ABSTRACT
The purpose of this thesis is to map the processes within the Chinese School Milk Program and investigate how these processes affect a supplier’s design of its supply chain. The case company, Oatly AB, is manufacturing oat based products which are considered as a substitute to dairy products. Oatly is now looking on the Chinese market as a way of expanding their business. As a first step, Oatly plans on joining the Chinese School Milk Program (SMP), which provides Chinese school children with milk. Oatly has to identify and map the processes of the SMP to be able to expand on the Chinese market. This process mapping is thereafter used to design the future supply chain. The results show that Oatly’s supply chain should be cost minimizing, mainly because of the regulated prices on products within the SMP and the stable demand of products. The production should be directed by actual customer orders, which is done by having the customer order point in the beginning of the supply chain. The main reason for this is that customer orders arrive a long time ahead, which makes it unnecessary to produce anything before the arrival of the customer order.
Introduction
An expression that is heard a lot these days, is that companies today don’t compete with their products, but rather compete with their supply chains. This expression highlights the importance of the area of supply chain management. The establishment of a company on a new market gives the opportunity to design and adjust the supply chain to the processes on the market, so that it can maximize the company’s profits.

Background
Oatly is a company that produces and sells oat based products. Their most selling product is the oat drink which is a substitute to milk, and over 80 percent of the annual sales volume comes from this product. Since the foundation of Oatly the main idea has been to sell their products on markets with low milk availability and milk consumption. Most recently, Oatly identified the Chinese market as a way of expanding their business. There has not been any long and widespread consumption of milk in China, but this is about to change. The last couple of years, the increasing wealth of the Chinese people and the positive health effects from milk, have lead to a dramatic increase in the consumption of milk in the country. The supply of the milk cannot meet the high demands from the market, which is why Oatly now see great potential for their products. Most of the Chinese people are also lactose intolerant which makes them sensitive to milk. This also contributes to why Oatly see potential in their products which are lactose free.

Problem definition
As a first step Oatly plans on joining the Chinese School Milk Program (SMP), which is a program run by the Chinese government. The purpose of the program is to improve the health of the Chinese people by providing children with milk in schools, and to develop the milk industry in the country.

Oatly has to identify and map the processes of the SMP to be able to expand on the Chinese market. This process mapping should thereafter be used to design the future supply chain so that Oatly can maximize their profits.

Purpose and delimitations
The purpose of this thesis is to map those processes that control the selected market, and to suggest how Oatly’s supply chain should be adjusted to these processes.

In this study the design of the supply chain was only investigated from a strategic point of view. The suggestions given in the article are based on the regulations on the market, Oatly’s current production in Landskrona and the characteristics of Oatly’s oat drink. Due to the fact that Oatly hasn’t established their supply chain on the Chinese market, no implementation of the developed suggestions has been conducted.

Methodology
This study was carried out as a case study, with an explorative and a descriptive purpose. The primary data has been gathered by interviewing people involved in the SMP in China, and people from Oatly’s organization in Landskrona. Interviews were conducted in a semi- and unstructured way. The secondary data has been gathered by reading books, articles, internet publications and in-house documents from organizations within the SMP.

Theoretical frame of reference
The theoretical framework of this study consists of process mapping and supply chain management. The process mapping is used to create a map of the processes on the market, and to analyze their effect on the design of the supply chain. To be able to design a supply chain based on the information from the process mapping supply chain management theories were used. The main theory used within supply chain management was development of demand chains by Childerhouse et al. (2002) [1].

These authors use the term demand chain instead of supply chain because they want to emphasize the importance of the customer, which creates the demand. Their theory consists of three steps, which are; Develop holistic demand chain strategy, Identify specific product/service offers and Categorise demand chain types using DWV3 variables. The third step uses a classification model named DVW3 and because of the importance of the classification of supply chains, two additional classification models were used in this step. The two models that were used was Fisher’s (1997) [2] well knowned model about innovative and functional products and Pagh and Coopers (1998) [3] theories about Supply chain postponement and speculation strategies. The theory framework is illustrated in figure 1.

The three different classification models have some similarity between them. The DWV3 model uses five different classification variables, which are; Duration of life cycle, time window for delivery, volume, variety, and variability.
These variables are also used in the two other models with some minor changes, but the two other models also uses additional variables to categorise a supply chain. The different variables used are illustrated in figure 2.

In DWV the variables are used to determine where the customer order point should be placed in the supply chain, and if the supply chain should be cost minimizing or flexible. In Supply chain postponement and speculation strategies the variables are used to analyze what part of the supply chain that should be driven by actual customer orders, and what part of the supply chain that should be driven by forecasts. In Innovative and functional products the variables are used to categorize supply chains into physically efficient and market responsive chains. When designing a supply chain to be physically efficient all focus is on reducing the costs. A market responsive supply chain is designed to be flexible and must be able to keep up with the market’s fluctuating demand.

Results

The process mapping of the SMP shows that there are four different core processes: development of the program, control of quality, inform the customers, and provide the product. Each process affects in some way the three steps in developing a focused demand chain.

The holistic demand chain strategy should be a supply chain that is cost minimizing. The main reason for this is that the prices on products within the SMP are regulated.

The service offerings within SMP are strictly regulated. What kind of service that is expected from the companies within the SMP is not known but the lead times are long, the prices are low and there are substantial quality requirements. This means that the supply chain must focus on minimizing the costs while still achieving the quality requirements.

The duration of the product life cycle for the oat drink is assumed to be long and when it’s launched on the Chinese market it will be in the introduction phase of the product life cycle. Due to the contracts that are written between the companies and the SMP organization, the delivery times are decided long time ahead and the delivery lead time are therefore long. Because the product will be in the introduction phase and the SMP is relatively undeveloped, the volumes will be low in the beginning. Within the SMP there are a low variety of products and the written contracts make the variability low as well.

Oat based products have a low value compared to their weight which makes the monetary density low. As for the value profile the main value is added in the final steps of the manufacturing process. Customers within the SMP demand their product every week and Oatly’s current production and delivery time is two weeks in total, which makes the relative delivery frequency high. Because the customers orders arrive long time ahead and the production and the delivery time is quite short in comparison to this, the relative delivery time is long. In Oatly’s factory in Landskrona there are no steps in the
manufacturing process that requires special knowledge but there exists large economies of scale.

Because of the written contracts the demand is relatively easy to predict and the average stockout rate is assumed to be low. Within the SMP the price is fixed for the whole season and there are no mark-downs. The fix and low price makes the expected contribution margin low.

Analysis
When analyzing the processes with the theory of Childerhouse et al (2002), the results clearly indicates that the supply chain should have cost minimization as a holistic strategy. The supply chain should also be designed to fulfill the quality criteria’s that exist within the SMP. The results from the DWV variables confirm that the focus of the supply chain should be on minimizing the costs, and also that the customer order point should be placed far upstream in the supply chain.

The analysis of the variables with the theory of Pagh and Cooper (1998) indicates that the supply chain should be designed with either the customer order point far upstream or far downstream. The reason for these contradictory results is that the SMP has unusual characteristics, with a stable demand as an example that should be supported with a supply chain with the customer order far downstream. But the program also has very long delivery lead times and a very low price, which means that the customer order point should be far upstream. The conclusion however is that the customer order point should be placed far upstream in the supply chain, mainly because the customer orders arrives very long time in advance. Otherwise the stock-keeping costs would be too high. This means that the strategy of the supply chain should be full postponement strategy.

Analysis of the variables with the theory of Fisher (1997), shows that the product is functional and therefore should have a supply chain that is physical efficient. This means that the focus of the supply chain should be on minimizing the costs.

Conclusion
The processes and the set of regulations within the SMP clearly affect the design of Oatly’s future supply chain. The supply chain should be physically efficient and cost minimizing, mainly because of the regulated low price within the SMP and because of the stable demand of the product. Within the SMP there are quality measures that can’t be neglected when designing the supply chain. If the regulations of SMP are to be changed the supply chain should adjust to these changes. Therefore it’s crucial that Oatly constantly update their information about the SMP.

The supply chain should also be designed with a full postponement strategy. This means that the customer order point should be placed far upstream in the supply chain, and no products should be produced before an actual customer order arrives. The main reason for this is that the customer orders arrives long time before the actual delivery is made, which makes it unnecessary to produce anything in advance.

References