Designing local food supply chains for The Greenery

Master Thesis

Business Administration/Management Studies Group

MST-80433

Wageningen University

February 29th 2012

Jurriaan Visser	871117-894-010
	Jurriaan.Visser@wur.nl
Firm	The Greenery
Thesis supervisors	Dr. J.H. Trienekens
	Jacques.Trienekens@wur.nl
Co-supervisor	Prof. Dr. P van Beek
Firm supervisor	Yvonne Geurten
	Manager Marketing and Communication

Table of content

Executive summary

The Greenery one of the largest fruits and vegetable trading companies in Europe is exploring the possibilities of setting up local food supply chains in The Netherlands. The company sees numerous initiatives of producers and other companies establishing local food sales. These developments have caught the attention of The Greenery and have led to the initiation of this research. In this research both literature research and empirical research is used to meet the objective of this research:

To give recommendations to The Greenery how to set up local food supply chains by investigating in what way local food supply chains should be arranged in order to meet the conditions of producers, retailers and consumers.

The producers of local food, the retailers and the consumers identified as the three main local supply chain actors take a central place in this research. Since The Greenery is possibly initiating local food supply chains it must arrange the local supply chain in such a way that the other chain actors are willing to participate. Literature study identified the most important motivations of consumers to buy local food and the conditions of producers and retailers to participate in local food supply chains. In the empirical study interviews are held with producers, retailers and The Greenery in order to find the practical implications of local food supply chains.

The information retrieved from the literature and empirical studies together, have led to the formulation of four strategies The Greenery could implement with regard to local food sales.

- Strategy 1: 'Keep it local', this strategy entails that The Greenery is going to set up local food supply chains between producers and supermarkets. The Greenery manages the supply chain and takes responsibilities for arranging all facilities needed to run the local supply chains.
- Strategy 2: 'Enabling producers', this strategy entail that The Greenery enables producers to sell their products locally. The Greenery provides services like billing and quality and food safety control however the responsibility of running the supply chain and attracting and maintaining customer is at the producers. Next to supermarkets also other customers like restaurant and care homes are targeted.
- Strategy 3: 'Local products, conventional supply chain' this strategy entails that products are sold locally like in strategy 1 however the current logistics systems are used to transport them to the local supermarkets.
- Strategy 4: 'Strengthening current consumers communication strategies' this strategy entails that products are distributed and sold like in current supply chain practice. However the communication to consumers is intensified better using the marketing possibilities of product packaging, social media and internet.

It is concluded that in order to satisfy the conditions of the producers, retailers and consumers it is best to implement strategy 2 and 4. The producers should be enabled to set up local food sales. In this way producers can get a higher price for their products, supermarkets can offer local food at reasonable price and consumers can buy fresh products grown close to where they live. For the 'regular products' of The Greenery it is advised to increase communication with consumers to inform and connect consumers and producers.

1. Introduction

The Greenery

The Greenery is a Dutch cooperative fruit and vegetable trading company. It was established in 1996 through the merger of nine fruit and vegetable auctions. The main reason for this merger was the rapid growth of the main customers of The Greenery, the European retailers. Since 1996 The Greenery has developed from a fruit and vegetable auction, to a trading company in which marketing and sales activities have taken over the role of the auctioning system. The company established tight relations with retailers and saw possibilities for chain integration, this led to the abolishment of the auctioning system.

The Greenery is a cooperative company, this means that The Greenery is fully owned by its members, around 1000 mainly Dutch fruit and vegetable growers. The Members Council, a group of seven representatives of the members is the highest authority of The Greenery. Producers which are a member of The Greenery, are not allowed to sell products to other customers than The Greenery.

■ Botanic-fruit vegetables	57%
■ Deciduous fruit	7%
■ Soft fruit	6%
■ Mushrooms	4%
■ Other fruits	9%
■ Other vegetables	17%
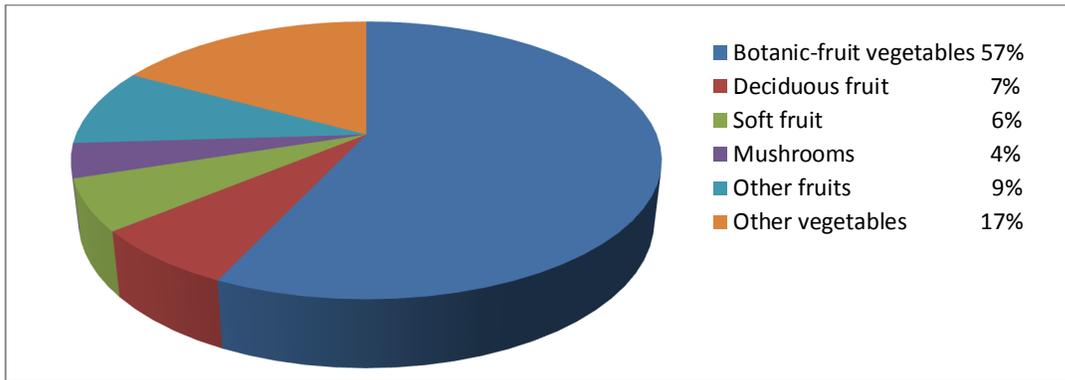
Figure 1 Assortment of The Greenery 2010

Currently the company employs over 1600 fulltime employees with a turnover of 1.84 billion euro's in the year 2010 (The Greenery, 2011). The Greenery is involved in the business to business market, there are no direct sales to consumers. The Greenery is a trading company in the European market for the supply of a complete range of fresh vegetables, fruits and mushrooms (figure 1) and providing support services such as logistics and marketing activities. The products The Greenery are grown mainly in the Netherlands, Spain and overseas (figure 2).

■ The Netherlands	71%
■ Spain	7%
■ Other European countries	3%
■ Overseas	19%

Figure 2 Provenance of the products sold in 2010

The main customers of The Greenery are international retail clients. The Greenery sells its products in the Benelux, Germany, United Kingdom, Southern Europe, Scandinavia and Russia/central Europe North America and the Far East (figure 3). The large customers in the Netherlands are retail companies like Plus and Jumbo supermarkets.
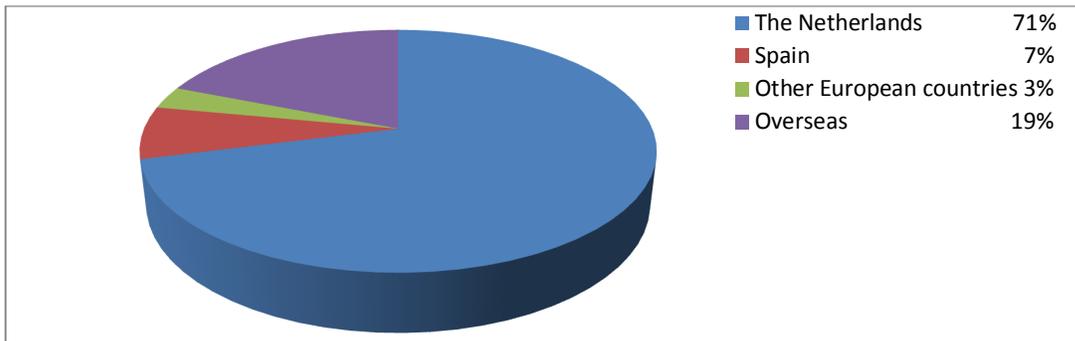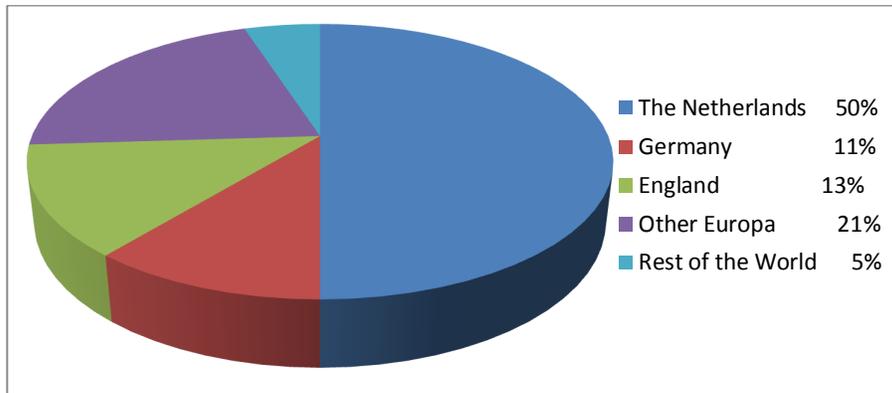

	The Netherlands	50%
	Germany	11%
	England	13%
	Other Europa	21%
	Rest of the World	5%

Figure 3 Geographic distribution of turnover 2010 (The Greenery 2011)

Strategy

The strategy of The Greenery focusses on two pillars. The first pillar is operational excellence, there is a constant focus to work as efficient and low cost as possible. The second pillar is added value, The Greenery sees opportunities to add value through specialty products, marketing knowledge and services. In recent years The Greenery has started to use the internet and social media to communicate with consumers. The 'Verse Oogst platform' is set-up to inform consumers about the growers of The Greenery (verseoogst.nl). Next to operational excellence and added value, sustainability is a strategic focus of The Greenery. Here The Greenery focuses on healthy cultivation, healthy innovation, healthy variation, healthy communication, healthy operations and healthy employees (The Greenery 2011).

The Greenery has several subsidiaries (figure 4), to be able to serve the different market segments The Greenery supplies. The subsidiaries focus for example on imports, organic products, unions and fruits and vegetables for industrial use.

Figure 4 Subsidiaries of The Greenery (The Greenery 2012)

1.1 Problem analysis

Local food

This research is focussed on the ways in which The Greenery could set up local food supply chains. In recent years several 'local' or 'regional' brands have been set up which sell locally produced food products through the retail channel.

Examples of these brands are:

- 'Willem en Drees': sell fruits and vegetables through the retail channel and try to source products within a radius of 40 km from the point of sale.
- 'Gijs': is emphasizing the authenticity of its products, the producer name and picture is used in product marketing. The products are available in Plus supermarkets and specialty shops.
- 'Marqt' is a new retail formula which positions itself at the high end of the market. Fresh produce is preferably sourced locally. The focus is on authentic, fresh and tasty food. Currently Marqt has three supermarkets, the ambition is to open shops in the whole 'Randstad' area.

These kinds of developments have caught the interest of The Greenery. The Greenery is investigating whether setting up local food supply chains can be interesting for them. The products The Greenery will sell through the local supply chains are products from their current product portfolio; fruits, vegetables and mushrooms. The local food initiative suits the strategy of The Greenery to focus on value added products and sustainability.

The local food topic is extensively mentioned in literature. As Bloom et al. (2010) maybe exaggerates somewhat: 'the interest in locally produced food has exploded over the last few years'. Remarkably in this sense is that 'there appears to be no generally agreed and widely accepted definition of local food' (Abatekassa, et al. 2011). There are two 'schools' in defining 'local'. The first focuses on the maximal distance between producer and consumer. The second focus on locality as a quality dimension for a broader market (e.g. Parma ham). This means products have to be produced in a certain geographical region but do not have to be consumed in this region (Abatekassa, et al. 2011). This research is using 'local' in line with the first 'school', so focussing on the distance between producer and consumer. The maximum distance between producer and consumer in order to call products local is hard to define since literature is not unambiguous on this matter. An American study mentions eight retailers which define local with a radius between 100 and 200 miles from the point of sale, other retailers name a specific region, state or county as local (Dunne, et al. 2010). Most often in the European context, 30 miles or 50 kilometres is mentioned as most commonly used distance (DEFRA 2003, Hingley 2010, Pearson, et al. 2011). However all authors indicate that there is no clear definition of local with respect to the distance between producer and consumer.
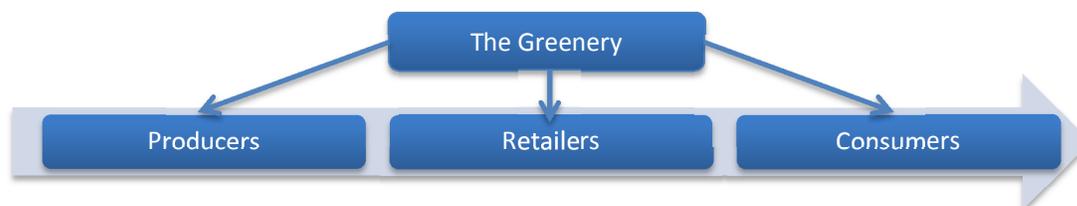
Local food supply chains
The way in which local food supply chains have to be organized is fundamentally different than the way current food supply chains are organized. Morgan (2007) and Oum & Park (2004) state that 'In a global context, firms have begun to consolidate their distribution activities to a few distribution centres as transportation activities become liberalised globally and transportation services become fast, flexible, and efficient'. As the number of DC's diminishes, the products from a larger region are handled by one DC. This trend has increased the transportation distance of the products and hereby the 'local' character of products is lost. One of the consequences of the operational excellence strategy of The Greenery has been the recent closure of two distributions centres. The bulk of the products The Greenery sells in the Benelux are distributed through one DC in Barendrecht. Because of this, the products from a large area are handled per DC. When the Greenery decides to enter the market of locally produced food products, the supply chain through which these products will be distributed will be different than their current supply chain. The supply chain must be different because the aim of local food is to keep the products local, this cannot be achieved by the current supply chain. Also the customer has to adjust its logistics to be able to handle locally produced food.

The products will no longer be distributed through large central DC's, products will be distributed within a limited radius from the producer. Next to the logistic challenges this new way of working poses, also other aspects of the supply chain mechanism like quality and food safety control need to be reconsidered. This research will focus on the needs of the main supply chain actors in the new local food chains. To be able to understand the needs of the main supply chain actors, the supply chain configuration is defined.

Existing retail channel

The Greenery is initiating the idea of the local food supply chains. In order to make these supply chains work other actors have to come on board. First of all fruit and vegetable producers are needed. The Greenery is intending to sell locally produced food products through existing retail channels, therefore retailers are needed to sell the local food products. Retailing is defined as; "Business activities involved in selling goods and services to consumers for their personal, family, or household use" (Berman et al. 2001). The Greenery is operating in the business to business market and does not have the abilities to directly sell to consumers. Therefore The Greenery is intending to sell local food products to retailers which in turn sell them to consumers. The Greenery also considered selling local food to specialty shops and restaurants, however it decided to first start with the retail channel. Main reasons for selling local food through the retail channels are that retailers are already large customers of The Greenery and the volumes sold through supermarkets are quite high. Because of this it is expected that the volumes will be high enough to pay for the logistical costs. The local food supply chains have three main actors, these are the producers, retailers and consumers (figure 5). In this supply chain, The Greenery is the service provider enabling the supply chain to function.

Figure 5 Main supply chain actors

The producers and retailers set several conditions to the way a local supply chain should be organised. Consumers have different motivations to buy local food. When The Greenery is able to meet the conditions of the producers and retailers and provides the products consumers wish, the local food supply chains should become successful. Examples of conditions literature mentions on local food supply chains are:

- Local food supply chains should add value to the business of the producers (Ilbery et al. 2005).
- Retailers: 'The retailers have increasing liability and food safety related concerns to establish direct relationships with potential local food producers' (Abatekassa, et al. 2011).
- Consumers: Marketing local food also poses challenges. 'An obvious obstacle for local food is the perceived price premium' (Hingley, et al. 2010). Communication to consumers is very important. It should be clear what 'local' means. 'It is perceived that successful communication with the end-consumer will help develop mutual trust and differentiate local products from other conventional and non-local products' (Sage, 2003).
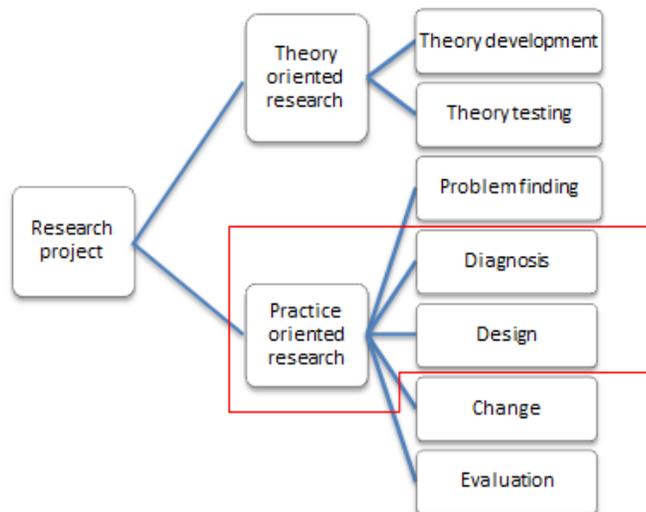
1.2 Conceptual research design

The conceptual design deals with determining the subject of the research project and consist of research objective, research questions and research framework (Verschuren and Doorewaard, 2010)

Research objective

The research objective defines the fundamental aim and purpose of the research, it represents the direction of the research which is obtained from the problem analysis.

This research project is practice oriented and is aimed to provide knowledge on how to comply with the conditions set by the three main chain actors (producers, retailers and consumers) in order for them to participate in local food supply chains. The problem finding phase is not passed in this research. The problem analysis shows the problem of The Greenery in setting up local food chains; it is unclear what the conditions of the three main chain actors are for participating in local food supply chains. The diagnosis phase of this research focuses on finding the conditions under which the three main chain actors will participate in local food supply chains set up by The Greenery. Subsequently the design phase provides solutions to be able to comply with the conditions found in the diagnoses phase. Figure 6 schematically shows the research phases a research can cover. This research will cover the phases in the red outline.

Figure 6 Research project

Research objective:

To give recommendations to The Greenery how to set up local food supply chains by investigating in what way local food supply chains should be arranged in order to meet the conditions of producers, retailers and consumers.

Research questions

From the research objective the general research question is derived below. To be able to answer the general research question, specific knowledge is necessary. To find this knowledge, specific research questions are set up.

General research question
In what way should local food supply chains be arranged in order to meet the conditions of producers, retailers and consumers?

Specific research questions:

1. In what way are food supply chains arranged in general?

2. Under what conditions are producers prepared to offer locally produced food products?

3. Under what conditions are retailers prepared to sell locally produced food products?

4. What are general motivations for consumers to buy locally produced food products?

5. What awed to be the role of The Greenery in local food supply chains, based on literature?

6. In what way can the Greenery best comply with the conditions and motivations found in literature?

7. Based on which strategies can The Greenery select their strategy on local food supply chains?

Research framework

A research framework is a schematic and visualized rough representation of the steps to be taken to realize the research objective. Literature research is conducted into the conditions which have to be met in order for local food supply chains to be successful. The results of the literature research are used to make a theoretical framework. The theoretical framework depicts the different variables in this research and the relation between these variables. The methodological framework indicates in what way the empirical research is conducted. In the empirical research producers, employees from The Greenery, and retailers are interviewed. Figure 7 depicts the research framework used for this research.

Literature on local food sourcing

Literature on food marketing/communication to consumers

Literature food supply chains

Literature on consumer preference of local food

Literature on supply chain management

Theoretical framework

Methodological framework

Methodological literature

- Interviews potential customers and producers

Acquiring empirical data

-Interviews The Greenery employees
- Company data

Analysing theoretical and empirical data

Recommendations to The Greenery in what way to set up local food supply chains
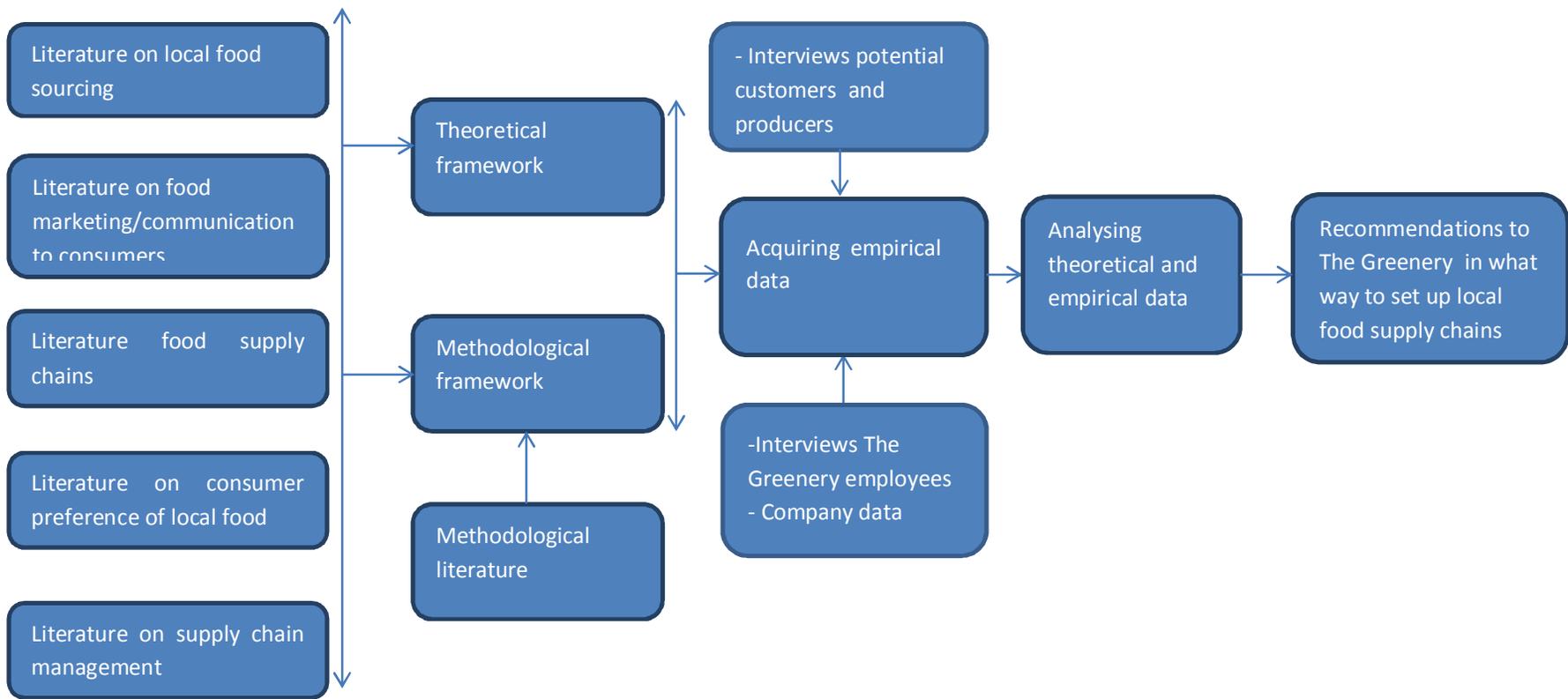
Figure 7 Research framework

1.3 Technical research design

The technical research design consists of three parts: research materials, research strategies and the research planning. These aspects will give an answer to, how the research project will be carried out (Verschuren & Doorewaard, 2010).

Research material
Below the research materials for each specific research question are stated.

1. In what way are food supply chains arranged?
- Scientific literature (books, journals and articles) like:
    o Journal of supply chain management
    o International journal of consumer studies
    o Journal of Rural Studies
    o British Food Journal
    o International Journal of Physical Distribution & Logistics Management
    o Renewable Agriculture and Food Systems

2. Under what conditions are producers prepared to offer locally produced food products?
- Same data sources as specific research question 1
- Interviews with producers which are member of The Greenery

3. Under what conditions are retailers prepared to offer locally produced food products?
- Same data sources as specific research question 1
- Interviews with supermarket managers and central sourcing manager

4. Why do consumers buy locally produced food products?
- Same data sources as specific research question 1

5. What is the role of The Greenery in local food supply chains?
- Same data sources as specific research question 1
- Interviews
    o Employees of The Greenery
        ▪ Logistics
        ▪ Quality management
        ▪ Marketing and Communication
        ▪ Sourcing department
    o Potential customers of local food
        ▪ Supermarket managers
        ▪ Central sourcing managers
- Company data
    o Data from The Greenery
        ▪ Company guidelines/regulations
        ▪ Current supply chain procedures

- o Data from potential customers of local food
  - Sales figures
  - Company guidelines/regulations

6. In what way can the Greenery best comply with the conditions found in literature?
- Same data sources as specific research question 5

7. Based on which strategies can The Greenery select their strategy on local food supply chains?
- Same data sources as specific research question 5

Research strategies

Desk research is performed in the first part of the diagnosis phase. Through literature research insight is gained into the general phenomenon of (local) food supply chains. Furthermore literature is examined to find the conditions set by the producers and retailers for them to participate in local food supply chains and to find the motivations of consumers to buy local food. The results of the desk research are a number of conditions and motivations. The Greenery needs to comply with these conditions and provide the products consumers wish in order to set up local food supply chains.

Interviews are conducted in the second part of the diagnoses phase and in the design phase. The results of the desk research are used as bases for the interviews. The interviews are conducted in order to find in depth information and innovative ideas on how to structure local food supply chains. Therefore open question interviews are more fit then closed question interviews.

Research planning

The time schedule is modelled in a Gantt chart, which can be found in annex 1. This Master thesis is scheduled to take approximately six months. The start of the research was in the beginning of September, the research ends in the beginning of March.

2. Food supply chains

2.1 Introduction

This chapter answers the first specific research question; in what way are food supply chains arranged? The answer to this research question is found through literature study. The main aim of this chapter is to get an overview of the important characteristics of food supply chains. This information is used to determine the basic characteristics and challenges of food supply chains. In chapter three specific conditions particularly for local food supply chains are discussed. First the definition of a supply chain is given. A supply chain is; 'A network of relationships within a firm and between interdependent organizations and business units consisting of material suppliers, purchasing, production facilities, logistics, marketing, and related systems that facilitate the forward and reverse flow of materials, services, finances and information from the original producer to final customer with the benefits of adding value, maximizing profitability through efficiencies, and achieving customer satisfaction' (Stock, 2009). Food supply chains have some characteristics which are specific for these supply chains (van der Vorst et al. 2005)in (Vlajic et al. 2008):

- Shelf life constraints, quality decay of products, and requirements regarding product freshness and food safety;
- Long production throughput times, product dependent cleaning and processing times, production seasonality and (necessity) for quality testing time;
- Variability of product quality and supply quantity of farm-based inputs;
- High volume production systems and capital-intensive machinery;
- Specific requirements for logistic processes;
- Unpredictable consumer demands;
- Legislations concerning food production, distribution, trade, quality of products etc.

Next to the characteristics of food supply chains, logistics and the coordination and management of these supply chains is discussed.

2.2 Food supply chain characteristics

Perishability
An important complicating factor in food supply chains is the fact that food products are perishable (van Donk et al. 2008). In food supply chains and especially fresh produce supply chains, products have to move fast from producer to consumer in order to maintain product quality. 'Product perishability creates uncertainty for the buyer with respect to product quality and the reliability (i.e. quantity) of supply. It creates uncertainty for the sellers in locating a buyer, as perishable products must be moved quickly to the marketplace to avoid deterioration, leaving seller unable to store the product awaiting favourable market conditions' (Rong et al. 2011; Hobbs et al. 2000; Georgiadis et al. 2005).

Food regulation and liability
'Food regulation in general is aimed at protecting the consumer's health, increasing economic viability, harmonizing well-being and engendering fair trade on foods within and between nations' (Aruoma, 2006). Regulation regarding product liability and food safety is severe in food supply

chains. The extension or strengthening of product liability laws along the supply chain may increase buyer uncertainty over product quality because the consequences of poor product quality are more severe (Hobbs et al. 2000). All along the Agri-food supply chains the requirements for food quality and safety impose stringent constraints on the supply chain processes (van Duren, 1998).

Traceability/transparency

Closely related to legislation and liability is the demanded transparency and traceability in food supply chains. Traceability in the supply chain has become a major issue in recent years, in particular related to the production of food (Olsen et al. 2010). Consumers call for food that can be fully trusted, they ask for safety guarantees and information with integrity to confirm their trust (Beulens et al. 2005). Next to the demands of consumers, national and international governments increase legislation in the area of food safety and food quality (Trienekens et al. 2011). One of the ways to guard food safety is supply chain transparency. Hofstede et al. (2004) in (Wognum et al. 2011) pose the following definition of transparency in supply chains: Transparency of a supply chain is the degree of shared understanding of and access to product-related information as requested by a supply chain's stakeholders without loss, noise, delay, or distortion. Supply chain transparency is essential for the traceability of food. In the event of food safety issues the source of the food products can be determined instantly. Traceability can also become part of the extrinsic quality attributes of food products. Traceability may be a powerful tool to help to establish the authenticity of food, and to check that claims made by producers about food are true (van Rijswijk, et al. 2008).

Price pressure

There is a lot of pressure on the food market. On the one hand food must be safe and of high quality and on the other hand there is constant price pressure from the retailers. 'The market for food products is more and more consumer-driven. Due to restructuring in the supply chain of retailers and low margins in retailing, downwards pressure on prices for the manufacturers is created. As a result, food chain actors face a dilemma, as on the one hand they have to produce in response to the market, but on the other hand, they have to produce at the lowest cost' (van Donk et al. 2008). Agricultural producers are forced to cut margins both from retailers, who directly buy food products, and from processors, who intend on sharing the burden raised by retailers' buying power (Kaditi, 2011).

Production lead times[1]

Food supply chains deal with natural products. The natural characteristics pose challenges like perishing, as described previously. A second challenge regarding natural production is the long production lead time (Van Duren, 1998; Taylor, 2005). It takes several months or even years to produce food products, due to this it is impossible to react fast on changing consumer demands

[1]Example, Brussels Sprouts. Brussels sprouts are planted around April and harvest from August till March. If in July it turns out that the demand for that winter is very high, growers cannot react. They will have to wait until next year before they can increase their production.

Sustainability

The globalized food system causes public concern about its sustainability due to mounting negative impacts of its operations on the environment, society and the economy (Yokovleva, 2007). Farmers, industry, trade and consumers are all keen to reduce climate change impact of food supply chains (Virtanen et al. 2011). Sustainable supply chain design is a new emerging approach that arose in

response to the increasing societal concerns regarding environmental issues and tries to embed economic, environmental as well as societal decisions in supply chains at design time (Chaabane et al. 2012).

2.3 Logistics

Logistics is separately mentioned in this chapter because it is essentially different in local food chains compared with non-local food chains (chapter 1). Food chains are now more global than ever and characterized by increased imports and exports and global sourcing of products (Matopoulos et al. 2010). As indicated in chapter one, logistical companies are consolidating their activities to a small number of vast logistical centres. One of the drivers of the globalization in food supply chains is the consumer demand for a wider choice of food products, often including those that are out of season (Matopoulos et al. 2010).

'Efficient logistics management has a positive impact on the success of food producers, because logistics activities greatly affect the profit of producers, the price of food products, and the satisfaction of consumers' (Bosona, et al. 2011).The main chain actors in local food supply chains are; producers, retailers and consumers. These actors are not expected to engage in the logistic operations of local food chains. Therefore logistics is regarded as an operation which The Greenery will have to arrange as The Greenery is a logistical service provider. Problem is that the current logistics of The Greenery is designed to transport high volumes with big trucks. Basically The Greenery can decide to perform the logistic activities itself or contract a logistic service provider (outsourcing). Hsiao et al. (2010) developed a decision-making framework for outsourcing logistics; 'A logistics outsourcing decision is related to asset specificity, core closeness and supply chain complexity'. Meaning that the lower the current investment by the firm in logistics assets, the higher the likelihood that the activity is outsourced. The less close the activity to the core business, the higher the likelihood that an activity is outsourced. Moreover, the higher the supply chain complexity, the higher the likelihood that an activity is outsourced.

Shelf-life is an important indicator of the effectiveness of the entire logistics operation. In the Netherlands, innovation in fresh logistics is oriented towards a longer shelf-life, next to a reduction of the negative external effects associated with road transport, such as congestion and pollution (Klink van, 2004). The effectiveness of fresh logistics can be measured by the shelf life of a product delivered at the retailer. When food products are harvested, the deterioration process starts. If the logistical operation reduces the time between the producer and the supermarkets, products are fresher and the products can be kept on the shelves of the supermarkets for a longer period. Next to the speed of logistics, the climate conditions during the time products are between the producer and the supermarket are crucial.

2.4 Supply chain management

Supply chain management is managing the supply chain as defined in the introduction of this chapter (Stock, 2009). Fawcett et al. (2007) defines supply chain management as ; 'the design and management of seamless, value added processes across organisational boundaries to meet the real needs of the end customer'. Ultimately, the goal of SCM is to achieve greater profitability by adding value and creating efficiencies, thereby increasing customer satisfaction (Groosse, 2000).

Food supply chain management

Food supply chain actors face a constant dilemma in producing consumer-driven (low cost, sustainable, healthy, tasteful) and producing against low cost. The balance of power in the food system is effectively shifting from processors to global retailers (Kaditi, 2011). The management of food supply chain networks is further complicated by specific product and process characteristics (Rong et al. 2011) (van Donk et al. 2008). As mentioned in the sections before, food products are perishable, therefore the supply chain should get the products from producer to consumer fast; 'Characteristics of (fresh) food products change over time, and this has important implications for the management of processes in the supply chain' (Trienekens et al. 2011). The requirements from governments and consumers regarding traceability and transparency put extra burden on supply chain management in food chains.

Table 1 gives an overview of the tasks and objectives of food supply chain management.

Table 1 Tasks and objectives of food SCM

Task of Food Supply Chain Management	Objective
Coordinating fast product flow	Getting food as soon as possible to consumers
Meeting food regulations	Providing the safest food possible
Providing supply chain transparency	Traceable food source and transparent supply chain
Cut costs while maintaining or improving food quality	Providing good food at lowest cost
In- or outsource logistics	Flexible logistics at low cost
Coordinating information flow	Enabling seamless information flow in supply chain

3. Producer and retailer conditions and consumer motivations

3.1 Introduction

This chapter answers specific research questions two, three and four of this research. The answers to the research questions are found through literature study. The literature study provides state of the art literature on these research questions. The conclusion of this chapter presents the conditions producers and retailers set in order to participate in local food supply chains. Furthermore, the motivations of consumers to buy locally produced food are presented. The findings of this chapter are used to build a theoretical framework. A theoretical framework is made to understand the conditions set by producers and retailers and the motivations of consumers and how these conditions and motivations are related. The framework is used in the empirical research to determine what empirical information is needed to answer the general research question.

3.2 Producer conditions

This section will answer the second specific research question: Under what conditions are producers prepared to offer locally produced food products? The Greenery is the initiator of the local food supply chains, it should therefore commit producers to these supply chains. This section is used to find the conditions producers set in order to participate in the local food supply chains.

Added value

Many farmers recognise that, if they are to remain profitable, they cannot just be commodity producers but must find ways to add value (Moverley, 2007). Farmers recognise that selling their products more directly to consumers would be an opportunity to become more profitable. 'Local food marketing offers opportunities for producers struggling to remain competitive in a global market space' (Morris et al. 2003). A British Policy Commission on the future of farming, noticed the same possibilities for farmers. It describes local food as 'one of the greatest opportunities for farmers to add value and retain a bigger slice of retail value' (Policy Commission, 2002). For the producers, a key motivation to participate in local food supply chains is therefore to retain more of the 'added value' of their products (Ilbery et al. 2005).

'The traditional role of added value was to distinguish brands from commodities. Later, a more competitive framework emerged, stressing superior customer value through operational excellence, customer intimacy or product leadership' (Chernatony, et al. 2000) (section 3.9). Next to the matter of how local food supply chains can add value, the question arises how this value is distributed within the supply chain. The value distribution is essential to farmers participating in local food supply chains. Value distribution will be a challenge for The Greenery since the supply chain coordination is in their hands. Literature is not exhaustive on the matter of value distribution. Looking at the definition of a supply chain; a dynamic and integrated system in which all firms integrated to increase the value of every chain (Awad et al. 2010), does shed some light on value distribution in supply chains. The definition indicates that in order for local food supply chains to be successful they should have an added value to each chain actor.

Time constraints

The second condition producers set to local food chains is the time it costs to participate in them. Recruiting producers to participate in local food supply chains will be challenging as 'producers do

not have the time to market their products' (Hardesty, 2008). Many producers see the opportunities local food can have for their company but do not have the time to set up and run local food supply chains. Interviews with farmers in New York (Uva, 2002) and California (Kambara et al. 2002) indicated that shortage of labour related specifically to marketing activities is consistently reported by farmers as being a barrier to direct marketing.

Infrastructure

Farmers who do find time to sell their products locally run into the problem that the current food supply chains and supply chain actors are not arranged to deal with local food. 'Lack of infrastructure related to distribution of local and regional food is reported as a barrier to local food market development' (Shipman, 2009). Customers like retailers need consistent deliveries of uniform products. For this, the local food supply chain lacks mid-scale, aggregation and distribution systems that move local food into mainstream markets in a cost-effective manner (Day-Farnsworth et al. 2009).

Training and education

Literature reports training and education to one of the barriers for producers to start local food supply chains. Growers often need education and training at the local level to meet market requirements and expand access to local customers on issues related to risk management; appropriate postharvest practices; recordkeeping; good agricultural practices (GAP) certification; and liability insurance requirements (Shipman, 2009). If the local food supply chains of The Greenery do not require additional training and education to producers this will be beneficial in attracting producers.

Conclusion

This research identifies four main conditions producers set to local food supply chains. Literature mentions marketing local food as a way to add value to food products. Producers are seeking ways to add value to their commodity products. Committing producers to local food chains will be easier if a price premium is given to producers, in this way the added value condition is met. A lot of producers do not have the time to market their own products and to invest a lot of time in setting up and running local food chains. Producers who do want to sell their products locally, encounter the problem that the supply chain infrastructure is not suited to handle smaller amounts of 'local' products. Because the supply chain infrastructure is not suited, the logistical costs of local products are often higher than with non-local products. Last condition is training and education. When producers set up their own local food supply chain they need training and education regarding food safety, risk management and need certification. This can be an important barrier to start selling locally since the time producers have is already limited.

3.3 Retailer conditions

This section answers the third specific research question. Under what conditions are retailers prepared to offer locally produced food products? The Greenery is intending to offer locally produced food products to retailers. In this chapter, literature is reviewed to understand the conditions which have to be met in order to successfully sell local food to retailers. Literature describes the increasing interest of retailers in local food. In an American survey, Dunne et al. (2010) finds that 'the widely observed increase in demand has made carrying local food a customer-driven practice in many stores'. The consumer demand has changed the attitude of retailers. Indirectly,

consumers have changed retailers' reasons for carrying local food as they have become more aware of the environmental issues related to food production, the impacts of rising energy prices and the influence of the recent economic conditions (Dunne et al. 2010). Also Dutch retailers are interested in local food. The largest retailer in The Netherlands; Ahold, mentions in its corporate responsibility report, the effort it makes to offer locally produced food products (Ahold, 2011).

Intrinsic product quality

The first condition retailers set is the product quality of local food. High product quality is one of the reasons for selling locally produced food products (Dunne et al. 2010). Product quality in this respect is the intrinsic quality of the products especially taste and freshness. In a survey among Small and Medium Enterprises (SME's) working in the agri-food sector, 65% identified freshness as the most essential attribute in local product positioning (Hingly et al. 2010). In a survey amongst Swedish retailers, five out of twelve retailers indicated they will increase their local food sales because consumers perceive their quality as superior (Ekelund et al. 2009).

Sourcing

Sourcing local food is perceived challenging by retailers. Inconsistent supply and delivery are among the factors that make local food purchase difficult for some conventional retailers and wholesalers leading to additional transaction and logistics costs for the buyers resulting in losses of money and trust (Abatekassa, et al. 2011). King et al. (2010) also comments on the challenge in sourcing local food by retailers. 'The current retail sourcing systems are ideally suited for sourcing consistent quality products at low cost from wherever they are available and so has been an integral part of an increasingly national and global food system'. The local products have to be delivered in the right quantities and the right quality in order for retailers to participate in local food supply chains.

Purchase volume

A more specific sourcing condition is the purchase volume required by retailers, which is an important issue in marketing local food through supermarkets. 'The supermarket's general preference is for purchasing high volume food products from fewer, larger producers or through local food aggregators in order to remain price competitive and to ensure product quality and quantity minimizing product safety related risks' (Abatekassa et al. 2011). For many producers in the local food sector, their production volumes are insufficiently large to meet the requirements of supermarkets and wholesalers (Morris et al. 2003). Therefore, supplying adequate volumes is the key challenge for local food supply chains. Direct shop delivery could be an option, however the delivery cost can be substantial (King et al. 2010). A solution literature mentions to overcome the issues with the purchase volume is cooperation. 'Local trade implies the need for collective action in order for producers to obtain purchasing economies of scale and maintain a stable, regular supply to customers' (Holt et al. 2005).

Food safety

Next to the logistical conditions food safety conditions are essential for selling local food to retailers. 'The retailers have an increasing liability and food safety related concerns to establish direct relationships with potential local food producers' (Abatekassa, et al. 2011). DeLind (2010) finds several regional US supermarkets which stop sourcing locally produced food products because of food safety regulations. On the other hand, Dunne et al. (2010) finds that one of the reasons for retailers to source local food products is their perceived higher food safety.

Tracking and tracing

Tracing an entity means to identify its origin by tracing back in the supply chain, whereas tracking an entity means to follow the path of the entity through the supply chain from supplier(s) to consumers (Opara, 2004). The European legislator defines traceability as `the ability to trace and follow a food, feed, food- producing animal or substance intended to be, or expected to be incorporated into a food or feed, through all stages of production, processing and distribution' (European Union, 2002). Large European retail companies are very rigorous in their criteria for traceability (Schwägele, 2005). Retail enterprises take an increasingly dominant position in the entire supply chain, and put pressure on upstream enterprises adopting traceability system (Jinshi, 2011). Remarkable in this sense is that products in supermarkets often end up in one large bin. The growers can then no longer be identified, while until that stage the products are 100 per cent traceable (Aramyan, et al. 2007)

Communication to the consumer

Literature finds communication to the consumer to be important for the success of local food. Ilbery et al. (2005) even view this as the most distinctive attribute of local food. 'While the number of nodes between the producer and the consumer may be minimized, the crucial distinction is that local food supply chains carry the food to the final consumer 'embedded' with information about where the product comes from and how it is produced'. Carrying this information has several advantages over non-local food. 'It is perceived that successful communication with the end-consumer will help develop mutual trust and differentiate local products from other conventional and non-local products' (Sage, 2003). The information which is carried with the products should be trustworthy since, 'maintaining a product's credibility and reputation is essential to keep consumer demand for local products (IGD, 2006). This is not yet the case with local food. 'Especially the communication of what 'local' means is inconsistent and most of the times unclear to consumers' (Dunne et al. 2010). Next to the fact that selling local food is advantages for producers, retailers can also gain from them. Offering locally produced food products can improve the reputation of retailers. 'Retailers in the United Kingdom, and to a lesser degree in the United States, are increasingly drawing on the discourses of the local as part of a marketing strategy aimed at distancing themselves from the negative connotations of globalized and industrialized food practices' (Blake et al. 2010).

Communication and information provision efforts can have an impact in terms of changing consumers' knowledge, shaping their attitudes and redirecting their decision making, including food choices and dietary behaviour (Verbeke, 2008). Almaani et al. (2004) identifies three key elements as being essential for retailers' marketing communications campaigns for sustainable consumption namely "segmentation and target information", "visibility of products and of communication", and the need to "use changing routines to capture attention." The first focuses on the need to target very precisely, the information a retailer wants to provide to the right group of customers. The second emphasises the visibility of products and communication with the accent being on ensuring that products and communications are placed in visible spots, easily accessible and available. The third stresses the importance of changing marketing communication messages regularly to continually capture customers' attention. Ways to attract and inform consumers are:

- *Certification and labelling* systems belong to the most effective instruments that can induce positive changes in consumer behaviour. The empirical research findings, showing that consumers prefer information attached to products and labels, support this conclusion (Koszewska, 2011).

Figure 8 EKO certificate (mvo Nederland 2012)

An example of certification is the EKO certificate indicating products are produced organically.

- The *product packaging* also plays a major part in providing information to consumers. Numerous market trends suggest a growing role for product packaging as a brand communication vehicle (Underwood et al. 2001). Product packaging serves three purposes, namely as a marketing tool, logistical tool providing protection and conservation and enabling transport. Last purpose of packaging is ethical namely, its environmental impact and packaging can be used to communicate the social impact of the product is contains (Vernuccio et al. 2010). An example of product packaging in fruit is

Figure 9 communicating through product packaging (The Greenery 2012)

the product packaging of little pears. The looks and information on the bag communicate the little pears are meant for children.

- *Communication through websites* is an important way for companies to communicate there environmental and social responsibility (Biloslavo et al. 2009). Currently almost all corporate websites have a section regarding sustainability and corporate social responsibility. From the top 50 American companies 80% has a fully functioning corporate social responsibility website (Gomez et al. 2011).

The three communication tools which are mentioned can all be part of and supporting the 'brand' of the products. 'A brand is a name, term, design, symbol or any other feature that identifies one seller's good or service as distinct from those of other sellers' (Bennett, 1988). 'Most brands are systematically build around the five A's : brand awareness, brand association, brand attitude, brand attachment and brand advocacy' (Lehman et al. 2008).

Conclusion

Intrinsic product quality is reported to be one of the reasons for retailers to sell locally produced food products. Sourcing locally is challenging, the supply chain is currently arranged to handle consistent quality from wherever it is available. Retailers are not used to buy their products directly from multiple (small) producers. In line with the sourcing challenges the purchase volume is an important condition for supermarkets to participate in local food supply chains. Aggregating products from multiple producers could be a way to increase the product volume sold to supermarkets. Because of food safety problems in the past and their negative effects on the image of retailers, the food safety regulations are strict. Literature is not unambiguous the role of food safety in sourcing locally produced food, it is a reason both to start and stop selling local food products. Despite this ambiguity, food safety is of major importance for the success of local food supply chains. Clear communication to consumers is essential for the success of local food. The definition of local is crucial in this respect, clearly defining local improves the credibility and distinctiveness of local food. The way in which the consumer is informed can differ. Most important instruments are certification and labelling and information on product packaging. These instruments can be supported by a website with more in-depth information.

3.4 Consumer motivation

This section answers the fourth specific research question: Why do consumers buy locally produced food products? As stated in the introduction buying local food is becoming increasingly popular. Adams et al. (2010) find a change in consumer perceptions for local and organic food over the past

few decades. 'Various drivers may have contributed to the shift toward local food, such as greater concern about industrialized organic agriculture and greater consumption of fresh produce'. Several scientific articles are devoted to find the reasons and motivations for people to buy local food. This chapter describes the different motivations of consumers to buy locally produced food products described in literature.

Taste and freshness

Freshness is a decisive attribute for the consumer choice of fruits and vegetables (Ragaert et al. 2004; Péneau et al. 2006). Literature describes the taste and freshness of locally produced food products as one of the main reasons for consumers to buy local products. Taste and freshness are grouped together because both concepts are interrelated and based on the articles no clear distinction between these concepts could be made. Consumers perceive the quality, namely freshness and taste of local food as superior (Pearson et al. 2009; Keeling-Bond et al. 2009). 'The perception of high standards of freshness and taste (particularly for fresh fruits and vegetables) is one of the reason consumers buy locally produced food products' (Pearson et al. 2011). The British Institute of Grocery Distribution (IGD) found as most important reason to buy locally produced food products the superior freshness. Reason for this is the shorter distance the products have travelled (IGD, 2010). The majority of respondents to a national, United States, study cited freshness (82 per cent), as reason for buying local food at direct markets or in conventional grocery stores (Food Marketing Institute, 2009). In a survey amongst urban consumers Kahn et al. (2010) find freshness the most important reason for buying locally produced food products. Wolf et al. (2005) found that consumers perceive local produce to be fresher looking and fresher tasting.

Supporting the local community

Next to the better perceived product characteristics of locally produced food, consumers also buy these products because of social reasons. Through buying locally produced food products, consumers feel they support the community (Pearson et al. 2009; Pearson et al. 2011). The British Institute of Grocery Distribution (IGD) found as second most important reason to buy locally produced food products, the support of local food producers (IGD, 2010). Support for the local economy is a reason for 75 per cent of US shoppers for buying local food at direct markets or in conventional grocery stores (Food Marketing Institute, 2009). A strong appreciation of local agriculture and a desire to support local farmers, whose loss is perceived as having negative consequences for local communities and their economies, is one reason identified as motivating consumer support of local food systems (Bean et al. 2011).

Sustainability

The environmental impact of food production and transportation has affected the opinion of consumers towards locally produced food products. Consumers believe locally produced food products are more sustainable than conventional produced food products (Pearson et al. 2009, Born et al. 2006). Consumers buy locally produced food because of the perceived environmental benefits (Pearson et al. 2011). The third most important reason for consumers to buy locally produced food is because they think it is good for the environment as they have not travelled as far (IGD, 2010). Environmental impact of transporting foods across great distances is a reason for 35 per cent of US shoppers for buying local food at direct markets or in conventional grocery stores (Food Marketing Institute, 2009).

Although consumers believe locally produced food products are more sustainable, questions are raised to whether this is true. 'This perception has been reflected through the widespread use of the phrase 'food miles', and a popular view is that greater food miles equate to higher levels of greenhouse gas emissions for food items. A problem with this viewpoint is that transport is only one part of the overall food system. All other parts of the food system are also responsible for producing greenhouse gases, and without further analysis it may be wrong to assume that the transport element of the food system is dominant in terms of greenhouse gas production' (Edwards-Jones, 2010).

Provenance

Knowing where food products come from is regarded as a quality attribute. In many cases, regional provenance is recognized as providing social, economic, environmental and health benefits for producers and consumers (Delind, 2006). Consumers better trust local food because the source is known (Pearson et al. 2009). Also Pearson et al. (2011) argues that knowing the source, or provenance, of the product' is an important reason for buying locally produced food products. Barling et al. (2009) finds for the wheat industry the provenance of products becomes more important for consumers for the perception of food safety and as a communication tool. Consumers need to feel a connection with the food they eat; therefore the main task is conveying this through marketing strategies (Hingly et al. 2010).

Health benefits

Consumers in general perceive local food as healthier over non-local food. Personal health benefits may arise from local food networks as they increase the availability and diversity of seasonal foods that may encourage the purchase of more fresh and unprocessed foods. Further, perishable foods are likely to have improved nutrient levels as they may be fresher as a result of a reduction in time associated with both transport and storage (Pearson et al. 2011). There is substantial evidence for the claim that the presence of various channels for the local exchange of foods enhances health (Guptill et al. 2002).

Authenticity

Last motivation for consumers to buy local food is their aversion from the 'industrialised' conventional food supply chains. The authenticity (not being associated with mass production) is one of the reasons for consumers to buy locally produced food products (Pearson et al. 2011). The growing consumer interest in product attributes such as authenticity has fuelled the demand for regional foods (Teuber, 2011).

It is however questionable whether selling local food through the retail channel will keep the authenticity of local food. Local food is regarded as a counteraction to the industrialised food sector of large producers and retailers (Ilbery et al. 2005). When large retailers sell local food it will be challenging to still keep the authentic image of local food.

Conclusion

This chapter describes six main motivations this research found in literature for consumers to buy locally produced food products. These motivations are depicted in table 2. Luning et al. (2009) describes the way in which consumers perceive food quality. The quality of food products perceived by consumers can be divided into several quality attributes. These quality attributes are divided into two categories. 'The intrinsic attributes, these are inherent to the physical product, like nutritional

value, taste, colour etc. The extrinsic attributes do not necessarily have a direct relationship with the product properties but can affect consumers' quality perception. Extrinsic attributes are production system characteristics or the quality which is assigned by marketing and communication'. The most important quality attribute of local food, taste and freshness, is an intrinsic quality attribute. Furthermore the perceived health benefit is an intrinsic quality attribute when local food is actually healthier than non-local food. The other four are extrinsic quality attributes. Literature shows that four out of six quality attributes of locally produced food are extrinsic. This suggests that next to the taste and freshness of the products the marketing and communication around the local food supply chains is essential to its success.

Table 2 Motivations to buy local food

Motivations	Intrinsic quality attribute	Extrinsic quality attribute
Taste/ Freshness	X	
Support community		X
Sustainability		X
Provenance		X
Health benefits	X	
Authenticity		X

3.5 Reasons for not buying locally produced food products

Next to the motivations of consumers to buy locally produced food products, literature also describes reason or 'barriers' why consumers do not buy these products.

Price

The first barrier is the price or perceived price of local food. 'An obvious obstacle for local food is the perceived price premium' (Hingley et al. 2010). In a questionnaire spread under urban consumers Kahn et al. (2010) mentions barriers which hold consumers from buying locally produced food products. Most important barrier is the higher price. In a research aimed to find ways to get local food out of the niche market affordability is one of the two barriers for local food to become more popular (Little et al. 2010).

Availability

Local foods may be more difficult for consumers to find than mainstream food due to seasonal constraints, limited accessibility (Hardesty, 2008). Little et al. (2010) and Kahn et al. (2010)find the limited access to local food the second barrier for local food to become more popular. Interestingly, the fourth barrier withholding urban consumers is the fact that locally

Figure 10 Preferred place to buy local food by rural and urban consumers (Weatherell et al. 2003)

26

produced food products are not available in supermarkets. To make locally produced food products better available the urban consumers suggest to sell the products through supermarkets (Kahn et al. 2010). Figure 10 depicts the preference of rural and urban consumers where to buy locally produced food products. Especially the urban consumers (50%) prefer to buy local food in supermarkets.

3.6 Conclusion of chapter three

This chapter aims to answer the second till fourth specific research questions, what are the conditions of producers and retailers and the motivations of consumers to participate in local food supply chains? Table 3 gives an overview of the answers to the second till fourth specific research questions.

Table 3 Conditions of producers, retailers and motivations of consumers

Producer conditions	Retailer conditions	Consumer motivations
Added value	Food quality	Taste/ Freshness
Time availability	Sourcing	Support community
Infrastructure	Purchase volume	Sustainability
Training and education	Food safety	Provenance
	Communication to consumer	Health benefits
	Tracking and tracing	Authenticity

The conditions of the producers are interrelated. The added value of participating in local food chains partly determines the amount of time producers are willing to invest in them. Same holds for training and education, the higher the added value and the higher the product volume the more producers are willing to get training and education. The conditions of producers and retailers are also interrelated. The infrastructure producers need is linked to the sourcing and purchase volume of retailers. Literature indicates that producers do not have enough time to set up local food supply chains. Even if they would have this time, retailers are not able to deal with the supplied volumes and seasonality. Because of this it is advantageous that The Greenery is intending to set up local food supply chains. A large trading company could be able to overcome the issues of sourcing and time availability. A down side to this is that the authenticity could be lost.

In local food marketing communication to the consumer plays a key role. Both intrinsic and extrinsic quality attributes of local food should be communicated to consumers. By doing this local food is differentiated from non-local food.

4. The role of The Greenery in local food supply chains

The aim of this research is to give recommendations to The Greenery in what way to design a supply chain which meets the conditions of the three main chain actors. In this respect it is important to view the role of The Greenery in the proposed local supply chain of producers, retailers and consumer. This chapter answers the fifth research question about the role of The Greenery in local food supply chains. The food products are produced by the producers and sold by retailers to the end-consumer. The most obvious task of The Greenery in this respect is logistics, however there are all kinds of other activities The Greenery has to perform in order for local food supply chains to be successful.

Value distribution

The activities The Greenery has to perform in local food supply chains can be best described as supply chain management. 'Processes must be coordinated between all the firms in the value chain to achieve improved performance and service. This form of external process integration, which is called value chain coordination, is the focus of modern supply chain management' (Awad et al. 2010). The value chain concept was developed by Michael Porter and describes the 'categories of activities within and around an organisation which together create a product or service' (Johnson et al. 2008). The interorganizational links which together are necessary to create a product or service is called the value network. The task of The Greenery is to coordinate the value network (supply chain) to assure that consumers get the products they expect and preferably better. Furthermore, 'the objective of supply chain management is to maximize the overall value generated rather than profit generated in a particular chain' (Chopra et al. 2010). The distribution of the created value is very important especially since consumers perceive local food as expensive and producers expect local food to add value to their business. As indicated before (section 3.2), added value can be achieved through a competitive framework (figure 11), stressing superior customer value through operational excellence, customer intimacy or product leadership.
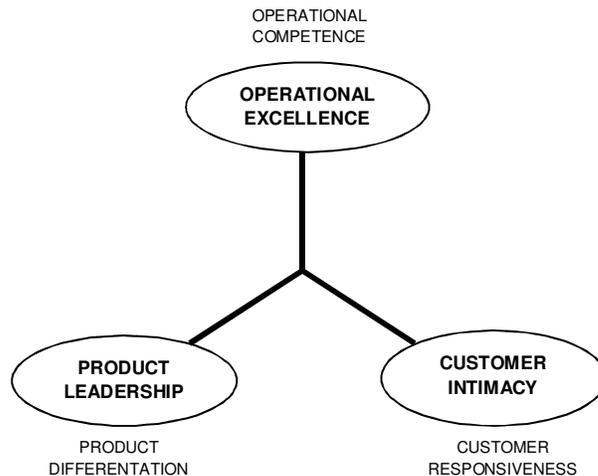

Figure 11 Three generic competitive strategies Source: Based on Treacy and Wiersema (1995)

Treacy and Wiersema (1995) describe these three competitive strategies as follows:

1. Operational excellence – the focus is on making better operations, efficiency, and supply chain management. Delivering a combination of reasonable quality at a low price,
2. Product leadership – the focus is on high quality, innovation, development, design, brand marketing and time-to-market. Offering the client the best product,
3. Customer intimacy – the focus is on customer relationships, tailored products, individual customers, delivering products on time above customer expectations;

The local food supply chains The Greenery is intending to set up resemble quite some characteristics from product leadership and customer intimacy strategy. Customer intimacy is required because main reason for setting up local food supply chains is the preference of consumers to eat local food. Here customer relationships are very important, consumers expect high quality which should be delivered on time and preferably above consumer expectations. The competitive strategy which is however most suitable for the local food supply chains is product leadership. The consumers buy local food because of its superior taste and freshness, therefore the focus of the companies in the local food supply chains should be on high product quality. Next to the intrinsic quality attributes consumers value, the extrinsic quality attributes are essential to the success of local food. Therefore, especially brand marketing is important to communicate the extrinsic quality of local food.

Information systems

As the complexity of the supply chain increases, collaboration and information-sharing among partners become increasingly essential (Bartlett, 2007). The utilization of supply chain management information systems is considered an imperative requirement for effectively managing supply chain networks. The supply chain management information systems are associated with significant improvements in supply chain efficiency (White et al. 2001). Supply chain management information systems are information systems used to coordinate information between internal and external customers, suppliers, distributors, and other partners in a supply chain (McLaren et al. 2004). More specifically, Kärkkäinen et al. (2007) identify three tasks of supply chain management information systems:

- Transaction processing
- Supply chain planning and collaboration
- Order tracking and delivery coordination

The use of supply chain management information systems has the natural effect of increasing interorganizational coordination activities, as well as increasing the integration that occurs between supply chain members (Hill et al. 2002). The advent of internet business-to-business applications created a range of new opportunities for managing supplier relationships (Da Silveira, et al. 2006).

The effects of using supply chain management information systems appear to be positive. On the other hand literature also indicates that research is lacking on the development, implementation and capabilities of ICT based information systems. 'Although the effect and influence of ICT both as an inspiration for new business and as an enabler of a fast flow of information to support operations and supply chain management is clear, we still know relatively little about the relationship between supply chain management and ICT. We rarely investigate what is needed to develop and implement appropriate information systems nor do we study if information systems are capable of providing such seamless information flows' (van Donk, 2008).

Communication to consumers

The local food supply chain concept is set up in line with the strategy of The Greenery to add value to their products. The added value of local food is the intrinsic quality and the extrinsic quality attributes of the locally distributed products. To exploit the extrinsic quality of local food communication to consumers is vital (Alonso, et al. 2002).

The generic competitive strategy (figure 11) which best suites the local food concept of The Greenery is product leadership. One of the characteristics of this strategy is the focus on brand marketing. The Greenery is the coordinator of the information flows in the local supply chains. Communication to the consumers is therefore a logic task for The Greenery since it holds all information about the provenance of the products.

Time between producer and consumer

The superior taste and freshness of local food products is the most heard argument from consumers to buy locally produced food products. Consumer studies show the concept of freshness to be determined primarily by time from harvest/production to the consumer (Cardello et al. 2003). This indicates that the speed of the supply chain is vital to delivering fresh products to consumers. The results of a large consumer study by Péneau, et al. (2009) suggests that freshness of fruits and vegetables 'describes a level of closeness to the original product, in terms of distance, time and processing'. The findings of Péneau et al. go a step further. They indicate that not only time is important, also the closeness to the original product, so if products are processed and the distance between production and consumption is important.

Guard food safety

Fresh produce supply chains are intrinsically vulnerable to food hazards (Jacxsens et al. 2010). Retailers demand food which is safe and traceable, regulation sets requirements to the way food is produced and distributed. The Greenery as initiator of local food supply chains and supply chain manager will have to secure the safety of the distributed food.

Logistics

The logistical operations in local food supply chains will be different from the logistical operations The Greenery currently performs. The local food supply chains require intricate logistical systems to distribute the products from individual producers to the supermarkets.

Simchi-Levi et al. (2000) identify three distribution strategies:

Figure 12 Direct shipment with milk runs (adapted from Chopra et al. 2010)

- Direct shipments. In this strategy the local food products are directly shipped from producers to the supermarkets, without passing distribution centres. Chopra et al. (2010) mention a variation to direct shipments, direct shipments with milk runs. Products from one or multiple suppliers are distributed to one or multiple buyers.
  - o Advantages
    - ▪ The expenses of operating distribution centres are avoided.
    - ▪ Lead times are reduced.
  - o Disadvantages
    - ▪ High supply chain risks.
    - ▪ The transportation costs increase because smaller trucks are send to more locations.
- Warehousing. In this strategy warehouses keep stock and supply customers with the required products. In the warehousing strategy, milk runs can also be used.
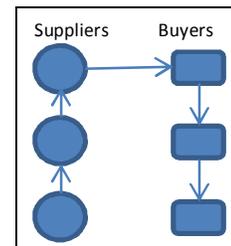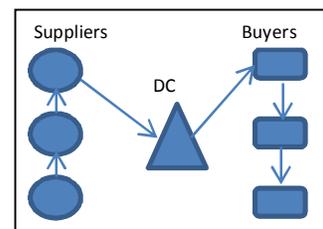

Figure 13 Warehousing/cross docking with milk runs (adapted from Chopra et al. 2010)

- Advantages
  - Being able to cope with changes in customer demand.
  - Coping with uncertainties in quantity, quality of the supply supplier costs and delivery times.
- Disadvantages
  - High costs of distribution centres and inventory.
  - Fresh produce cannot be stored for a longer period.
- Cross-docking. In this strategy products are distributed continuously from producer through warehouse to retailers. The warehouses however rarely keep products longer than 10 to 15 hours.
  - Advantages
    - Inventory costs decrease
    - Lead times are reduced
  - Disadvantages
    - Very difficult to manage, advanced information systems are required to ensure all pickups and deliveries are made in the right time window.
    - Cross-docking strategies are effective only for large distribution systems with a large number of vehicles delivering and picking up goods at the same time

5. Theoretical framework

The information found in the literature study, is used to build a theoretical framework. Figure 14 represents the theoretical framework.

The theoretical framework consists of two circles. The largest circle contains the conditions retailers and producers set to local food supply chains and the motivations of consumers to buy locally produced food products. The smaller circle contains the responsibilities of The Greenery in local food supply chains. These are tasks and features of local food supply chains for which the overall responsibility is not with one of the three main chain actors. Below responsibilities of The Greenery and their relations to the conditions and motivations of the three main chain actors are explained.

Time between producer and consumers: This variable is responsible for the healthiness, freshness and partly the taste of the locally produced food products. When the time it takes for the food products to go from producer to consumer is reduced the taste and freshness of food products in the supermarkets improves. Literature indicates that the perception of consumers about freshness is also positively influenced when products are not processed and when they are produced close to the point of sales.

Communication to consumers: This variable is responsible for satisfying most of the motivations of consumers to buy locally produced food products. The extrinsic quality attributes of local food, supporting the local economy, sustainability, authenticity and provenance need to be communicated to the consumer. By communicating these extrinsic quality attributes consumers understand the difference between local food and non-local food.

Coordinating information flows: Local food supply chains can be seen as links between producers, retailers and consumers with a company like The Greenery enabling the supply chain to function. Information flows in supply chains are just as important as product flows. Ordering, billing, product quality information, consumer preference etc. are all relying on well managed information flows.

Logistics: Producers are interested in selling locally produced food products to retailers. In turn retailers are interested in selling locally produced food products to consumers. Literature clarifies why food producers and retailers not very often set up direct relations. The main challenge is logistics. Retailers prefer to do business with a limited number of suppliers with high purchase volumes. Producers do not have the infrastructure to supply retailers with the adequate volumes and consistence. When the logistics are set up right, direct deliveries from producer to supermarkets are most could be viable.

Value distribution: The main reason of producers to participate in local food supply chains is the added value to their business. Participating in local food supply chains takes extra time and possibly additional training and education. Producers are only willing to participate when these extra efforts are rewarded. The second motivation for consumers is to support the local economy. Therefore the value created in the local food supply chain should be retained locally.

Guarding food safety: Retailers demand food which is safe and traceable. The Greenery must meet the demands of the retailers in order to sell to the retailers, therefore The Greenery should ensure

the food safety and traceability of the local foods. Literature regards food safety is a challenge in local food supply chains since the current food safety systems cannot always be used.

Next to the relations between the responsibilities of The Greenery with the conditions and motivations of the main chain actors, the responsibilities of The Greenery are also interrelated.

- *Time between producer and consumers/Communication to consumer:*
  The time between producer and consumer can also be seen as an extrinsic quality attribute. Communicating the time between producer and consumer can distinct local food from non-local food.
- *Time between producer and consumers/logistics:*
  The time between producer and consumer is mainly dependent on the speed of logistics and the number of pick-up and deliveries.
- *Time between producer and consumers/value distribution:*
  Reducing the time between producer and consumer and adequate communication about this can add value to food products because of their superior freshness. This extra value could be distributed to the producers.
- *Communication to consumers/logistics:*
  Short distances between producer and consumer and efficient logistics should be communicated to the consumer. This at least gives the image of a sustainable supply chain. When the exact producers of the food products are communicated to the consumers this implies that the logistical processes should be able to separate products from different producers. The logistic system should carry this information from producer to consumer.
- *Communication to consumers/value distribution:*
  Supporting the local economy is one of the motivations of consumers to buy locally produced food products. Communicating this distinguishes local food from non-local food.
- *Communication to consumers/coordinating information flows:*
  As mentioned in section 3.4, the crucial distinction between local and non/local food distinction is that local food supply chains carry the food to the final consumer 'embedded' with information about where the product comes from and how it is produced. This implies that the information systems supporting the local food supply chains should be capable of processing this ´embedded´ information.
- *Coordinating information flows/guarding food safety:*
  In order to ensure food safety, the food products should be traceable. The information systems should provide this information.

Consumer motivations

Intrinsic quality attributes

Taste and freshness
Health benefits

Extrinsic quality attributes

Support local economy

Sustainability
Provenance
Authenticity

Producer conditions

Time between producers and consumers

Communication to consumers

The Greenery

Coordinating information flows

Guarding Food safety

Value distribution

Logistics

Time constraints

Added value

Training and education

Infrastructure

Purchase volume

Sourcing

Retailer conditions

Communication

Intrinsic food quality

Food safety

Tracking and tracing

34

Figure 14 Theoretical framework

6. Methodology

6.1 Research design

The research design makes sure that the evidence obtained during this research, is sufficient to answer the research questions as explicit as possible. A variety of research designs exist, the research design used for this research is the case study. Verschuren and Doorewaard (2010) describe case studies as a research strategy in which 'the researcher tries to gain a profound and full insight into one or several objects or processes that are restricted in time and space'. In this research the 'object' or 'case' is local food supply chains and the phenomenon researched is 'arranging local food supply chains for The Greenery which meet the conditions of producers, retailers and consumers'. This is a single case study since only the case of The Greenery is used in this study.

For this research an intrinsic case study is executed since the phenomenon and case are unique. The research approach is descriptive (exploratory) since the unique case is explored. The analysis of the data is prospective, it is pointing to the present with the intention that expectations and decisions are based on this. The type of case study is 'evaluative'. The primary purpose is to use the data to evaluate the value of some practise, program, movement or event (Merriam, 1988). In this research this means that from the multiple strategies to arrange local food supply chains the best strategy is searched.
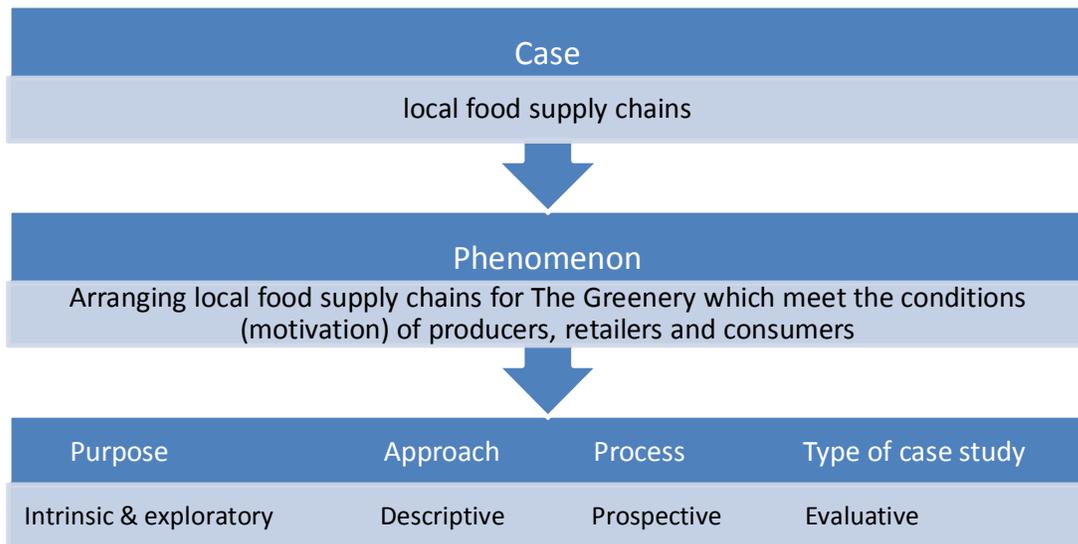
Case			
local food supply chains			

Phenomenon			
Arranging local food supply chains for The Greenery which meet the conditions (motivation) of producers, retailers and consumers			

Purpose	Approach	Process	Type of case study
Intrinsic & exploratory	Descriptive	Prospective	Evaluative

Figure 15 Case study design

6.2 Reliability and validity of data

Case study designs cannot provide a basis for making statistically valid generalizations beyond that particular case. 'A case study can consist of one case and we cannot be confident, in any statistical sense, that the case represents a wider class of cases. It is too small for credible statistical generalization' (De Vaus, 2009). In this research only one case, The Greenery, is used. Because the case study is based on only one case the external validity is not high enough to generalize to other fruit and vegetable trading companies willing to set up local food supply chains. The research can however give good general indications of how these companies can set up local food supply chains.

The reliability of the empirical research is being maintained by the in depth interviews and the different backgrounds of the interviewees. Through this interview technique the opinion of the interviewees is researched in depth. It is therefore likely that the interviewees give the same answers when the interviews are repeated. The interviewees which are selected have different backgrounds. Producers of different crops and farm sizes and retailers from different supermarket chains are interviewed.

To guard the internal validity first extensive literature research has been conducted on the conditions producers, retailers and consumers set in order to participate in local food supply chains. The information which is obtained through literature research is verified through empirical research. In the empirical research interviews with producers, employees of The Greenery and retailers will take a central place.

6.3 Data Collection

The data in case study designs can be collected in several ways. The sources should be divided in groups and linked to appropriate methods of accessing the sources (Verschuren and Doorewaard, 2010). The data sources and methods of accessing them are presented in figure 16.
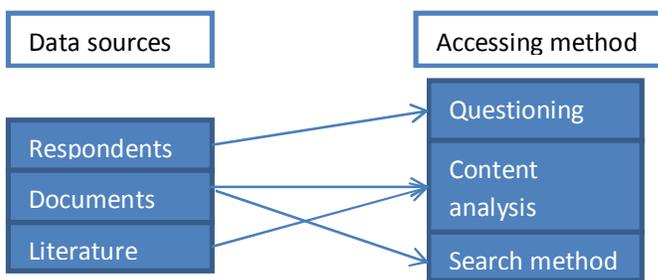

Figure 16 Accessing methods data sources

The respondents are grouped in producers, retailers and employees of The Greenery. Consumers will not be used as data sources. The most important reason for this is that the literature study gave a consistent and complete picture of the motivations of consumers to buy locally produced food products. Several large consumer studies have been used in the literature study. The time and resources for this research are not sufficient to be able to do such large consumer studies.

In the single, evaluative case study, respondents and internal documents are used to obtain the qualitative data that is necessary to make a comparison with the literature that is found. To find relevant documents search methods have been used.

Respondents
Respondents are used as resources to acquire qualitative data from different actors within the proposed local food supply chains. Two kinds of accessing methods can be used to extract data from these resources, namely questioning and observation. The problem with observation as data gathering method is that the local food supply chains are not yet set up. Therefore, there are no relevant processes to observe. Questioning on the other hand is suitable to gain data about the way to arrange local food supply chains. There are all kinds of techniques in interviewing respondents. To gain in-depth information and to be able to respond to the answers of the interviewees, individual face-to-face interviews are conducted.

Sampling & data sources

Case studies are used to generalize to a theory rather than to a population (De Vaus, 2009). Thus the sample collection should not be based on generalization of a population but instead it should be made based on obtaining different views about the topic of local food supply chains from different potential actors in these supply chains.

The interviews are aimed to clarify two topics. First, the main differences between local and non-local food supply chains are identified. Secondly respondents are asked on the way in which local food supply chains should be structured. Questions are asked on the personal perception of the interviewee on the idea and practical implications of local food supply chains. The answers to these question lead to new questions to clarify or further explain the interviewee's point of view. Semi structured interviews are most suitable for the intentions of the interviews. The semi-structured interview is more flexible in allowing additional aspects and views of the interviewees leading to a fuller and more detailed understanding of local food supply chains.

Producers interviewed

As described in the introduction The Greenery is a cooperative trading company. The owners of The Greenery are growers which are member of the cooperative. The members of the cooperative are also suppliers of The Greenery. The producers are therefore very well known by The Greenery. The producers are selected in such a way that different views on local food supply chains would be obtained. Therefore the growers of The Greenery are divided in the main groups of growers which are member of The Greenery.

The members of The Greenery can be divided in three main groups, these are:
- Fruit growers
- Field vegetable growers
- Greenhouse vegetable growers

From each of the main grower groups two growers are selected.

Employees of The Greenery

The Greenery employees working at several departments are interviewed to get a full understanding from different viewpoints regarding the activities and challenges in local food supply chains. As a basis for the selection of interviewees, the theoretical framework is used. The theoretical framework describes six main responsibilities for The Greenery in local food supply chains. For each of these six responsibilities experts on these fields working for The Greenery are selected.

- Time between producers and consumers, staff from the product quality department and logistics department were interviewed on this topic.
- Communication to consumers, the manager product marketing was interviewed on this topic.
- Food safety, the head of the food safety department was interviewed on this topic
- Logistics, a person from the logistics department was interviewed on this topic.
- Value distribution, a person from the sourcing department was interviewed on the attitude of producers to added value and pricing.
- Coordinating information flows, an online marketer and IT specialist is interviewed on this topic.

Retailers interviewed

The main customers of The Greenery in the Netherlands are large retail chains. Plus supermarkets is a Dutch national supermarket with around 270 retail stores in the Netherlands. The central Plus retail organisation is a cooperative, meaning that the individual shops are owned by independent entrepreneurs. All Plus entrepreneurs together own the central Plus retail organisation. The individual shops have quite some freedom to source products outside the central sourcing of the retail chain. Individual shops are allowed to source ten per cent of their products outside the central sourcing of the Plus retail chain. Plus supermarkets is one of the largest retail customers of The Greenery in The Netherlands. The people who are interviewed are:

- Manager Plus Koelhuis Bergschenhoek.
- Manager/Owner Plus Boerman Dordrecht.
- Sourcing manager Potatoes, fruits and vegetables central Plus retail.

MCD supermarkets is a more regional supermarket chain with 36 shops in the middle and south-western parts of the Netherlands. MCD supermarkets owns most of the 36 shops, unlike Plus supermarkets, the possibilities of shops sourcing products outside the central sourcing of MCD are very limited. MCD supermarkets is a client of The Greenery. The people who are interviewed are:

- Manager MCD Dordrecht.

The central MCD company was unfortunately not able to make time to participate in this research.

The supermarket managers are interviewed on the conditions and ideas they have regarding the practical implementation of the ordering, deliveries and communication in local food supply chains. The sourcing manager, potatoes, fruits and vegetables is interviewed on his ideas on local food and the possibilities of selling local food in the supermarkets of his chain.

Documents

The documents which are used in the empirical research are annual reports of The Greenery and Plus retail. Furthermore information on the websites of the Plus, MCD and The Greenery is used to find general information on for example the number of supermarkets of the retail chains.

6.4 Operationalization

The bases of the operationalization are the specific research questions of this research. The specific research questions indicate the information which should be retrieved through the empirical research. Next to the specific research questions the theoretical framework is used to formulate the interview questions. The information in the theoretical framework is verified and interviewees are asked to elaborate on the information in the theoretical framework. Furthermore the interviewees are asked to give additional information about topics which were not found in literature and are thus not part of the theoretical framework. Table 4 indicates who were interviewed, when they were interviewed and which questions were asked. The interview questions can be found in appendix 2.

Table 4 Operationalization

Interviewee	Organisation/department	Date of interview	Questions
Rob Broere	Supermarket manager Plus	16-01-2012	Q2
Piet Boerman	Supermarket manager/owner Plus	24-01-2012	Q2
Jack	Supermarket manager MCD	24-01-2012	Q2
Jack Nijboer	Central sourcing manager Plus	26-01-2012	Q3
Henk van Wetten	Fruit grower	17-01-2012	Q1
Anton van Garderen	Fruit grower	18-01-2012	Q1
Arie van de Pol	Field vegetable grower	20-01-2012	Q1
Johan Meuzelaar	Field vegetable grower	18-01-2012	Q1
Dolf Boekestijn	Greenhouse vegetable grower	01-02-2012	Q1
Niek de Laat	Logistical department	26-01-2012	Q4.4
Rien Simonsen	Food safety department	12-01-2012	Q4.1/4.2
Chantal Oostvogels	Product marketing	25-01-2012	Q4.3
Ton de Weerdt	Product quality department	09-02-2012	Q4.3
Harm-Jan Eikelenboom	Online marketer/ IT specialist	28-02-2012	Q4.6
Nanne van Baar	Sourcing department	12-01-2012	Q4.5

7. Results

This chapter gives the results of the empirical research. In order to make the results clear and readable the results are grouped for each stakeholder group. The stakeholder groups are; the producers, the supermarket managers, the central souring of retail chains and the Greenery. As bases for the interviews the theoretical framework was used. The elements in the theoretical framework are used in this chapter to systematically present the findings of the empirical research.

7.1 Producers

The findings of the literature research showed that the main motivation of growers to participate in local food supply chains is the added value of these chains to their business. The main constraint that was found in literature was the time available for local food chains. Two other factors for deciding whether to participate in local food supply chains are found in literature. The need for training and education and the current infrastructure which makes it difficult for growers to directly sell to retailers. The findings from the literature study are used as bases for the interviews which are conducted with growers (appendix 1).

(Financial) Added value

All growers indicate that getting a higher price for their products is important for participating in local food supply chains. Participating in local food supply chains will cost more time than their current sales channels and this extra work should be paid for. Fruit grower Henk van Wetten indicates that the price premium depends on the volume times the price, this should make up for the extra costs of local sales. When the volume is higher the price premium can be lower and vice versa. Some growers are sceptic about getting higher prices from retailers. Soft-fruit grower Anton van Garderen has experience in this. 'We have a special raspberry for one retail chain. Because of improved quality and higher labour cost, the retailer pays a higher price than the normal raspberry. After a while the retailer indicated my price was too high because he could get 'ordinary' raspberries for a lower price. So in the end retailers a most concerned with the price and stop to value the added value in quality I deliver'.

(Social) Added value

Most growers also indicate other reasons why local food chains or shorter supply chains would have benefits to their company. Lettuce grower Arie van de Pol indicates for example that the lettuce he sees in shops is sometimes of very poor quality while growers sell it when they have very good quality. 'This hurts, I would like it if I knew that in the local concept the product quality would be optimal in the shops'. Tighter relations between growers and customers like supermarkets are seen as positive. The growers work together with the customers to improve the quality of the products and reduce the time between harvest and shops. Pepper grower Dolf Boekestijn indicates that his company is active in social media and has a web shop. The primary goal of the internet activity is not making more money but making connections between consumers and growers and making food production more transparent. In the long term this could have positive consequences for the financial position of the company but this is not the primary goal.

Time constraints

Most growers indicate that time constraints is not an important barrier for participating in local food supply chains. All growers that were interviewed have one or many people working for them making it possible to take on extra duties. Field vegetable grower Johan Meuzelaar has a clear opinion on this matter; 'everything is possible as long as the extra labour is paid for'. Many growers indicate that more and more is asked from them while prices have gone down. 'this can't go on for ever'. The extra cost for the local food chains depend on what extra activities need to be done in order to sell the products. Anton van Garderen indicates that he is supplying to Freshweb which picks up the products daily. Freshweb is supplying our products mainly to restaurants., these are not necessarily local. 'Freshweb is still in a start-up phase and I am willing to invest time in this project because I hope it will work', indicating that there are growers who are willing to invest time and effort which is not directly paid if they are enthusiastic and believe in a project.

Infrastructure

The main aim of this research is to judge the feasibility of local food supply chains set up and give recommendations to The Greenery in which way to set up local food supply chains. This means that the questions about the infrastructure, how the local supply chains are practically set-up, are very important.

All growers are worried about the additional logistical costs of local food supply chains. They indicate that the current supply chains are designed to get the products from the farm to the consumer as quick and low cost as possible. Local supply chains will make the logistical costs higher.

About the ordering system everyone agrees that an email or some electronic ordering system is the best option. Combining the electronic orders with a text message or a call is preferred as most growers don't spend all day behind the computer. The growers also agree on how the products should be picked up. Most growers already have several buyers of their products so multiple trucks come each day. They are used to make the orders including the needed documentation. The truck drivers then load the orders themselves.

Role of The Greenery

About what role The Greenery should play in local food supply chains and whether or not The Greenery should set-up the local food supply chains the opinions differ. The two growers who are already engaged in direct sales to customers and local sales are in favour of The Greenery as an enabler for its growers to sell local. Especially Henk van Wetten is strongly in favour of this. 'I think producers themselves can contact clients. A small producer can adapt much easier to changes than a large organisation. I would opt for an easy system of The Greenery enabling producers to sell local, with an easy billing system. The GMO[1] an NMA[2] rules should be covered. The Greenery should also play a small commercial role in setting prices. I see a lot of producers which are shy in asking a fair price. This drives down prices and destroys the market'. Dolf Boekestijn

[1]GMO is a subsidy mechanism offered by the European Union. Growers which are a member of a sales organisation (like The Greenery) can apply for the subsidies. Precondition of the subsidies is that all products from growers are sold through the sales organisation.

[2]The NMA, (Dutch competition authority) is responsible for guarding fair competition on the Dutch markets. NMA rules prevent companies from making price agreements.

agrees on these points, GMO rules forbid growers to sell outside The Greenery, only for small quantities exceptions are made. He questions however how many growers would be interested in selling locally themselves and how large the market for local sales would be.

All growers that were interviewed have direct contact with at least part of their customers. Some for example directly deliver to Plus supermarkets. All growers are satisfied with the policy of The Greenery to establish direct links between growers and their customers. They wonder whether The Greenery should set-up local food supply chains. Both Anton van Garderen and Dolf Boekestijn indicate that they already think The Netherlands are small. The path The Greenery now chooses with the Verse Oogst platform is a good way to connect consumers and producers. Is the opinion of most interviewees.

Product quality
Better intrinsic product quality of local food is the most important quality characteristic why consumers buy local food. Most growers mention direct relation between growers and customers as an improver of intrinsic product quality. They mention this as a result from the policy of The Greenery to directly link producers to customers. In consultation with their customers the growers try to improve the intrinsic product quality and reduce the time between grower and consumer. Henk van Wetten gives an example of why linking individual growers to customers can be beneficial and how intrinsic product quality can then be improved. 'What I see is that the Dutch fruit sector tries to sell Dutch fruit at homogenous high quality. The soil type differs in the Netherlands as do other factors which influence the quality of Dutch fruit. Therefore, the general Dutch quality can never be as high as the quality which can be achieved by some individual growers'.

7.2 Supermarket managers
The findings of the literature study showed six conditions under which supermarkets would be prepared to sell locally produced food products. Communication accompanying the local products should be arranged in order for the supermarkets to distinguish them from competitors. The intrinsic food quality should be better than the quality of products currently sold. Food safety and tracking and tracing should be assured. The sourcing of local food and the purchase volume should be adequate so that selling local food will not cost too much extra work.

Communication
The supermarket managers indicate that local food can be a good way of differentiating their supermarket from their competitors. The supermarket managers believe local food will appeal to a group of their customers who value the extrinsic quality of local food. Local food is perceived local if the consumers could know the grower or at least have an idea where the products come from. As a distance around twenty kilometres is mentioned as maximum what consumers perceive local.

The methods of communicating to consumers which are mentioned all supermarket managers are: hanging posters in the shops and communicating via product packaging. Piet Boerman suggests organising trips to the local growers. He has experience with taking consumers to producers and he has noticed that consumers get a certain positive feeling about products, which causes consumers to stick with certain products.

Intrinsic food quality

All supermarket managers indicate that they do not believe the time between producer and consumer can be reduced much or that the intrinsic quality of the fruits and vegetables can be much higher. They do see that local supply chains would improve the freshness of the products. All supermarket managers indicate that the appearance and freshness of fruits and vegetables is the most important quality attribute. People first look at the products to see if the products are fresh, price and other attributes come later. All supermarket managers believe that the intrinsic quality attributes are more important than the extrinsic quality attributes of local food.

Food safety/tracking and tracing

The supermarket managers indicate that food safety is very important to them. The supermarkets check every incoming truck on its temperature which should be below seven degrees Celsius. The general assurance of food safety is however in the hands of the central retail organisation and their suppliers.

Sourcing

The supermarkets that were visited are supplied with fresh vegetables daily. The supermarkets strive to keep the shelf time of fresh produce as low as possible. For products with high turnover the shelf time is usually not more than one or two days. Products with low turnover usually have a longer shelve time. The supermarkets have a head of the fresh produce department. This person is responsible for the quality of the products on the shelves and ordering. For judging the product quality the; 'would I buy this product?', rule of thumb is used. The ordering of fruits and vegetables is done through an internet-based ordering system in both Plus and MCD supermarkets. All products with bar-codes are ordered automatically. Products without bar-codes have to be ordered manually. The supermarket managers indicate that they would prefer to order the local products through the ordering systems which are currently used. The managers indicate that if this is not possible it could also be an option to set up another kind of internet ordering system.

In the questions regarding sourcing the difference between a cooperative supermarket organisation like Plus and a private retail company like MCD becomes clear. The Plus supermarkets are owned by independent entrepreneurs who have much more freedom in what they sell than the MCD supermarkets which are owned by MCD retail organisation. Individual Plus supermarkets are allowed to source ten per cent outside the central retail organisation.

Rob Broere from Plus Koelhuis indicates that local food supply chains can be set up without involving the central Plus retail organisation, this way the initiative can be really local he argues. Plus Koelhuis is used to work with a lot of local companies. Around five to ten truck come daily to supply the supermarket, among which are trucks from Plus, two bakers, a florist and a local lumpia producer. According to Mr Broere it wouldn't be a problem if local products are supplied outside regular deliveries as long as it would fit the supply schedule. Plus Boerman is a much smaller supermarket then Plus Koelhuis and also has a lot less deliveries per day. Mr Boerman indicates that he would prefer to receive the locally produced products in the regular Plus truck which comes every day. 'Extra deliveries distort the processes in the shop and take up much time'. According to Mr Boerman the central Plus organisation should take the lead in local food supply because 'it is too much work for local shops to arrange'.

Jack, supermarket manager of MCD Dordrecht indicates that his supermarket is owned by the central retail organisation. Therefore he has almost no freedom in sourcing product outside the central retail organisation. Besides one typical local product no local products are sold. All products are sourced centrally, the shops have an advisory role in what products are sourced. The central MCD organisation must decide whether MCD will sell locally produced fruits and vegetables. If so, the orders could be placed through the current ordering system, Jack would prefer to receive local products with the regular truck deliveries. 'Separate deliveries could be possible, however it would mean more work and thus costs for the shops.

Purchase volume
All supermarket managers indicate that they are striving to sell products as uniformly as possible. Because of this, supermarkets work with preferably one or a limited number of producers. These producers should supply enough volume to supply supermarkets for a certain period. Identifying the exact purchase volumes of supermarkets turns out to be quite challenging. MCD Dordrecht is not allowed to give any sales information. Plus supermarkets only gives general sales figures. Both Plus Koelhuis and Boerman indicate that ten to twelve per cent of their turnover is fresh fruit and vegetables, potatoes and cut fruits and vegetables. For Plus Koelhuis this is an annual turnover of around 2.5 million Euro's, the turnover of Dutch, uncut fresh fruits and vegetables was not given.

Added value
The main motivation of the producers to participate in local food supply chains would be a higher price for their products. The supermarket managers also mention an extra profit margin as a motivation for them to participate in the local food supply chains. What the supermarket managers also indicate is that they believe consumers are not willing to pay a whole lot more for their fruits and vegetables if they are locally produced. Especially when the locally produced food products would replace the current assortment of non-local food products, the supermarkets are not willing to ask a significant higher price.

Distinctive products
Mr Broere indicates that for his supermarket a benefit of local food sales would be able to differentiate from other supermarkets. He indicates it is hard to differentiate a supermarket on ordinary products like soft drinks, toilet paper etc. 'With distinctive products like local fresh products a supermarket can really offer their customers something unique'. Both other supermarket managers indicate similar motivations for their interest in local food, they are seeking ways to differentiate their assortment form other supermarkets to attract consumers.

7.3 Central sourcing manager
Jack Nijboer, sourcing manager of potatoes, fruits and vegetables at Plus retail is interviewed on the perception of the central retail company towards local food supply chains. The central retail organisation is currently responsible for sourcing and distributing virtually all fruits and vegetables which are sold in the Plus supermarkets.

Communication
'Plus has five brand pillars; Plus brand, Plus appetite, Bio, Fair trade and the A-brand'. All products Plus sells have to fit in one of these five pillars. Past years Plus has established an increasing number of direct relations between Plus and the producers of the fruits and vegetables. Currently Plus has one or sometimes a few growers per product, this allows Plus to communicate directly with growers

resulting in higher and more uniform product quality. On Plus website (http://www.plus.nl/assortiment/telers) the growers are introduced to the consumers. The Plus website and the website verseoogst.nl of The Greenery are linked so consumers visiting the Plus website can also find the information about growers on the Verse Oogst website of The Greenery. Past two years Plus has had marketing campaigns on television, product packaging and in store posters to show the consumers who their growers are. Currently Plus is reducing the communication about our growers because Plus wants to communicate the PLUS brand.

Mr Nijboer indicates that branding local products will fit the Plus brand strategy. Plus currently has the brand Gijs, which stands for authenticity and taste. Gijs sells products with a local character in the whole of the Netherlands. 'We want to sell products which fit our brand strategy and we want to sell them nationally'.

Intrinsic food quality
One of the reasons Plus has a limited number of producers is that Plus wants to assure high product quality as uniformly as possible. 'For example, for our regular supply we have only one cucumber grower, we can monitor quality closely, offer uniform products and make direct agreements with the grower'. Mr Nijboer agrees that shorter supply chains are favourable with regard to intrinsic food quality, he however indicates that this is already the case because of the limited number of producers and fast logistics. 'Local supply would mean that for all product categories we would have a number of growers, this is unmanageable'.

Food safety/ tracking and tracing
Mr Nijboer shortly addresses the topic of food safety. If an organisation like The Greenery is responsible for the local food supply, they must be able to assure the safety of the supplied food. Therefore Mr Nijboer expects food safety and tracking and tracing not to be an issue on local food supply chains set up by The Greenery.

Sourcing
Mr Nijboer is very resolute about if local food supply, directly from producer to supermarket is possible within a national retail chain. 'Local food supply chains in that way are impossible'. 'A local grower around Rotterdam is not local around Maastricht. This would mean we need hundreds of growers, this is unmanageable for a central retail organisation. The local concept doesn't fit the brand strategy. The costs of local distribution will be much higher than regular distribution'. What The Greenery could do is directly sell products to the supermarkets since supermarkets are allowed to source ten per cent outside the central retail organisation. Mr Nijboer indicates however that he believes the central retail organisation will never approve this from one of their main suppliers of fruits and vegetables. This will lead to conflict between Plus and The Greenery.

A second option of selling local food would be that products from growers all over the Netherlands are aggregated in the current DC's and from there distributed to the region they are produced. In this way products are locally produced, no extra transports and deliveries are needed but the logistics is not local. Mr Nijboer indicates that this option is also impossible to manage and very expensive. 'This would mean we still have way too many growers and all kind of practical problems would arise. For example we would need separate pallet places for all products from all growers. This means we would need thousands of pallet places, we would need an enormous DC.

Plus retail has the Gijs brand with which Plus offers 'local' products nationally. According to Mr Nijboer this is the only way in which national retail chains can offer 'local' products.

Purchase volume

The average turnover of all fruits, vegetables potatoes is around ten per cent of total turnover of Plus supermarkets. Mr Nijboer gives a rough estimation of the sales per product category, about 20% of the fruits and vegetables sales of Plus supermarkets are Dutch fruits and vegetables. At a total turnover of Plus retails consumer sales of 1.91 billion euros (Sperwer 2011) the total sales of Dutch fruits and vegetables are around 38 million euros per year. On shop level (269 shops in 2010) the average sales of Dutch fruits and vegetables are around 140.000 euros. Remark should be made that the shop sizes differ considerably, resulting in huge differences in turnover of Dutch fruits and vegetables.

7.4 The Greenery

Six main responsibilities or attention fields of The Greenery in managing local food supply chains were identified through literature study. To explore different ways to address the six responsibilities, five employees of different departments of The Greenery are interviewed.

Time between producers and consumers

This topic is covered by both the logistical department and the product quality department. According to Niek de Laat, the time between harvest and display on the shelves is around two days. With direct deliveries from producer to customers this time can be reduced. Furthermore, the time between producer and supermarket is reduced using VMI, reducing the inventory at the Greenery and by adapting the times when retailers order and producers deliver their products. The time between producer and consumers can be reduced in local supply chains, this depends on the configuration of the supply chains. Direct transport from producer to supermarket would reduce the time.

Ton de Weerdt manager of the product quality department indicates that the time between consumers and producers is an important determinant of freshness in supermarkets. The importance however depends on the type of fruit or vegetable. Especially in leafy vegetables it is vital to get the products fast from producer to supermarkets. Current supply chains manage to get the products in the supermarkets between 24 and 48 hours. For products like cucumbers, the time is much less important. When stored under the right conditions, these products can be kept fresh for days. Mr de Weerdt indicates that direct sales from producers to supermarkets would increase the freshness of products in the supermarkets. Especially in leafy vegetables the consumers could notice that products are fresher. The largest step to further improve intrinsic food quality however, could be taken in the shops. According to Mr de Weerdt the producers and The Greenery are doing their utmost best to provide retailers with fresh product. However in the supermarkets products are often not cooled and handled roughly. 'Here food quality can be significantly improved'.

The increased direct transports from producers to retailers greatly impacted the way product quality controls are performed. 'Past years the quality inspectors which used to work on the DC's have been turned into mobile quality inspectors which inspect product quality at the producer companies'. As the volume of products which pass the DC's diminishes, product quality inspection becomes more decentralized. Therefore local food supply chains would be no problem for the food quality department.

Communication to consumers

Currently the marketing activities of The Greenery are mainly focussed on business to business marketing. The Greenery has a few consumer brands but the marketing budget of The Greenery is not sufficient to effectively target consumers. The emergence of social media and internet has opened new ways for The Greenery to communicate with consumers. The Verse Oogst platform is set up to communicate to consumers about the producers and production methods of the member growers of The Greenery. Chantal Oostvogels indicates that the definition of 'local' is a problem in marketing local products. There are no standards for what is local and it differs per consumer what they regard as local. 'In the end the fact that local food is produced where you live and the feeling you could take you bike and have a look where your food is grown is the strongest marketing story'. To maintain the strong marketing story the supply chain should be transparent and local. When products do go through the central DC's and travel hundreds of kilometres the local story is gone. Even if this would be more efficient and sustainable consumers won't understand it. The better intrinsic quality is very hard to accomplish in local supply chains since the responsibility is only partly at the producers and The Greenery. The supermarkets are very important in this and they will not throw away products which look ok and are a few days old. Mrs Oostvogels also questions whether consumers can really judge the freshness of fruits and vegetables.

A suitable communication method could be direct marketing by producers on the shop floors. Through these marketing methods consumers get to know the producers of their food, this creates trust. The Greenery could organise a similar event like 'Kom In De Kas' where consumers are invited to visit the producers. Local news media can be used to inform the local community that a local supermarket sells the products from a few local growers. In these kinds of promotions The Greenery can play a supporting role, the producers themselves can play a major role in marketing their products. The main challenge in marketing Mrs Oostvogels sees is her observation that sometimes there is the illusion that when a brand is created this will automatically lead to more profit. In these kinds of initiatives quality should be outstanding, no concessions should be made either in intrinsic or extrinsic product quality.

Coordinating information flows

Information systems in local food supply chains can be divided into two systems according to Harm Jan Eikelenboom online marketer of The Greenery. First system is the financial transaction and ordering system. This system, designed by Mr Eikelenboom, is depicted in figure 17. It is quite a complex system indicating that quite some departments within The Greenery will have to cooperate for local food supply chains to work. The spider in the web is the ordering portal where supermarkets order and producers get their orders and indicate the availability. This portal receives the prices from The Greenery Benelux, which sets week prices for all products The Greenery sells in the Benelux. The portal inform the logistics department where and how many products should be picked up and delivered. Furthermore the sourcing department is informed how much products are sold locally so they know how much products are left to sell through the conventional supply chain of The Greenery. The payments arranged through the SAP system of The Greenery which bills the retailers and pays the producer. According to Mr Eikelenboom this system could well be embedded within the current systems of The Greenery.

The second system which should be used in local food supply chains is the consumer system. For this the Verse Oogst website can be used according to Mr Eikelenboom. The Verse Oogst website is
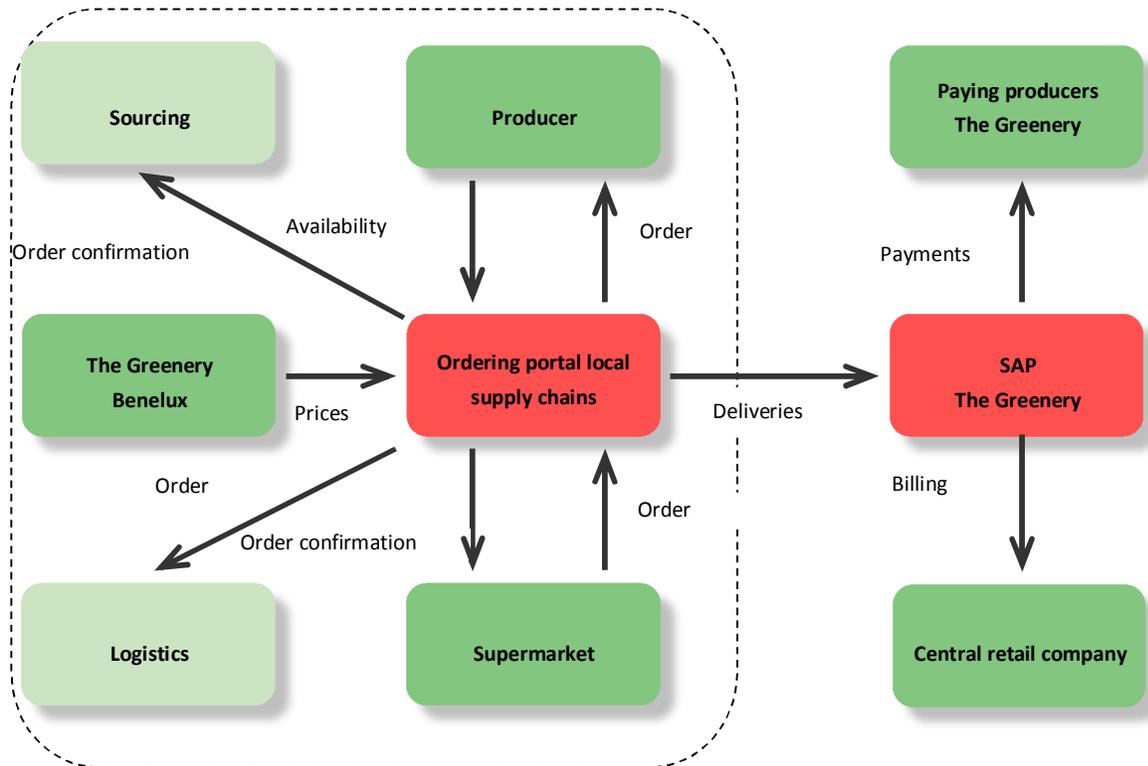

Figure 17 Transaction system local food supply chains (The Greenery)

already informing consumers about the producers of The Greenery. The website can be extended to meet the needs of communication in local food supply chains. QR codes can be used on packaging so consumers are linked to the Verse Oogst website and can see who produced the product they bought.

Guarding food safety

Retailers demand products which are safe. The products distributed through local food supply chains should be as safe as current products or even better. Rien Simonsen, head of the food safety department of The Greenery, is very positive about the impact of local food supply chains on the food safety of the products distributed through them. 'When producers are directly linked to customers they tend to be more careful regarding food safety issues. They don't want to lose 'their customer''. Currently more and more products are directly transported from producer to the DC of the retailers. Because of this food safety checks more often take place at the producers. Last year about fifty per cent of the samples were taken on the DC's of The Greenery, the other samples were taken at the producers. Therefore Mr Simonsen indicates that he does not expect food safety related issues in local food supply chains.

Value distribution

As mentioned before, the main motivation of producers to participate in local food supply chains is the financial added value to their business. To give producers a higher price for their products either the selling price to retailers must be higher or the cost of distribution must be lower.

Nanne van Baar explains that The Greenery works with the method that the producers pay the costs The Greenery makes in selling and distributing their products. Part of the products are sold on contract, other products are sold at market prices. Being able to give higher prices to the producers will turn out to be difficult. Mrs Oostvogels indicates that price is a very important consideration when consumers buy fruits and vegetables. It is not expected that consumers are willing to pay significantly more for locally produced food. Niek de Laat indicates that it is very difficult to indicate what the logistic costs of local food will be. Problem is that the overall logistic costs are bound to rise because of the local food chains, an extra product stream is created which makes costs. The costs of the current supply chains will not be much lower when local supply chains will be introduced. The DC's will still be there and the trucks still have to pass all growers since the volume in local supply chains is expected to be insufficient to take up all products from individual producers. Only in the long run The Greenery will be able to save some costs on the conventional supply chain. If due to the local food supply chains, the product volumes handled by the central DC's diminishes some costs can be saved there. In the end volume is important, when the local supply chains distribute high volumes the costs can be spread over a large number of products.

Logistics
The main logistical options for The Greenery in setting up local food supply chains are:
- Running products over the central DC's and then distributing them to local supermarkets.
- Setting up/hiring local DC's where products are locally aggregated and then distributed
- Direct transportation from producer to supermarket

Niek de Laat indicates that it is impossible to indicate what the logistical costs of each option will be. An important cost factor to consider outside volume is supply chain complexity. 'Currently we see a lot of things which are not done wright the first time.' Local supply chains which further complicate the logistical operations are unfavourable. The Greenery is now using SAP, in this program it is possible to identify the producer of product at product level, therefore it could be possible to separate products from individual producers at the DC's this would however increase supply chain complexity.

If the central DC's are not used local DC's could be set up. This is however contrary to the strategy of The Greenery to reduce the number of DC's. Problem here is that because a lot of Dutch products are seasonal the local DC's would not be used year round making fixed costs to high. A solution for this could be using the packing stations of producers which are present in many parts of the Netherlands.

Last option would be to not use any kind of DC at all and pick up products from several local producers and immediately transport them to supermarkets. This option is also possible according to Mr de Laat, however the problem arises that not all growers have the packing, storage and grading facilities needed to directly supply supermarkets. This problem is also mentioned by fruit grower Henk van Wetten. He indicates that only about one quarter of the fruit growers have up to date grading facilities. This shows that if direct transportation from producer to supermarkets are used many producers will not be able participate in the local supply chains.
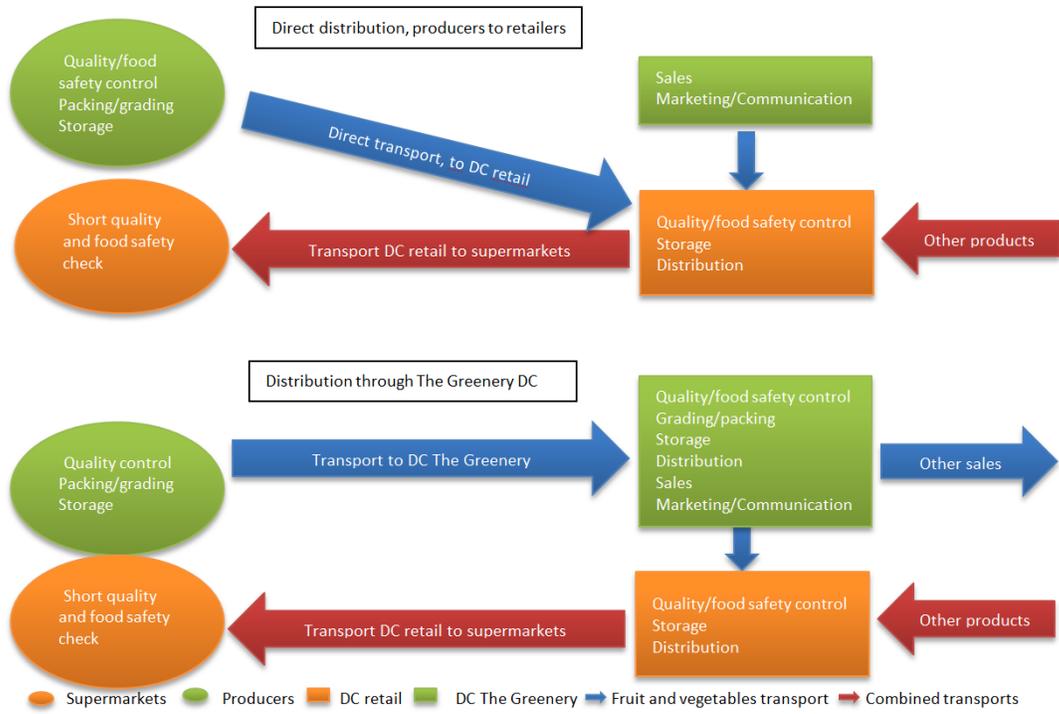
Figure 18 Current fruits and vegetables supply chains

8. Strategies

As a conclusion to this research four strategies are presented. The strategies are based on the information which is retrieved through literature study and interviews. In the first three strategies a product is local when it is produced within a radius of twenty kilometres. The specific distance is arbitrary however both the interviewed supermarket managers and the product marketing manager indicated that the producer should work within 'biking distance' of the consumers. In each strategy the responsibilities of the four stakeholders, producers, The Greenery, retailers and the consumers are mentioned in brief.

8.1 'Keep it local'

The 'keep it local' strategy means that the local food supply chains will not make use of the current infrastructure of The Greenery. The products are either transported directly from producers to local supermarkets or from producers to local DC's and then to local supermarkets. The 'keep it local' strategy resembles the direct shipments with milk route strategy found in literature. If local DC's are used it is advised to use cross-docking for fresh produce to maintain product freshness. Problem with cross-docking is that literature mentions this strategy is only suitable for high volume supply chains with continuous product flows. In local food supply chains this can be solved by only picking up products on demand. Supermarkets order daily, the producers provide the order the same day. The orders are distributed overnight and delivered at the supermarkets the next day.
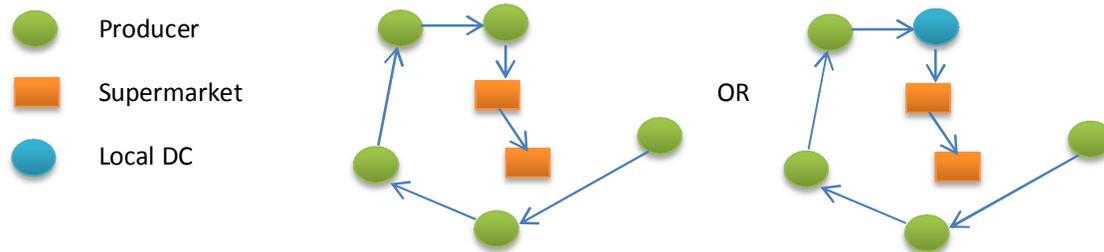

Figure 19 Keep it local supply chain

Producers

During the harvesting season producers daily get an e-mail and text message with the order for that day. Producers have to harvest and prepare the order before the end of the day. If necessary producers pack and label the products to communicate the fact that the products are grown locally. The products are loaded by the truck driver.

For promotional activities the producers are asked to participate in interviews in local news media, occasional promotions on the shop floor and regularly update a web page of their company about recent activities. Once a year the participating companies have an open day where consumers can visit local producers which explain how they grow their crops.

The Greenery

The responsibility for sales, billing, logistics and ordering is at The Greenery. Furthermore The Greenery is coordinating the promotional activities and is monitoring food safety and product quality. If a local DC is used The Greenery can organise the packing and labelling here.

Retailers

The supermarkets separately order the available local food products in the computer system they already use for ordering. The ordered products are supplied the next day, separate from the 'normal' deliveries. The products are placed in the ordinary shelves instead of the non-local products, the local products thus replace the non-local products. For promotional activities the supermarkets are asked to perform some in-store promotion like hanging posters. Furthermore the supermarkets are asked to participate in interviews in local news media and to provide space for in-store promotions of the producers on the shop floor. Together with The Greenery other promotional activities like trips to producers can be organised

Consumers

The consumers buy product which are grown local and distributed local and harvested just hours before the products are sold, the path from seed to fork is transparent and local. Consumers can visit the places where their food is grown and can meet the people who provide their food. Most interviewees believe the costs of this supply chain will be considerably higher than conventional supply chains resulting in higher food prices for the consumers.

Advantages:
- Very short supply chain so very fresh products
- Strong marketing concept
- Unique concept, hard to copy by competitors

Disadvantages:
- Fragmentation of pick-ups at producers
- Fragmentation of deliveries at supermarkets
- Fragmentation of product streams for The Greenery
- Central retail companies want to work with limited number of producers
- Adding costs while not saving as much costs elsewhere
- Not all producers have packing and grading equipment

8.2 Local products, conventional supply chain

This strategy implies that current (non-local) supply chains are used to distribute local products. The products are picked up at the producers and transported to the adequate DC of The Greenery. From here, the products are distributed to the DC's of the retailers. At the DC of the retailer the products are loaded into the trucks which supply the supermarkets and the products are transported to the supermarket. This supply chain strategy resembles the warehousing with milk route strategy which was found in literature. For producers and supermarkets this strategy would mean that their way of working is not really changed. The supply chain planning and DC work will however be complicated severely since products need to be separated per grower and distributed to several local supermarkets.
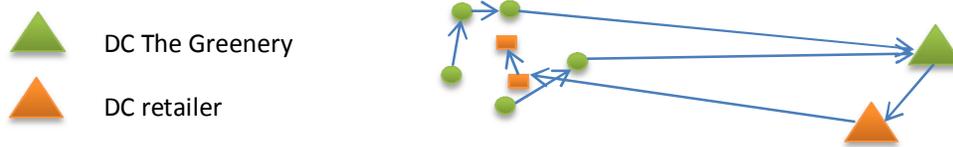

DC The Greenery

DC retailer

Figure 20 Local products, conventional supply chain

Producers

For the producers the distribution of the products from their company will hardly change. The products which will be sold locally are picked up by the same truck which picks up the products which are sold elsewhere. For the promotional activities, the same activities as in the 'keep it local' strategy are organised.

The Greenery

The Greenery has to perform the exact same duties as in their current supply chains. On top of this The Greenery will have to come up with a logistic system which can separate products from different growers and distribute them to the right customer. This will increase supply chain complexity enormously. Currently a product like tomato is separated on quality (several quality classes) and harvesting date. In this strategy, all products also have to be separated on producer, leading to an enormous variety of products.

Retailers

The central retail company should, together with The Greenery, work out a logistic system which is able to separate products from individual producers and deliver them to shops near the producer. For the central retail company the supply chain complexity increases similar to The Greenery. Because of this, Mr Nijboer of Plus retail states this strategy to be virtually impossible. For the supermarkets the deliveries are no different than current deliveries, the local products come with the normal truck. For the promotional activities the supermarkets are asked to participate in the same activities as in the 'keep it local' strategy.

Consumers

The consumers buy products which are locally grown. Consumers can meet the people who grow their food through in-store promotions by producers and through open days on their companies. On the open days, consumers can see how their food is grown. Supply chain transparency however is difficult to achieve. If for example a consumer buys a product in a Jumbo supermarket in Lelystad. It can well be that a product which is grown a few kilometres from its house is transported to the DC of The Greenery in Barendrecht. Then the product is transported to the DC of Jumbo in Veghel and then transported back to Lelystad. This is a journey of several hundreds of kilometres. Because of this journey the freshness of the products will not be as high as in the first strategy. The supply chain in this strategy will be more costly than the current supply chain because of increased supply chain complexity. Therefore the prices of the local products will have to be higher than 'normal' food prices.

Advantages:
- No extra pick-ups at producers
- No extra deliveries at supermarkets
- No or only slight fragmentation of product streams for The Greenery
- Unique concept, hard to copy by competitors

Disadvantages:
- Product freshness is not improved
- Marketing concept is weak
- Supply chain complexity is raised a lot
- Central retail companies want to work with limited number of producers

- Increase supply chain costs because of added complexity

8.3 Enabling producers

The 'enabling producers' strategy is fundamentally different from the first two strategies presented. In this strategy not The Greenery itself is taking up the challenge of setting up local food supply chains, however it is going to enable their member producers to sell their products locally. To prevent fierce price competition between producers, to guard food safety and to support producers in setting up local food sales and marketing, The Greenery should play a supporting role. The Greenery can support producers in for instance, billing and payments, marketing, logistics and it can connect the assortment of producers so they can jointly offer a wide assortment of local products. The local supply chains will then look similar to figure 19, main difference is that the responsibility of running the supply chains is not in the hands of The Greenery but is in the hands of the producers. Because The Greenery is not running the local supply chains itself, the central retail organisations do not have to be involved in the local sales.

Producers

The producers play a key role in this strategy. The producers are enabled to set up local food supply chains alone, or together with other local members of The Greenery. Acquiring new customers arranging logistics, marketing, quality standards etc. is all the responsibility of the producer (The Greenery can support this). In this strategy not only supermarkets could be supplied, restaurants, specialty shops, hospitals, care homes, farm shops etc. could all be supplied by the producers. The Greenery can support the producers in the whole process of setting up and running local food supply chains.

The Greenery

The main task of The Greenery in this strategy is enabling the producers to set up local food supply chains. Connecting local member producers will be advantageous so the producers can offer a wider range of products to their customers. The Greenery should make sure that this strategy is not violating any legislation around GMO and competition (NL: mededinging).

Retailers

The supermarkets will have direct contact with the producers. Agreements about ordering and deliveries will be made between producer and supermarket. The products are delivered separately from the current product streams. Together with the producers agreements about promotional activities can be made, The Greenery can support this. Because the producers are still a member of The Greenery, the food safety and product quality is monitored by The Greenery in the same way current products are monitored.

Consumer

Like in the first strategy the consumers can buy products which are grown and distributed locally. Depending on the promotional activities of the producer and supermarket, the consumers can meet the people who produce their food. Depending on the sales efforts of the producers, local food can be sold anywhere. Patients in care-homes and hospitals could get local food, consumers can buy the products in specialty shops, at farm shops or eat it in restaurants. It is hard to predict whether the price the consumer has to pay for the local fruits and vegetables is comparable to the current prices of these products. It is likely that prices will be comparable because less supply chain actors need to

earn money of these products. Depending on the sales channel through which the products are sold these are mainly, wholesalers and the central retail companies. The Greenery will need part of the selling price to make up for the costs in supporting producers in running local supply chains.

Advantages:
- Strong marketing concept
- Short supply chain so very fresh products
- Producers can use their local network to sell products
- Central retail companies do not have to be involved in local sales
- Could deliver significant added value to producers
- Producers can adapt much faster to changing market conditions then The Greenery

Disadvantages:
- Fragmentation of deliveries at supermarkets
- Fragmentation of product streams for The Greenery
- Producers need to invest a lot of time and effort to set up and run the local supply chains
- Not all producers have packing and grading equipment
- Supermarkets owned by central retail companies are unlikely to buy local products
- Interest of producers might be lacking

8.4 Strengthening current consumer communication strategy

Currently The Greenery is mainly communicating with consumers through social media and the Verse Oogst website. All interviewed producers commented positive on the efforts The Greenery makes to communicate with consumers. Here the discussion about what is local is relevant. Some producers and also the sourcing manager interviewed indicated that products produced in the Netherlands can also be seen as local. It is argued that connecting producers and consumers, regardless of where they live is advantageous. To do this The Greenery set up the Verse Oogst website to inform consumers about the producers and to show consumers where their food is produced. Connecting producers and consumers can be enhanced and personalised by showing consumers who produced the product they bought. QR codes[1] can be used so that for each product a consumer buys, he or she can find out who the producer is and find all kind of information about how and where the products are grown.

[1]A QR code is a two-dimensional bar code which is increasingly used on packaging and in advertisement. Consumers can scan the code with their smart phone and the phone will show the website to which the code is linked. (Poot, 2011)

Producers
For the producers there will not be much change. The producers are asked to frequently update their company page on the Verse Oogst website. The Greenery could organise open days, similar to the farm days of FrieslandCampina. The producers will be asked to open their company for the public and explain consumers about their growing methods.

The Greenery
The Greenery should expand the Verse Oogst platform, increase its activities in social media and introduce QR codes on the packaging of their products.

Retailers

For the supermarkets nothing really changes. Central retail companies could, like Plus supermarkets, introduce their regular producers on their website and link this to the Verse Oogst website.

Consumers

For consumers the supply of food becomes more transparent, on fruits and vegetables a QR code is placed with which consumers can go to a website. Here is explained who, where and how the product is produced.

Advantages:
- No new supply chain needs to be set up
- No need for retailers to increase their number of producers
- Supply chain becomes more transparent to consumers

Disadvantages:
- Marketing concept not as strong as real food sales
- No clear (financial) added value for producers, The Greenery and retailers
- Easy to copy by competitors

9. Conclusions, recommendations and discussions

The objective of this research is: To give recommendations to The Greenery how to set up local food supply chains by investigating in what way local food supply chains should be arranged in order to meet the conditions of producers, retailers and consumers. Based upon all information acquired through the literature research and empirical research, conclusions are given about the best strategy of The Greenery regarding local food supply chains.

9.1 Conclusions

Based upon the information found in this research it is concluded that strategy 3; 'Enabling producers', in combination with strategy 4; 'Strengthening current consumer communication strategies' are the most promising options in setting up local food supply chains. Strategies 1 and 2, where The Greenery itself takes on the challenge of setting up local food supply chains meets too much resistance from the central retail companies and offers too little opportunities for providing added value to both producers and retailers.

Resistance from retail

For years the trend in food supply chains, both at The Greenery and the retailers, has been to centralize distribution. Retail is more and more working with limited numbers of regular suppliers. Because of this, retailers are capable of providing uniform quality products to consumers and to improve product quality by interactions with growers. Strategies 1 and 2 would mean central retail companies would have to work with a great number of local producers making it impossible for them to have the same control over product quality and uniformity. In strategy 3 the producers themselves can decide what customers to approach to sell their products to. Supermarkets could be potential customers. However it should be taken into account that some retail chains, like Plus, allow local supermarkets to source outside the central sourcing. Other supermarkets, like MCD, do not allow local supermarkets to source outside the central sourcing. The number of supermarkets which are expected to participate in strategy 3 is therefore limited.

Added value

All producers indicate that getting a higher price for their products would be the most, or an important motivation for participating in local food supply chains. Participating in strategy 1 will cost the producers extra time. All supermarket managers which were interviewed indicate that extra deliveries of fruits and vegetable are increasing costs because of extra work. The retailers and the product marketing manager of The Greenery agree that consumers are not willing to pay a whole lot more for local fruits and vegetables compared to non-local. So while the consumers are not prepared to pay much more for local products, both producers and supermarkets make more costs for which they want to be paid. This indicates that the only way local food supply chains will work is when the costs The Greenery and the central retail company make to distribute the local products are lower than in conventional supply chains. Empirical research was not able to give the exact costs of local distribution. However interviewees indicated that the costs made in local food supply chains cannot all be saved in the conventional supply chain. Because of the fragmented distribution the total supply chain costs (conventional + local) of The Greenery are expected to rise, therefore the higher price to producers and the extra costs for the supermarkets cannot be paid.

Like strategy 1 also strategy 2 is unlikely to create more value for producers. The supply chain costs will rise because the complexity is increased significantly. The prices consumers are willing to pay will be equal or just slightly higher than current prices leaving no extra value for producers. Both Plus retail and The Greenery indicated that strategy 2 is too complex, costly and the marketing benefits too low to be feasible.

Strategy 3 shares quite some similarities with strategy 1, however the fundamental difference is that in strategy 3 the initiative and the responsibilities are with the producers. The Greenery is enabling producers to sell their products local and arranges services for which it is beneficial to arrange together. These could be services like, pricing, billing, marketing and logistics, this depends on the demand from producers. The benefit of this strategy is that producers are able to get a higher price for their products. The supply chain is reduced to only the producer and the supermarket. The central retail company is left out and because The Greenery has fewer responsibilities and fewer tasks, they only get paid for the services they deliver.

Strategy 4 is different from all other strategies because it does not change the current supply of fruits and vegetables to supermarkets. The difference is that The Greenery increases it marketing activities towards consumers. The marketing activities are aimed at creating a sort of bond between consumers and producers by enabling consumers to see who grew their food. The added value of this strategy is supposedly small, however the costs are limited as well and in the long term a bond between consumers and producers could prove to be beneficial.

In table 5 the four strategies are weighted on the most important conditions and motivations of the

Supply chain actor	Motivation /condition
• Producers	Added value
• Supermarkets	Distinctive products
• Central retail company	Small number of producers
• Consumers	Superior freshness
• The Greenery	Total supply chain costs (conventional + local)

The conditions and motivations are derived from both the literature and empirical study. The weighing is done based on the information and experiences retrieved from both literature and empirical study. A positive or negative weight depends on the benefits (positive or negative) which are expected from the strategy compared to the current situation.

Table 5 General comparison of strategies

Motivations	Strategy 1	Strategy 2	Strategy 3	Strategy 4
Added value for producers	+/-	+/-	++	+/-
Distinctive products	++	+	++	+
Small number of producers	--	--	--	+/-
Superior freshness	+	+/-	+	+/-
Total supply chain costs	-	-	-	+/-

9.2 Recommendations

First of all the motivations of The Greenery to start local food supply chains should be very clear. Is it to provide added value to their member-producers? To meet consumer demand? Because competitors are selling local products? If the goal of The Greenery with the local supply chains is clear it is easier to select the right strategy regarding local supply chains.

Commitment within the whole The Greenery organisation is required. Local supply chains will take up current supply and current customers from The Greenery. It is likely some departments will see this as a threat to their department. Local supply chains will have implications across virtually the whole organisation of The Greenery, sourcing, logistics, quality, food safety, sales, marketing etc. All these departments will in some way be affected by the local supply chains. Therefore organisation-wide commitment and freedom in running in the local supply chains is necessary. Freedom is needed to be able to deal with sudden changes and issues. Since so many departments have some role in the local supply chains, one department or person should be able to make discussions without needing permission from all involved departments.

The retail market is a consolidated market with a small number of companies responsible for all retail sales. The retail supply chains are highly centralized and in this way became highly efficient. Local food supply chains might not fit the retail market because of this. It is therefore advised to seriously consider other markets like healthcare and catering. These markets are not as consolidated as the retail market and might therefore pose more opportunities for local food sales.

Mr Nijboer sourcing manager of Plus retail extensively explains why local food supply chains, according to him, will not work in national retail chains. His observation is that the Gijs-brand, offering authentic, top quality products which inform consumers about the producers is a concept which does work in national retail chains. These products have a 'local character' however they are sold nationally. Setting up such a brand by The Greenery in combination with strategy 4 could be a sensible option for The Greenery to sell 'local products' through national retail chains.

9.3 Discussion

The theoretical framework (figure 14) is constructed based upon the information found in literature. The framework is used to construct the interview questions and as background information during the interviews. The interviewees agreed on the information in the theoretical framework and only had some minor additions to the framework. It is therefore concluded that the theoretical framework is a good indication of the motivations, conditions and tasks of the main actors in local food supply chains.

Literature is very extensive on the matter of local food supply chains, however a clear definition of what local food supply chains are is lacking. Local food is a broad concept, for some authors it is food sold by producers within a radius of 30 kilometres. For other authors it is food sold within one state or one country with a radius of 400 to 500 kilometres from the point of production. This broad concept of local food makes it sometimes difficult to compare literature on local food. A clear definition of 'local' would help making literature more consistent and comparable on this matter.

The main motivation for producers to engage in local food sales found in literature is financial added value, this point was confirmed by empirical research. However 'social added value', connecting consumers with producers and creating an understanding between consumers and producers and

vice versa is also an important motivation for producers to participate in local food supply chains. The literature used for this research did not recognise this important motivation.

In all interviews that were conducted one subject constantly arose, namely the price. All interviewees are enthusiastic on the matter of local food sales, all interviewees saw nice possibilities. It all however boils down to money. Local food sales to the great public will only become successful if the price of the local products is similar to the current food prices. Literature is not extensive on this matter and often only describes relatively low volume supply chains, or 'exclusive' products. Therefore the cost and pricing aspect of local food supply chains remain underexposed.

Unfortunately it was only possible to interview one central sourcing manager of a retail chain. Based on this one interview conclusions are made regarding the willingness and view of the central retail companies regarding local food supply chains. It is advisable to further investigate the willingness of central retail companies regarding local food.

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