One to one meetings</li> <li>• Assessment for development planning</li> <li>• Competency management and performance</li> <li>• 13 weeks probationary period</li> </ul>	<p><b>7. Human resource and human resource management</b></p> <ul style="list-style-type: none"> <li>• NFPC is the one who is responsible about HR</li> <li>• Poor worker election procedure</li> <li>• The initial interview is made telephonically</li> <li>• Induction period is very short and is given by another warehouse picker.</li> <li>• A yearly assessment of performance is made for all employees and workers. But during the year there is no kind of training.</li> </ul>
<p><b>8. The environment all the way</b></p> <ul style="list-style-type: none"> <li>• Investments in new, more environmentally-friendly vehicles.</li> <li>• Arla's drivers are trained in "eco-driving", a style of driving that saves diesel.</li> <li>• 6% reduction in fuel consumption in 2006.</li> <li>• Simple computer in vehicles.</li> <li>• Courses in "eco-driving"</li> <li>• Reducing water consumption at its plants</li> <li>• Arla Foods' objective is to limit CO2 emissions by 5% and NOx emissions by 10%.</li> <li>• The target is to reduce energy consumption by a further 5%.</li> <li>• The target is for all chemicals used at the Group's plants to be assessed in relation to their effect on health and the environment.</li> <li>• Considerable effort has been directed at reducing industrial accidents by reviewing and analysing the causes of such accidents.</li> <li>• The objective is for all productions plants in Denmark and Sweden to be ISO 14001 environmentally accredited.</li> </ul>	<p><b>8. The environment all the way</b></p> <ul style="list-style-type: none"> <li>• Old vehicles</li> <li>• Drive twice to the same customer (more fuel consumption, more pollution)</li> <li>• No future plans of reducing fuel consumption</li> <li>• No courses in eco-driving</li> </ul>

Table 5.1 is a comparison between Arla foods in Denmark and in UAE. The table is made by the researcher

It is to be concluded from the upper table that the reasons which make the gap between Arla foods DK and ArlaNFPC UAE are the following:

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- a) Technology: Arla foods in Denmark are following the new technologies of the world and using the appropriate ones. They have a system which allows any Arla employee in the world to go into it (the system) and find the information he/she needs. Arla Foods knows the needs of each employee of that system; therefore he/she get access to the area of need. In addition they have the SAP system which is a part of an Enterprise resource planning (ERP) system. Enterprise resource planning or ERP is the name for a type of integrated business software that handles most of its functional areas. For example, ERP helps order processing throughout the company viewed as one instead of separate pieces of software in every department. ERP is based mostly on one common database for the entire company. This technology gives a faster and more accurate information and production flow. This technology is not to be found at ArlaNFPC, since NFPC is the responsible of warehousing and distributions.
- b) Human resource management: Arla foods in general have a set of programmes of how to manage the human resources. They are very sure that no matter how developed the used systems are, it will be nothing worth if the human resources are not well trained to use it. Therefore employee training is one of their cornerstones.
- The situation in the UAE is very different. ArlaNFPC gives almost no kind of training. A new warehouse picker is being trained for two days of another picker, which means that the bad picking habits of the first picker will be transferred to the new one and so on.
- c) Resources and capabilities: Arla foods in general have great both tangible and intangible resources and capabilities (assets). While ArlaNFPC as shown in the table above has a very poor resources and capabilities.

### **5.1.2 Recommendations**

As the contract made between Arla foods and ArlaNFPC is a confidential one. It was impossible for the researcher to know much more about the period of time of the contract and the penalty if one of the two parties wants to cancel that joint venture. But, anyway,

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he will assume that Arla foods want to make use of my study. Therefore his recommendations will be based on two assumptions:

1. No penalty or barriers of cancelling the contract with NFPC, so the first and only recommendation is to get out of the joint venture contract asap so that Arla Foods is the only controller of warehousing, distribution and human resource management.
2. The second assumption is that it is not possible to come out of the contract, but it is possible to negotiate with NFPC in order to come out of the contract. Arla foods could take the following steps in a scheduled time line:
  - Negotiate the prices until getting the best price, both on warehousing and trucks.
  - Takeover the human resource management of ArlaNFPC in order to start employee training
  - Takeover the trucks contract, as NFPC's trucks are not big enough and we need some bigger trucks.
  - Takeover the warehousing management, but behold the warehouses of NFPC.
  - The above mentioned steps will give Arla time to think about how to come out of the contract, chance to observe the financial recession and enough time to find alternative warehouses, if needed.

### Abbreviations

HFO= Holstebro Fløde ost or Holstebro Creme cheese  
UAE= United Arab Emirates  
NFPC= National food production company  
ME= Middle East  
E.g.= For example  
Etc.= excreta  
LRMC= long run marginal cost  
LRAC= long run average cost  
MR= marginal revenue  
VET= vejle export terminal  
NATO= North Atlantic Treaty Organisation  
OSCE= organization for security and cooperation in Europe  
GDP= gross domestic product  
IMF= international monetary fund  
SAS= Scandinavian airlines system  
MD= mejriselskabet Denmark  
UK= united kingdom  
NOX= nitrous oxide  
CO= carbon monoxide  
HC= hydro carbon  
PM= particulate matter  
GP= global purchase  
VMI= vendor managed inventory  
UF= ultra filtration  
HBD= holstebro butter dairy  
PH= potential of hydrogen  
SCA= svenska cellulose aktiebolaget  
EDI= electronic data interchange  
Asap= as soon as possible

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WH= warehouse

C2C= cow to consumer

QR= quick response

RFID= radio frequency identification

APO= advanced planning and optimization

OTIF= on time and in full

JV= joint venture

AED= Arab emirate dirham

A/C= air-condition

BD= business development

ERP= enterprise resource planning

HR= human resource



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