An assessment of the characteristics and constraining factors of the supply chain of Surinamese vegetables in the Netherlands

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ACRONYMS

Hazard Analysis and Critical Control Point	HACCP
Ministry of Agriculture, Animal Husbandry and Fisheries	MAAHF

ABSTRACT

CHAPTER 1 INTRODUCTION

After years of neglect there is a renewed attention for agriculture as an effective mean for reducing poverty. According to the world development report (World Bank Report, 2008) : “In the 21st century, agriculture continues to be a fundamental instrument for sustainable development and poverty reduction. Cross country estimates show that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture.” In the same report is mentioned that of the developing world’s 5.5 billion people, 3 billion live in rural areas, nearly half of humanity. Of these rural inhabitants 2.5 billion are in households involved in agriculture, and 1.5 billion are in smallholder households.

Above mentioned importance of agriculture is also valid for Suriname. Figures of the General Bureau of Statistics in 2005 show that agriculture is responsible for the employment of 11% (10.865) of the total workforce. The third largest supplier of jobs after the public administration and defense sector (39,8 %) and the sector trade, restaurants and hotels (16,4%).

This report is divided in the in the following way:
-Chapter 2 is divided in 2 sub-chapters. In sub-chapter 2.1. the important definitions, concepts and the conceptual frame work regarding supply chains is described. In chapter 2.2. an overview is given about the important characteristics of the supply chain of Surinamese vegetables in the Netherlands, which is gathered through desk study.
-In chapter 3. a detail description is given about the methodology applied for data collection and the tools fro analyses.
-In chapter 4. the relevant data collected through the field research is given in qualitative way.
-In chapter 5. the data collected is analyzed and the findings are discussed.
-In chapter 6 recommendations are given for improving the competitiveness of the supply chain of Surinamese vegetables in the Netherlands
-In chapter 7 the main features regarding the supply chain of Surinamese vegetables in the Netherlands is summarized.

1.1 Background

An effective instrument in using agriculture for development especially for small farmers is to make product markets work better. This mean:

- help small farmers to reach the economies of scale and the necessary bargaining power by organizing them
- linking farmers or farmer organizations with supply chains in urban areas or international retail markets
- helping small farmers to meet the quality standards set by public or private parties.
- a good physical infrastructure that prevents long delivery times
- a chain were as much as possible intermediaries are excluded and the activities are coordinated through out the chain in order to improve competitiveness and equity in the chain

These principles are also valid for small farmers in Suriname especially the vegetable producers. These producers are unorganized and are depending on traders for marketing of their produce because most of them don’t have any links to urban or international retail markets. These conditions have made them to price takers.

For meeting the high requirements of the international retail market is still a big hurdle. This and the stiff competition with the fresh tropical produce of other countries has resulted in stagnant export figures. Of the total production a rough estimate of around 17% was exported in the period 2004- 2007 (source statistics Ministry of Agriculture, Animal Husbandry and Fisheries). This is mainly to the Netherlands (see chapter 3). Before going further into the subject it may be advisable to give a definition of vegetables in order to prevent any confusions. In general with vegetables is meant plants that are cultivated for an edible part such as the fruit, the root, the tuber, the leaf, seeds, bean or the flower. For the purpose of this research with vegetables is meant fruit, leaf, seed and bean plant that are cultivated for an edible part. With the supply chain of Surinamese vegetables in the Netherlands is meant those fruit, leaf, seed and bean vegetables that are cultivated in Suriname and exported to the Netherlands. In appendix 1 an overview is given of the important fruit, leaf, seed and bean vegetables cultivated in Surname.

Of the wide variety of vegetables produced some of these crops are being exported. The more important crops being exported are: hot pepper, okra, yard long bean, aubergine, eggplant and bitter melon. The producers and exporters in the export supply chain are confronted with a wide range of problems which has resulted in discontent and rivalry in the chain. A supply chain can be described as transformation processes from inputs through primary production, processing and marketing to the final consumer (Porter cited in Ruben et al. eds. 2006).
Some of the problems the producers in the export chain of vegetables are confronted with are:

- almost no bargaining power against traders (in this case the exporters) unclear quality standards
- unit prices are in bags, crates or bundles instead of weighing and paying in kg's which leads to lower proceeds for the producer .

Some of the problems exporters are confronted with are:

- unclear quality standards
- unclear price setting
- stiff competition

In order to overcome these obstacles it is necessary that the different actors in the chain cooperate with each in order to increase the competitiveness of the chain. For example actors can agree on quality standards, volumes and prices for delivered goods and services. For small farmers this might lead to a more fair share of the profits and higher production opportunities. In this context it is for public or private organizations who want to facilitate vertical coordination important to know what the characteristics and the constraining factors of the chain are . In this approach it is important not to overlook the part of the chain in the Netherlands. This part is important because it is the channel through which the vegetables reach the consumers but also the information channel for producers and exporters to assess consumers demands and requirements.

Vegetable production in Suriname is usually done by small farmers on a patch of land not more than the size of 2 ha. The main export market of these crops are the Netherlands. In the following table gives a overview of the export statistics between 1997-2007 (Anon 2006).

Table 1.1 Production and export figures of vegetables in Suriname

Description	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Production area (ha)	1,258	975	967	1,092	1,034	994	1,111	947	1,041	825
Production (ton)	21,185	15,021	15,758	17,073	17,138	16,144	18,536	15,123	17,800	14,367
Export (ton)*	2,221	2,211	2,160	2,725	2,448	2,675	2,395	2,475	2,390	2,783
Export value (USD x 1000)	634	641	593	673	737	904	900	1,103	1,290	1,586

Remarks: In the export weights is also included root and tuber crops
Source: ministry of LVV/department of statistics

From raw data about vegetable exports from 2007 until the second quarter of 2008 obtained from the General Bureau of Statistics (of Suriname) the following figures have been derived:
- In 2007 the amount vegetables exported to the Netherlands was: 2423 ton gross weight
- In 2008 until the second quarter a total of 1270 ton of vegetables have been exported of which 1261 to the Netherlands.

From the figures of 2007 (both table 1.1 and raw data) reconfirms that a large part of the vegetables is exported to the Netherlands (roughly 80%). Figures from 2008 until now show an even higher percentage (99%). The share that is exported to the Netherlands is……………..

Some important facts regarding the export of fresh vegetables from Suriname to the Netherlands that are cited in the work of Hoorweg (2004) are:
-Estimate of 10 exporters are active
-The total amount that yearly is exported to the Netherlands is around 2000 ton (40 ton/week)
-Around 99% of the export is intended for the Dutch market
-The important crops being imported are: yardlong bean, eggplant, pumpkin, hot pepper and taro leaves
-The price used is usually FOB price
-The chain can be short with no intermediaries or long with 3 or more intermediaries.

The imports of fresh vegetables in the Netherlands from developing countries is growing considerably. The main imported vegetables are beans, peas and asparagus (CBI 2008). Some important import figures given in the report of the CBI (2008) are:
In 2006 the imports of fresh vegetables was 940,000 ton with a value of 884 € million. Comparing with 2002 this is a growth of 21% in value and 16% in volume. The share of the developing counties is 15% of the value. Comparing with 2002 imports from developing counties increased by 42% in value and 39% in volume in 2006. Suriname had a share of 0.7% of the total value of imports in 2006. It is competing with other developing countries in the market of "other vegetables" which has a market value of 32 € million (CBI 2008).

Between 2002-2005 the household of consumption per year grew from 72 (worth 146 €)- 74 kg (worth 152 €). The growth was 4% in value and 3% in volume (Commodity Board for Horticulture cited in CBI 2008). The outlook for the future are that their will be a increase in value and not in volume which is related to the increase in sales of prepared vegetables. Another market trend is sale of pre-packed vegetables. This already accounts for more than 50 % of the total vegetables sale in the Netherlands (CBI 2008). In 2005 the household consumption of vegetables was around 515000 tons (CBI 2008).

Important general consumers trends regarding vegetable consumption are (CBI 2008):
-health and convenience
-pre-cut and pre-packed vegetables are popular
-complete meals and take-away products are popular (also sold at non-food outlets)
-consumption of organic foods is growing
-Dutch consumers are quite open to new products ("trysomers")

A consumers study of the commodity board of horticulture cited in the report "Groentezaken" (HBD 2004) has described the following consumption pattern for immigrants:
-Immigrants of Surinamese and Antillean descent spend a lot of money on fresh vegetables and fruits they are accustomed to. The Antilleans are less attached to their customs.
-Surinamese vegetables are expensive but usually bought at cheap places (wet markets)
-Surinamese vegetables have a lot in common with that of the Asians

According to a rapport of Foquz Etno marketing (cited in Hoorweg 2004) immigrant of Surinamese descent spend around 39 % of their household budget on food. The high prices of Surinamese fresh vegetables has resulted in the search for alternatives. Alternatives are found in vegetables coming from Africa, Dominican Republic, Costa Rica, Thailand. Other alternatives are tropical (leaf) vegetables grown in greenhouses especially during summer.

According to the statistics (Statistisch Jaar Boek 2007) there are 333,000 immigrants of Surinamese descent of which 186,000 or from the first generation and 147,000 are from the second generation. Most of the immigrants of this group live in Amsterdam, Rotterdam, Den Hague and Utrecht (Hoorweg 2004).

An overview of the retail outlet of fruit and vegetables according to BHD ("Hoofdbedrijfschap Detailhandel") is as follow:

Table 1.2. Market shares of sales and the number of outlets for fresh fruit and vegetables*, 2006

Market shares	% of total	Number
Supermarket	74	6000
Greengrocer	11	1500
Streetmarket	9	1500
Non-retail and others	6	510

Remark: Vegetables* includes potatoes
Source: BHD 2008 (BHD cited in CBI 2008)

The greengrocers are a important outlet of high quality fruits and tropical produce (CBI 2008).

1.2. Research problem and research objective

Research problem can defined as the chain actors in Suriname do not have a clear picture about the price making process, market forces and the quality standards/requirements in the Dutch part of the chain.

The research objective is to identify the characteristics and constraining factors of the value chain of Surinamese vegetables in the Netherlands (importer- retailer) relevant for the Surinamese part of the chain.

1.3. Main and sub-research questions

The Main research question are:

- What institutional systems exist in the supply chain of Surinamese vegetables in the Netherlands?
- What systems are used to guide product flow and to control quality in the supply chain of Surinamese vegetables in the Netherlands?

The Sub-questions are:

1 What is the scope and structure of the supply chain of Surinamese vegetables in the Netherlands?
2 What activities do the different actors undertake in the supply chain of Surinamese vegetables in the Netherlands?
3 What relationships (operating rules) exits between the actors of the supply chain of Surinamese vegetables in the Netherlands?
4 What mechanism are used to assess the expectations of the consumers?
5 What information is exchanged between the actors of the supply chain of Surinamese vegetables in the Netherlands and their direct link (exporter) in Suriname?
6 What legal and regulatory guidelines influence these actors activities?
7 What technologies are used to guide the flow of products in the chain?
8 What technologies are used to control the quality of products in the chain?
9 What means are used for the import, distribution and storage of the produce?
10 How is the added value distributed over the different actors in the Dutch part of the chain?

CHAPTER 2 GLOBAL SUPPLY CHAINS

In the supply chain of Surinamese vegetables to Netherlands the producers, traders. exporters in Suriname are linked with the importers, wholesalers and retailers in the Netherlands. According to Porter (cited in Ruben et al. eds. 2006) a supply chain is a transformation process from inputs through primary production , processing and marketing to the final consumer. In this case the farmers are the primary producers and the exporters, importers, wholesalers and retailers in charge for the marketing. Direct actors are those who are commercially involved in the chain. For example: producers, traders and consumers. The indirect actors are those who are providing financial or non-financial support services. For example bankers, business service providers, government and extension agents.

For analyzing the performance of the supply chain there are 4 dimensions according to Trienekens (1999 cited in Ruben 2006). These 4 dimensions are:
- Economic dimension, related to chain efficiency (in a cost-benefit perspective) and consumer orientation. To increase efficiency and profitability, individual companies may establish alliances with other parties in the production column resulting in netchains. Such netchains offer better prospects that production and distribution systems comply with consumer values, enable the establishment of integrated quality and safety control systems, and might enhance the external competitiveness of businesses.
-Environmental dimension, referring to the way production, trade and distribution of food is embedded in its (ecological) environment. Important performance issues are related to the use of energy and to energy emissions in production and distribution of food products, the recycling of waste and packaging materials and the prospects for sustainable food production system.
-Technological dimension, related to the application of (product and process) technology, logistical systems and information and communication technologies that improve quality performance and enhance innovation in food products. Important issues at stake refer to systems for guiding and controlling processes and flows of goods throughout the supply chain (HACCP, tracking and tracing) and the development of new products supported by standards.
-Legal and social dimension, i.e. the norms and values related to societal constraints to production, distribution and trade of food, concerning criteria of human well-being, animal welfare and sustainable entrepreneurship. Important issues at stake refer to legislation and agreed business practices (in platforms and conventions) regarding food products, compliance with corporate social responsibility (People-Planet-Profit) and the (inter)national legal and regulatory framework.

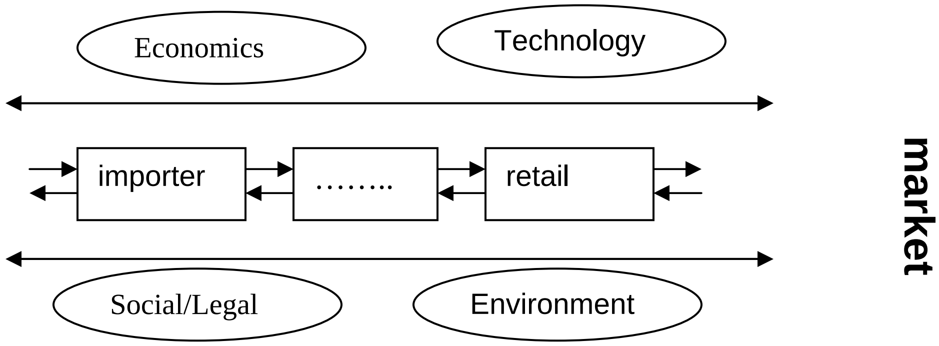


Figure 1: analytical perspective on a chain

In the above mentioned explanation for analyzing the performance of the supply chain the concept of netchains is used. According to Lazzarini et al. (2001 cited in Ruben 2006) netchains is a multi-layer hierarchy between suppliers, processors and retailers where horizontal coordination between reciprocal agents is embedded in a framework of vertical deliveries. According to this definition in netchains there is coordination and collaboration horizontal and vertical along the supply chain.

For analyzing the Surinamese vegetable chain in the Netherlands this research will focus on the following:
The economic (profit) dimension is related to relationships actors in the supply chain establish and information they share with each other to increase efficiency, profitability and to comply with consumers values.
The technological dimension is related to the application of technology to control processes, quality and the flow of goods throughout the chain.
The social and legal (people) dimension is related to the legal and regulatory guidelines regarding product safety and equity in the chain.
Evironmental (planet) has to with practices that minimize pollution and waste.

CHAPTER 3 RESEARCH STRATEGY AND METHODOGY

This research has a qualitative approach and is based on literature study and data collected by interviews. Through literature theories has been collected to establish criteria necessary for analyzing the vegetable chain and topics that are used for the interviews.

For extracting the necessary information about the chain, a case study has been conducted. Around 21 persons directly or indirectly involved in the export chain of Surinamese vegetables to the Netherlands gave their support to this research. The interviewees were:

From the part of the chain in Suriname:
A exporter of fresh vegetables to the Netherlands
A researcher of the Ministry of Agriculture, Animal Husbandry and Fisheries, department of Agriculture Research, Marketing and Processing. This person is involved in a ongoing project regarding the improvement of the quality of vegetables in the export chain.
A regional extension officer involved in assisting export farmers in implementing good agriculture practices and has regular contact with exporters.
A employee of a fruit and vegetables export company
A employee of a freight forwarding company which is in charge for handling the freight of vegetables for the airlines KLM and SLM. Two airline companies who are transporting most of the produce to the Netherlands.

From the part of the chain in the Netherlands:
3 importers, 1 branch of a supermarket chain, 2 wet market traders, 3 wholesalers and 1 in the municipality of Den Hague.
1 importer and 1 wet market trader in the municipality of Amsterdam.
1 importer of the municipality of Rotterdam
1 greengrocer (toko) in the municipality Wageningen.
Also 6 consumers who regularly consume Surinamese fresh produce

Although not directly related to the chain of Surinamese produce a freight forwarding company from Thailand gave me information about the transport cost of fresh vegetables.

As you can see the research area is quite broad but a necessary challenge you will have to face when analyzing global food chains. Summarizing the interviewees they can be categorized in the following groups:
21 respondents
4 informants
1 expert

The number per category differs depending on the consistency of the outcome and willingness to be interviewed. The interviews were semi-structured, open interview and questionnaire in the case of the consumers. During the interviews as much as possible the reactions and expressions of the interviewees was used to confirm the answers given. Another important source of information was the field observations during the interviews.

For identifying the different actors the following methods were used: searching on the internet, talking to some people of the Surinamese community ,field observations and asking the interviewees if they know any actors. The first interview with a greengrocer was very enlightening. The information the interviewees have given helped also so to guide the research. By this is meant the answers to the questions (issues) helped to assess what additional information will be relevant or who to approach. For example during the interviews it became clear that high transportation cost for flying over the produce is a important cause for the high prices and that a competitor has lower cost. It became than relevant also to seek for information or approach some persons who can shed some light on this issue.

One obvious thing but what the researcher didn't take into account when starting this research is that the research period from mid july until august it is the holiday season in the Netherlands. Numerous times when the researcher approached different actors or informants he was confronted with the problem that the person responsible was on holidays. This resulted in a delay of data collection. In other cases the actors refused to give any information. From the total number of 8 importers of Surinamese fresh vegetables 5 agreed to be interviewed. For the interview of this group a semi-structured interview list was used. The topics of this list were derived from the main- and sub-questions of the interview (see appendix 3). One importer because of his busy schedule requested me to send him the question list by e-mail. Up till now he hasn't replied. Of the other two importers one just made clear that he refuses to give any information because usually when he provides information it is used by the same people to start a similar business. The last one doesn't preferred to be interviewed. It has to be noted that there was no sequential manner in interviewing the different category of actors. The field circumstances mostly dictated the sequence but also the intention was not to do a sequence according to actor category. This made it possible that with each new insights in the subject, the interview list of the actors in the different category could be adjusted. In order to determine which research topics are important when analyzing the export chain of Surinamese vegetables the researcher contacted a expert who in 2003 participated in a project about the export chain of Surinamese fruit and vegetables to the Netherlands. Another important factor to select this person was that he is a chain consultant. Unfortunately this person was on summer holidays. As alternative a researcher at the Ministry of Agriculture, Animal Husbandry and Fisheries, department of Agriculture Research, Marketing and Processing in Suriname was approached. This person is involved in a ongoing project of improving the quality of fresh vegetables in the export chain. In addition to that two local extension officers were asked for assistance and information. These local officers are involved in assisting farmers who are producing vegetables for the export. The assistance is related to implementing good agriculture practices and keeping records of their activities. Also did they assisted exporters in implementing a "trace back system" which enables exporters but also other authorities to trace back the delivered produce to the producer. Each of these two local officers agreed to interview an exporter. A semi-structured interview list (appendix 4) was send to them by e-mail and additional instructions was given to them by phone. Of this group only the researcher and one local extension officer in the end collaborated. To the researcher a semi-structured list (see appendix 5 was sent by e-mail. The interview with the with the local extension officer was by phone and was a open interview. During interviews with the importers it came clear that the transport to the Netherlands is a significant part of the total cost. This has a direct influences on the competitiveness of the chain. Information regarding the transport cost and that of competing countries would therefore be relevant. In order to get the necessary information the researcher contacted the cargo divisions of SLM, KLM and Martinair. These companies redirected the researcher to freight forwarding companies. Of the 4 freight forwarding companies only one replied. This company provided information regarding the transport cost of fresh vegetables from Thailand. Information regarding the cost of transport from Suriname to Amsterdam, Dominican Republic and Kenya to Amsterdam the researcher could not obtain. Through his network in Suriname the researcher was brought into contact with a freight forwarding company in Suriname (Surair Air Cargo Services N.V.) which is handling the freight of the 2 airline companies which are transporting most of the produce to the Netherlands. A semi-structured interview list was send to this informant by e-mail (see appendix ………). Through this contact the researcher was introduced to a employee of a fruit and vegetable export company. This informant provided the researcher with information regarding the exporter. A semi-structured interview list was send to him by mail (see appendix………).Of the 7 wet market traders approached for a interview only three collaborated. Although only 2 greengrocers have been interviewed the researcher was fortunate that both were purchasing their produce at the same importer. This importer was also one of the respondents in this research. Thereby the researcher was able to triangulate the information these actors provided. In the cases of the wet market traders and the greengrocers a semi-structured interview list was used (see appendices). With supermarket chain actor and one of the wholesaler it was a similar situation as with the greengrocers and the importer. For both of this actors it was a open interview because of the limited time available. The 6 regular consumers of Surinamese vegetables are regular customers of the a greengrocer who were asked to fill in a form (of the 10 handed out only 6 were filled in). The questionnaire was intended to make an assessment which of the 4 P's (planet, product, price and people) are important for this group of consumers.

The data collected through the field research has been analyzed with the following tools:

- o Chain mapping
- o SWOT analysis of the chain
- o Porter's five forces tool

Chain mapping is used to visualize the chain. A simple model is used to describe the This means visualizing the following aspects of the chain (GTZ n.d.) :

- o The core processes in the chain. For example: production, collection, export, import and retail the different actors
- o The different actors in the chain. For example: producer, trader, exporter, importer, and retailer
- o The relationship between the functions, the activities involved and the actors.
- o The relationship and linkages between actors
- o The added value through the chain
- o For visualizing the chain the following symbols will be used:

In a SWOT analysis (strengths, weaknesses, opportunities and threats) the internal and external environment of the chain is analyzed . This is done by classifying the internal strengths and weaknesses of the chain against the external opportunities and threats (Anon n.d., p. 64). Recommendations or done by looking how to use the strengths to overcome the weaknesses and to take advantage of the opportunities to minimize the threats.

To explain the relation and the behavior of the actors in the chain Porter's five forces model will be used. With this model the bargaining power of the actors can be assessed. The five forces are (Wijnands et al n.d, p. 271-274):

- threat of entry
- threat of substitutes
- bargaining power supplier
- bargaining power buyer
-degree of rivalry existing between competitors

With treat of entry is meant the easiness of people to enter the market. This is determined by time needed and the cost involved to become a competitor. The easiness to copy the technologies used. Are there only small businesses or only large ones operating (economies of scale).

When customers can replace the products or services you provide the treat of substitutes is high. It has to with the ability of customers replacing the products or services you offer.

Bargaining power supplier has to do with how easy it is for the supplier to raise prices. This is related to the number of suppliers, the importance of the input or services the supplier offers, the switching cost.

Bargaining power buyer has to do with how easy it is for the buyer to lower prices. This is related to the number of buyers, the importance of the buyer for your business, the switching cost for the buyer.

Degree of rivalry existing between competitors has to with the number of competitors that offer products or services of the same quality. If that is high the degree of rivalry will also be high.

CHAPTER 4 RESULTS

In order to assess the important issues relevant for this research regarding the exporter the following persons were approached:

1 Researcher at the Ministry of Agriculture, Animal Husbandry and Fisheries in Suriname

1 local representative of the Ministry of Agriculture, Animal Husbandry and Fisheries in Suriname.

1 Exporter

1 Employee of a exporter

From the information these 4 persons provided the relevant information is summarized in the following table.

Table 4.1 Relevant information regarding the exporter

Issue	Response 4 resources
Fresh vegetables exported to the Netherlands	The important fresh vegetables that have been indicated by all 4 resources are: okra , bitter gourd, african eggplant, aubergine , Some leaf vegetables being exported mostly during the winter time are: taro leaves (“boterblad/tayerblad”), celery, bitter greens (“bitter blad”), water spinach (“kankun”) Vegetables also being exported are: hot pepper, yard long bean chinese okra
Amount and frequency exported	1 (empoyee of the exporter) person indicated 2 times a week around 5 ton
Cost influencing the resale price	Transport cost for purchasing and delivery at the airport Purchasing price Packaging material Cost for service at the airport Tax Labor cost Sometimes storage cost
Fluctuations in export during the year.	During summer time the demand decreases and during winter the demand increases.
Important steps to ensure produce safety and quality	The ministry is assisting farmers in implementing good agriculture practices , this also includes registering the important production activities. For some systemic pesticides there is a ban of import. Other control points to ensure the safety of the produce is the inspection in Suriname before export and the inspection by plant inspection authorities at the airport Schiphol. Use of day fresh vegetables. Inspection at the packaging facility. Keeping the time between harvest and shipment as short as possible. By the researcher the following has been mentioned: 1 exporter is using a improvised cooling facility 2 exporters are using cooling facilities 2 are in the process of building cooling facilities Some exporters are using better packaging material Those that do not use cooling facilities are ventilated cardboard boxes. According to the same person there are 15 registered exporters of which 8 are active. When there is a is delay the produce is stored in a cooled storage.

Assessment of purchased vegetables	No grades are used. Assessment is on the basis of freshness, color, uniformity in size and maturity, physical damage, discoloring
Relationship with the producers	Vegetables are purchased from: regular suppliers, a group of irregular suppliers and traders Produce not meeting the requirements of the exporter is sold on the local market or given back to the producer. No contracts are used, regular transactions based on oral agreements
Relationship with the importer(s)	2 persons (exporter and informant) indicated that the importer has a trade relationship with more than one importer. 2 person (researcher and informant) also mentioned that there is a degree of tension in the relationship regarding payment and quality assessment. The exporter mentioned that problems are solved through talking. No contracts are used, regular transactions based on oral agreements. Payment after importer has received the produce.
Activities of the importer	Some are partly cultivating their own produce for export, transport of produce from field to packaging facility, transport of produce from packaging facility to the airport, inspection and sorting , washing (not all crops), packaging , sale of produce on the local market, sometimes cold storage, export.
Mechanisms to control the flow of produce	The producers/traders are aware of : the export date, pick up time or delivery time.The exporter but also the importer are aware of the flight schedule of the airline company.
Information about the consumers	A large part are descendants of Surinamese origin.
Information shared mong actors	In general the only information shared is price and amount during transactions.
Collaboration among actors	Almost no collaboration

From the interview with the category importers (5) the following information was extracted during the period 14 juli-25 august 2008

Table 4.2 Qualitative information provided by the importers (5)

Issue	Response importers
Fresh vegetables imported from Suriname	Important fresh vegetables imported the whole year, mentioned by all respondents, are: okra , bitter melon, african eggplant, aubergine, hot pepper and yardlong bean. Some leaf vegetables are only imported during the winter time: taro leaf (“boterblad/tayerblad”), celery, bitter greens, water spinach Vegetable imported in smaller quatity: chinese okra, “sem “
Important reasons for importing vegetables from Dominican Republic	Cold chain and therefore the quality is better. Better packaging material. The storage life is generally at least 1 week longer than produce from Suriname The freight cost are cheaper (around 1$/kg cheaper) which results in a cheaper resale price than the Surinamese produce. The price difference can range from 0,25-1 €/kg. A better response to market demands.
Amount and frequency of vegetables imported from Suriname	All the respondents are importing twice a week and the amount varies from 2-8 ton/week. An indication was given that around 50 ton is imported per week
Amount and frequency vegetables imported from the Dominican Republic	The 4 respondents are importing twice a week and the amount is around the same as from Suriname. An indication was given that around 60 ton is imported per week

Cost influencing the resale price	Freight cost Inspection cost and customs clearance (Indicated was that for freight , inspection and clearance, around 1,50- 1,70 €/kg can be added to the purchase price) Transport cost Storage cost Labor cost Lost of weight because of dehydration and removal of damaged or spoiled produce
Demand during the year.	During summer time some tropical vegetables as: taro leaves, water spinach, bitter greens, hot pepper, yardlong bean are also cultivated in green houses in the Netherlands. This results in a decrease of imports from Suriname. Increase of imports during winter and special days (as religious days) for inhabitants form Surinamese origin
Transport time	From the packaging facility in Suriname until arrival at the facility of the importer, it takes around 24-25 hours
Important steps to ensure produce safety and quality	Inspection in Suriname before export and the inspection by plant inspection authorities at the airport. Cold transport and storage Short resale time by ensuring a fluent flow of the produce from the airport to storage facility.
Assessment of the imported produce	No grades are used. Assessment is on the basis of freshness, color, uniformity in size and maturity, physical injury, discoloring and damage because of decay.
Relationship with the exporter	The purchasing price is on the basis of fob price. Payment after delivery. Most of the respondents have only one supplier (exporter). Price determination is usually done through negotiations No contracts are used, regular transactions based on oral agreements. A indication has been given that around 7-10 importers are active
Relationship with the customers	No contracts are used, regular transactions on oral agreements
Activities of the importer	The activities are: import, transport, inspection, weighing, cold storage, sale, deliverance on order. Refrigerated transport depends on the amount of produce imported.
Mechanisms to control the flow of produce	The flow is regulated by the following factors: -days of import or and arrival at the importer is fixed -amount imported is based on the time of the year and sale figures -customers know the day and time fresh produce arrive
Import trend the last few years	Most of the respondents are indicating that the import is constant.
Customers	These are: greengrocers (toko owners), wholesalers, wet market traders They are able to make out the difference between the Surinamese and the Dominican produce
Assessment of customers satisfaction	Done by sale figures and personal communication. Usually costumers speak up when they are unhappy with the quality
Information about the consumers	A large part are descendants of Surinamese or Indian origin. Consumers of Turkish and Moroccan descendant are familiar with some of these vegetables (taro leave and yardlong bean) Yard long bean is also widely known among the native inhabitants It is most likely that they can't make out the difference between the Surinamese and the Dominican produce

Opinion regarding the biggest retail outlet	The opinions are divided regarding the biggest retail outlet (greengrocer or wet market)
Information shared among actors	In general the only information shared is price and amount during transactions
Collaboration among actors	Almost no collaboration

The average wholesale prices at the importers for some of the most common vegetables imported form Suriname during the period 14 juli-25 august 2008 are noted down. Also was registered the average price for the same crops originated from the Dominican Republic.

Table 4.3. Prices of fresh vegetables at the importers during the period 14 juli-25 august 2008.

Name vegetable	Importer Average whole sale price Produce from Surinamese origin €/kg	Importer Average whole sale price Produce from Dominican origin €/kg
African eggplant	3.0	2.95
Aubergine	2.95	2.50
Bitter melon	2.88	2.25
Yardlong bean	3.50	2.55
Hot pepper	3.60	-
Okra	2.88	-
Average price €/kg	3.14	2.56

During the field research 3 wholesalers were interviewed. 2 of these wholesalers are selling Surinamese fresh vegetables and the other one was selling similar produce only from other countries.

Table 4.4 Qualitative data provided by 2 wholesalers of Surinamese vegetables

Issue	Response wholesalers
Fresh vegetables from Surinamese origin sold	Important fresh vegetables from Surinamese origin sold are: okra, bitter melon, african eggplant, aubergine , hot pepper, yardlong bean One was before also engaged in the import of Surinamese vegetables but because of the bad quality and financial losses because of this he stopped with this activity.
Sale of similar tropical vegetables from other countries	Both are selling tropical vegetables from the Dominican Republic. These are: okra , bitter melon, african eggplant, aubergine, yard long bean. Also tropical vegetables cultivated in the Netherlands are sold such as : taro leaves, hot pepper Both of these wholesalers are importing the Dominican produce by themselves.
Reasons for importing vegetables from the Dominican Republic	Cold chain and therefore the quality is better. Packaging material is of better. The storage life is generally at least 1 week longer than produce from Suriname The freight cost are cheaper (around 1$/kg cheaper) which results in a cheaper resale price than the Surinamese produce. The price difference can range from 0,25-0.50 €/kg.
Reasons for selling vegetables from Surinamese origin	One has mentioned that the quality of the Surinamese bitter melon and african eggplant. It is a addition to their assortment and for their costumer convenience.

Cost influencing the resale price	Storage cost Labor cost
Important steps to ensure produce safety and quality	The inspection by plant inspection authorities at the airport. One of the wholesalers is also HACCP certified. Visual inspection before purchasing the produce Cold transport and storage Short resale time
Assessment of the imported produce	No grades are used. Assessment is on the basis of freshness, color, uniformity in size and maturity, physical injury, discoloring and damage because of decay
Relationship with the importer(s)	The purchasing price is fixed. The respondents have a relationship with more than one supplier (importer). No contracts are used, regular transactions based on oral agreements
Relationship with the customers	Resale prices are fixed. No contracts are used, regular transactions on oral agreements
Activities of the wholesaler	The activities are: inspection, transport, cold storage, sale, deliverance on order.
Mechanisms to control the flow of produce	Costumers know when fresh produce arrive. Supply is in correspondence with the demand.
Customers	These are: specialized green grocers (took owners), wet markets, supermarkets
Import trend the last few years	The demand for fresh tropical vegetables is increasing because of the sale in supermarket chains.
Customers	These are: greengrocers (toko), wet markets, supermarkets They can make out the difference between the Surinamese and the Dominican produce
Assessment of customers satisfaction	Done by sale figures and personal communication. Usually costumers speak up when they are unhappy with the quality
Information about the consumers	A large part are descendants of Surinamese origin mostly of the first generation. The consumption among the native inhabitants is increasing because more of them are trying exotic recipes. It is most likely they can't make out the difference between the Surinamese and the Dominican produce
Opinion regarding the biggest retail outlet of Surinamese produce	The opinions of both respondents is the supermarket chain.
Collaboration among actors	Almost no collaboration

Some relevant information that a importer/wholesaler of tropical vegetables who doesn't sell Surinamese produce provided.

Table 4.5. Qualitative data provided by the wholesaler not selling produce from Suriname

Issue	Response wholesaler
Tropical fresh vegetables that are being sold.	Important fresh vegetables from Dominican origin sold are: bitter melon (3.25 €/kg), african eggplant , aubergine (2.95 €/kg) and yardlong bean (2.75 €/kg). Produce are bought at a importer. Tropical vegetables produced in the Netherlands and sold are: hot pepper (yellow 6 €/kg , red 5.25 €/kg). Frozen pre-cut yard long beans from China. The price of a box of 10 kg consisting of 20 small packages of 500 grams is 15 € ((1.50 €/kg). This is produce imported by the wholesaler . Also sells hot peppers from Uganda.
Reasons for not selling the Surinamese produce	Produce from the Dominican Republic is of the same quality but cheaper (around 0.80 €/kg)
Relationship with the importer(s)	The purchasing price is fixed. The respondents have a relationship with more than one supplier (importer). No contracts are used, regular transactions based on oral agreements
Relationship with the customers	Resale prices are fixed. No contracts are used, regular transactions on oral agreements
Mechanisms to control the flow of produce	Supply is in correspondence with the demand.
Mechanisms to control the quality	Visual inspection Cold transport and storage Short resale time
Customers	The biggest group are the Chinese horeca.
Cost	The same as the other wholesalers. The resale price increase with an average of 50% of the purchasing price.

During this research interviews were conducted with 5 retailers which can be divided into the following categories:
Supermarket chain: 1
Greengrocer (toko): 2
Wet market: 3
The relevant information they provided is presented in the following tables.

Table 4.6. Qualitative data provided by the supermarket chain

Issue	Response supermarket chain employee
Fresh tropical vegetables sold	Important fresh vegetables sold are: okra , bitter melon , African eggplant , aubergine , yard long bean. The words Surinamese vegetables ("Surinaamse groente") is used but the employee told me that these vegetables are partly from Suriname and partly from the Dominican Republic. Other tropical vegetables sold are: taro leaves, hot pepper. (most likely not produced in Suriname).
Reasons for selling these vegetables	There is a large population (30,000) in this neighborhood but there are very few places where you can purchase these vegetables.
Important steps to ensure produce safety and quality	The inspection by the plant inspection authorities at the airport. Cold storage Short resale time

Assessment of the quality of the delivered produce	The assessment is on the basis of trial and error and interaction with consumers. Noted that he doesn't have much experience with assessing the quality of tropical vegetables.
Relationship with the supplier (importer/wholesaler)	The produce is coming from 1 supplier. No contracts are used, regular transactions based on oral agreements (there is a agreement that if he orders it can be delivered the following day)
Activities supermarket chain	The activities are: inspection, cold storage, sale
Mechanisms to control the flow of produce	Form experience he knows that when a certain amount is put for sale all is sold the next day afternoon. The supply is adjusted to these features. (The chain is selling fresh tropical vegetables for 1.5 years now)
Assessment of customers satisfaction	Sales figures
Information about the consumers	Descendants of immigrants. Also native inhabitants who went abroad and tasted these vegetables once.

An overview of the prices of some fresh tropical vegetables that are being sold in the supermarket chain.

Table 4.7. Overview prices supermarket chain

Name vegetable	Sale price €/kg
African eggplant	5.98
Aubergine	4.98
Bitter melon	5.58
Yardlong bean	5.58
Hot peper	11.96
Okra	5.98
Taro leaves	6.98
Average price €/kg	6.72

Remark: In the supermarket the price is expressed in €/500gr.

The relevant information provided by the 2 greengrocers (toko owners) is presented in the following table.

Table 4.8. Qualitative data provided by the greengrocers

Issue	Response greengrocers (toko owners)
Fresh vegetables from Surinamese origin sold	Important fresh vegetables from Surinamese origin sold are: okra, bitter melon, african eggplant, aubergine , hot pepper, yardlong bean
Sale of fresh tropical vegetables from other countries	Both are selling tropical vegetables from the Dominican Republic. These are : okra , bitter melon, african eggplant , yardlong bean., chinese okra Also have been mentioned: Netherlands: taro leaves, bitter greens, water spinach Thailand: water spinach (usually only in winter ; price is around 8.50 €/kg) Jordan: okra Kenya: hot pepper Costa Rica: yard long bean
Reason for selling vegetables from Surinamese origin	For a part of there costumers it is a must have item.
Cost influencing the resale price	Transport, cost related to cold storage and display, repackaging sometimes, produce lost because of decay, and labor cost The sale price is around 1.5 time the purchasing price
Important steps to ensure produce safety and quality	The inspection by plant inspection authorities at the airport. Visual inspection before purchasing the produce Cold storage and display Short resale time
Assessment of the produce	No grades are used. Assessment is on the basis of freshness, color, uniformity in size and maturity, physical injury, discoloring and damage because of decay
Relationship with the supplier	The purchasing price is fixed. They have a relationship with only one supplier (importer). No contracts are used, regular transactions based on oral agreements. This also ensures them that in periods of scarcity they are ensured continuous supply
Activities greengrocer	The activities are: inspection, transport, cold storage, sale, sometimes repackaging.
Mechanisms to control the flow of produce	From experience the owner knows what his weekly demand (also taking into account the season) is. The arrival days of fresh produce are fixed. The consumers are aware when fresh produce are for sale in shop.
Assessment of consumers satisfaction	Done by sale figures and personal communication. Usually the consumers speak up when they are unhappy with the quality.
Information about the consumers	These are mostly: descendants of Surinamese origin. Africans (immigrants) and Antilleans; these are not concern about the origin of the produce
Biggest retail outlet	Difficult to assess

The relevant information provided by the 3 wet market traders is presented in the following table.

Table 4.9. Qualitative data provided by the 3 wet market traders.

Issue	Response 3 wet market traders
Fresh vegetables from Surinamese origin sold	Important fresh vegetables from Surinamese origin sold are: okra, bitter melon, african eggplant, aubergine , hot pepper, yardlong bean
Sale of fresh tropical vegetables from other countries	Both are selling tropical vegetables from the Dominican Republic. These are : okra , bitter melon, african eggplant , aubergine, yardlong bean., chinese okra Also have been mentioned: Netherlands: taro leaves, bitter greens, wet spinach Uganda: hot pepper Turkey: aubergine
Reason for selling vegetables from Surinamese origin	For a part of there costumers it is a must have item.
Cost influencing the resale price	Transport, cost related to cold storage, repackaging sometimes, produce lost because of decay, and labor cost
Important steps to ensure produce safety and quality	The inspection by the plant inspection authorities at the airport. Visual inspection before purchasing the produce Cold storage Short resale time
Assessment of the produce	No grades are used. Assessment is on the basis of freshness, color, uniformity in size and maturity, physical injury, discoloring and damage because of decay
Relationship with the supplier.	The purchasing price is fixed. They have a relationship with more than one supplier (importer as local producer) No contracts are used, regular transactions based on oral agreements.
Activities wet market trader	The activities are: inspection, transport, cold storage, sale, sometimes repackaging.
Mechanisms to control the flow of produce	From experience the owner knows what his weekly demand (also taking into account the season) is. The arrival days of fresh produce are fixed. The consumers are aware when fresh produce are for sale.
Assessment of consumers satisfaction	Done by sale figures and personal communication. Usually the consumers speak up when they are unhappy with the quality.
Information about the consumers	These are mostly: descendants of Surinamese origin.
Biggest retail outlet	Difficult to assess
Collaboration among actors	Almost no collaboration

The average prices of fresh tropical vegetables sold at the greengrocers (toko) and wet markets is given the following table.

Table 4.10. Prices of tropical fresh vegetables at the greengrocers and the wet markets during the period 14 juli-25 august 2008.

Name vegetable	Sale price (€/kg) Toko		Sale price (€/kg) Wet market	
	Sur.	Dom. Rep	Sur.	Dom. Rep
African eggplant	5.45		4.50	
Aubergine	5.38	4.50	4.30	3.50
Bitter gourd	5.45		3.98	
Yard long bean	5.45	3.95	5.50	4.50
Hot peper	10		12.25	
Okra	5.45		5	
Average price €/kg	6.19		5.92	

Remark: Sur.= vegetables from Suriname
Dom. Rep= vegetables from Dominican Republic

To assess how important the 4 P's (people, planet ,product , price) are for the regular consumers of Surinamese fresh vegetables, this group was asked to fill in a questionnaire. Of the 10 questionnaires handed out 6 were returned back. The results are presented in the next table.

Table 4.11. Results of the questionnaire among regular consumers

Issue	Response consumers	Number of respondents (n= 6)
Flavor/taste of the Surinamese vegetables	Good Average	5 1
Appearance of the produce	Good Average	4 2
Concern about product safety	Yes No	4 1
The price of the produce	High Affordable Cheap	5 1
Can you distinguish the Surinamese produce from the others	Yes No	1 5
Do also purchase similar tropical vegetables not originated from Suriname	Yes No	5 1
*Reason for buying these similar tropical vegetables not originated from Suriname	Affordable price Better quality Both	 1 4
Are you regulary asked about the quality of the produce	Yes No	 6
If not satisfied with the quality what do you do	Don't buy the produce Express my dissatisfaction	5 1
The 2 most important concerns when consuming Surinamese vegetables	Sustainable production Product safety Producers are getting a fair price Good labor conditions in the chain	1 6 4 1

Remark: * one of the respondents didn't answered the question

The information 2 freight forwarding companies provided is presented in the next table.

Table 4.12. Overview freight cost

Cost	Suriname	Thailand
Handling cost (USD)	< 50 kg 55.53 50-100 kg 60.00 > 100 kg 60.00 plus 0.06/kg above 100 kg	120.00
Air freight (USD)	KLM: groenten/fruit : 500 kg-1000 kg 0.75 p/kg 1000 kg-2500 kg 0.50 p/kg > 2500 kg 0.40 p/kg SLM: groenten/fruit : 500 kg-1000 kg 0.59 p/kg 1000 kg-2000 0.50 p/kg > 2000 kg 0.40 p/kg	>100 kg 3.00 /kg
Fuel surcharge (USD)	KLM: 1.30/kg SLM: 1.25/kg	0.90/kg
Security fee (USD)	KLM: 0.14/kg SLM: 0.10/kg	
Crisis surcharge (USD)	-	0.13/kg
Added value tax	8%	-

CHAPTER 5 ANALYSIS AND DISCUSSION

In the export chain of Surinamese vegetables to the Netherlands the main activities in which the direct actors are involved is described in the following table.

Table 5.1. The main activities of the direct actors

Direct actor			
Exporter	Importer	Wholesaler	Retailer
Collecting Inspection Sort Local sale Wash Pack Transport Export	Import Transport Inspection Weighing Storage	Inspection Transport Store	Inspection Store Sell

It is possible that the direct actors are in involved in more activities than described in table……but the purpose of chain mapping is just to put the main activities and to give a general view. For example some exporter are some times also active in producing but most of them are still depending on other producers to fill in their orders. What is mentioned is the local sale because produce that is not meeting requirements for export is sold on the local market. Some of the crops are washed in a diluted solution if chloride or soap, for example bitter melon. This is done to remove still present field pest. Figure 2 (see the next page) is derived from mapping out the processes, the actors and activities. In figure 2 the line between the exporters and importers is the visualization of the border where one part of the chain ends (Suriname) and where the other part start (Netherland). Regarding the wholesalers the field research have shown that all of them are engaged in the imports of tropical vegetables similar as the vegetables from Suriname (see tales   ). This is shown by the fact that 2 are importing vegetables from the Dominican Republic and the other one is importing pre-cut frozen yardlong bean from China. Especially from the Dominican Republic has to be mentioned that the varieties are similar to that from Suriname. More strongly they are difficult to be separated from the Surinamese produce especially for the consumers. The boundary between importer and wholesaler is therefore vague. In the export chain of Surinamese vegetables they are considered wholesalers because they are not importing the produce directly. In other chains for example tropical vegetables from the Dominican Republic they are considered importers. Figure 2 shows that the export chain of Surinamese vegetables is short with in some cases only 1 intermediary. The results have shown that most likely the wet market traders and the greengrocers are purchasing their produce directly from the importer. This is done for the obvious reason to maximize profits because every intermediary in the chain leads to value addition and therefore to higher purchasing prices. From the point of function this group is preferably to be excluded.

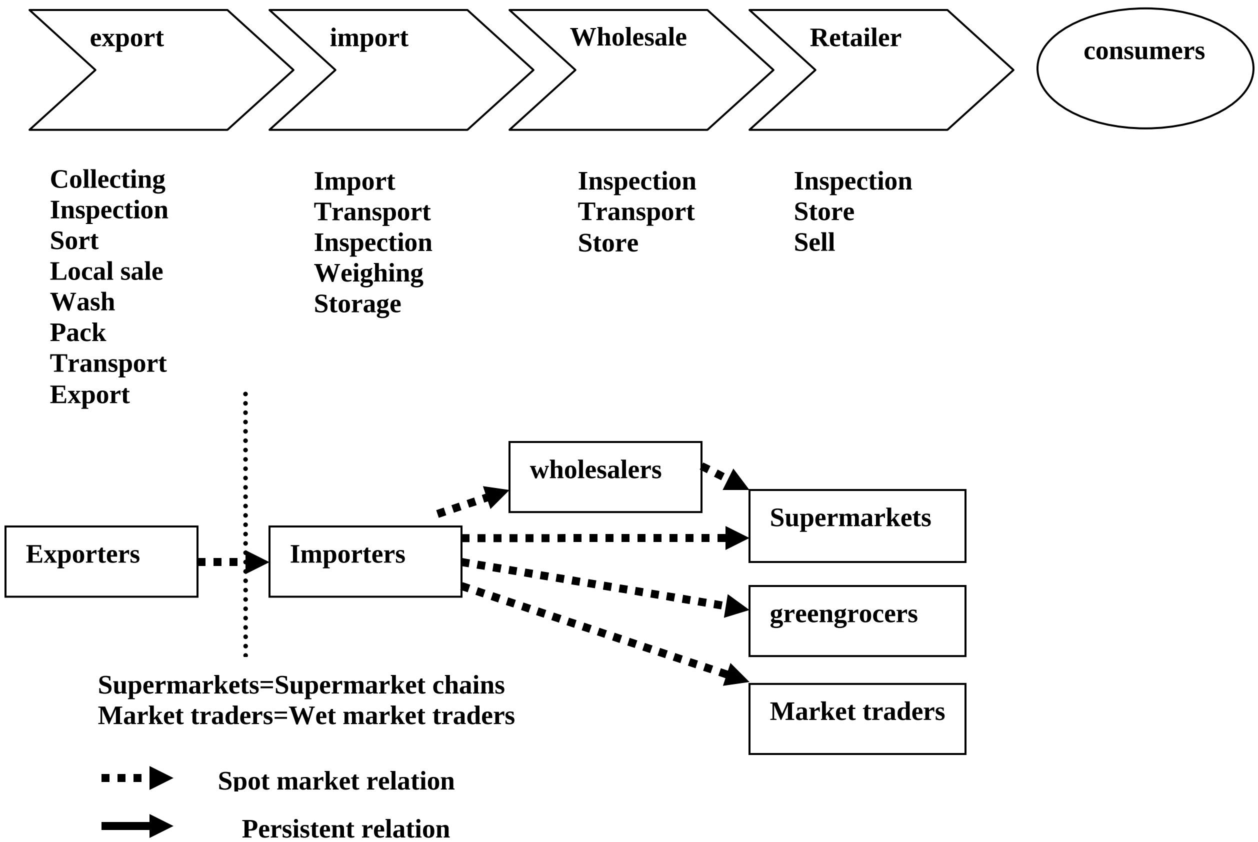


Figure 5.1. The functions, actors and linkages in the export chain

The retailers that are purchasing the Surinamese produce from the wholesalers are more likely to be the supermarket chains where the produce is also sold at a higher price (see tables of chapter 3). The described structure of the chain differs from what Hoorweg (2004) mentions in his report. He mentioned in his report of long chains of 3 or more intermediaries. An explanation for the differences in structure is again the issue of profit margin that has come under pressure after 2004 because of increased transport cost and competition. According to the CBI report: “Fresh fruit and vegetables market in the Netherlands” (2008) the import of fresh vegetables from developing countries increased with 39% in volume from 2002-2006 in the Netherlands but the export of vegetables out of Suriname between 2002-2006 (see table) are almost the same. In the next table a comparison is shown between the lowest prices Hoorweg (2004) has registered and the lowest prices noted down during this research project.

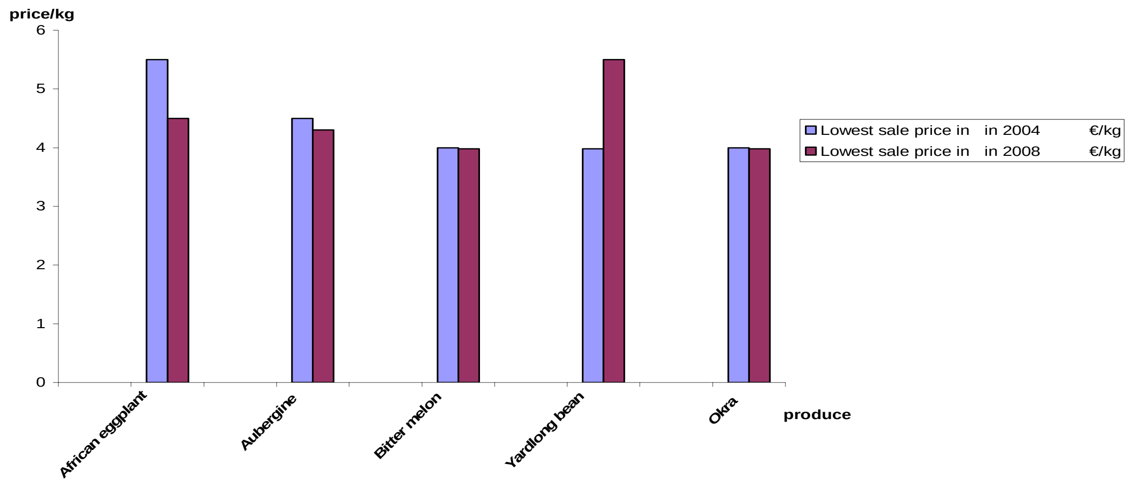


Figure 5.2. The price differences of Surinamese vegetables between 2004 and 2008
Sources: Hoorweg (2004) and data collected from the field

Figure 5.2. shows that the price differences that the prices for most important Surinamese crops hasn't increased. This means for the actors of the chain to control cost in order to secure the sale of Surinamese vegetables. The price of yardlong bean has increased, an explanation is that this crop is also gaining popularity under the not traditional consumers.

In figure 5.1. the relationship the direct actors have with each other is visualized with arrows. From the exporters and down ward the chain can be characterized as spot market relations. Although there is a preference between actors to regularly have transactions with each other. This can be explained by the fact that the suppliers of fresh Surinamese vegetables is just a handful of importers. The number of importers mentioned by the actors interviewed during the field research is around 7-10. The number of importers is more likely to be around 10-13 if we take into consideration that a rough estimated of 50 ton (see chapter 2.2.) is imported and that most of the importers are flying goods twice a week. The quantity with most favorable rate is 2000 kg and above. Using these assumption the number of importers is roughly 12. Other factors that stimulates these persistent relations is it reduces transaction cost and it ensures continuity. The aspect of continuity is confirmed by the greengrocers who are purchasing their produce usually at the same importer to ensure that even in time of scarcity they have these vegetables for sale. To substantiate the characterization of the relationship between actors as spot market the following can be mentioned:
The relation between the actors is guided by prices. As long as the relationship is beneficial for the parties they work together. The field results show that the only information that is exchanged is prices during transactions. Also there is no collaboration among actors. Further exploration of the relationship will be done when the five forces model of Porter will be used.

The degree of regularity may vary along the chain with possible the highest between the exporter and the importer and the lowest between the wet market traders/wholesalers and their suppliers. As seen from the results wet market traders/wholesalers are purchasing their produce from different suppliers.

The number of active exporters is around 8. Hoorweg (2004) mentioned 10 exporters. This is a decrease of 20 % in numbers between 2004 and 2008. The number of wholesalers, wet market traders and greengrocers is difficult to assess because none of the interviewees were able to give any figures and the limited time available for this research project. The number of supermarket retailers that have been identified are 2 (C-1000 and Super de Boer). Hoorweg (2004) also mentioned Jumbo. Regarding the market share of these retailers, the opinions among the actors is mixed. In the next table a overview is given of the differences in average prices.

Table 5.2. The average price of Surinamese vegetables at the retailers

Retailer	Average price €/kg
Supermarket chain	6.67
Greengrocer	6.19
Wet market trader	5.92

In calculating the average price for the supermarket chain the price of taro leaves is excluded because at this time of the year most of the taro leaves are produced in the Netherlands. Comparing the average prices of the different retailers the research results show that the wet markets are the cheapest point of sale followed by the greengrocers. These results are same as that of Hoorweg (2004). An interesting point to mentioned is that the supermarket chain was using the words Surinamese vegetables for selling some of the produce but when asked if the vegetables from really Suriname the employee in charge of vegetables answered partly. After 2 weeks when the reacher went back to the store to check on the prices he noticed the word Surinamese was removed. Also at the wet market produce of different origin are put side by side. For some of these tropical vegetables such as african eggplant, aubergine, okra, yardlong bean, taro leaves the origin is difficult to assess therefore easy for the consumers to make the mistake of buying produce from another origin for the Surinamese. This especially the case with fresh vegetables from the Dominican Republican. The results from the questionnaire (see table) also confirm that. Possible paying also more as the Surinamese vegetables have a high price. Coming back to the issue of retailers in general the supermarket chains have the highest share of food sales in the Netherlands (see table) and the wet markets the lowest share. If it comes to the point of sale of the Surinamese vegetables the wet markets and the greengrocers have the highest share. A rough estimate given by the wet market traders and the greengrocers is that the respective average sales of Surinamese produce per week is 570 kg for the wetmarket traders and 180 kg for the greengrocer. The greengrocer sells the produce with the best quality. From own observations in the field it was noticed that the supermarket chain is still struggling with the quality assessment of these tropical produce. This can be confirmed with the statement of the supermarket employee, who is in charge of the vegetables division, saying that they are still in a learning process. Interesting point to mention is that although the supermarket chain probably has the smallest share in the it is giving bigger exposure to these produce. So for promoting tropical vegetables (also Surinamese vegetables) they are playing a big part. In time their share will grow when their knowledge about these produce will improve. As their share will increase also quality requirements will increase. As supermarket chains are l known for standardization of quality and safety. If the export chain of Surinamese vegetables can utilize these positive development is a question that remains.

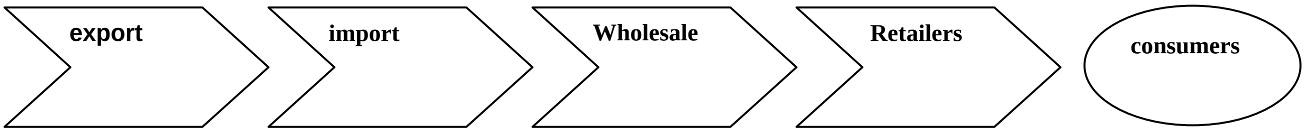
Regarding the consumers of fresh Surinamese produce all the interviewed actors stated that the biggest group are immigrants of Surinamese descent. The size of the immigrants of Surinamese descent was at January 2007, 333,000 (Statistisch Jaar boek 2007). In his research report Hoorweg (2004) mentions that the older generation is eating lesser Surinamese vegetables than the younger generation. From the data collected this is difficult to assess. Some of the actors did indicated that it is the younger generation that is eating less fresh Surinamese vegetables. Also the origin of the fresh tropical vegetables is of less importance for the younger generation. This may also be the reason that with the findings that all the importers are also selling fresh produce from the Dominican Republic.(see table chapter). For consumers the price quality relation is important. Other consumers that have been identified are Antilleans and immigrants of Asia and Africa. The size of these groups (Arubans included) was at January 2007 (Statistisch Jaar boek 2007) 1,362,000. Also is mentioned that the crop yardlong bean is being consumed by the native inhabitants and immigrants of Turkish and Moroccan descent. If we look at geographical concentration of the actors involved it can be stated they are concentrated in the municipalities Den Hague, Rotterdam and Amsterdam. This corresponds with location were most of he immigrants are living (Hoorweg 2004).

As was mentioned before there is almost no collaboration between actors, the only information that is exchanged between actors is the exchange of information of prices and quantities during transactions. The satisfaction of costumers (also end consumers) is mainly through personal communication (see tables). The frequency of personal communication is difficult to assess. The important information about customers (also end consumers) satisfaction is not shared among actors. That a climate of minimal information sharing is hampering the performance of the export chain of Surinamese fresh vegetables is given by the result of the research:

-high degree of discontent about the quality of the produce (this means also the consumers)

-under performance of the chain as the export statistics (see table) show while there is a growth in imports of fresh tropical vegetables to Netherlands as mentioned in chapter 2.2.

That minimal information sharing and no collaboration has lead to a misconceptions about quality will be demonstrated in the following figure.



export	import	Wholesale	Retailers	consumers
Appearance	**Appearance** **Shelf life** **Price** **Availability**	**Appearance** **Shelf life** **Price**	**Appearance** **Shelf life** **Price**	**Appearance** **Price** **Physical product features** **Product safety** **Fair trade**

Figure 5.3. The different views among the actors about quality.

The features that are given to quality are from the tables that mentioned by the different direct actors. From figure 3 visualizes the misconception of that there is about the term product quality between direct actors. This figure also gives an indication that one of the reasons the Surinamese export chain of vegetables is not performing well is that the produce are not meeting consumers demand. From these results the Surinamese export chain can be characterized as a supply driven chain. To the description given for appearance (freshness, color, bruises, uniformity, size) are still not well defined. A way to solve this to is introduction of grades and standards.

For making a rough estimate of value added through the chain the following information has been used:

- Average consumers prices of vegetables provided by the statistic department of the ministry of Agriculture, Animal Husbandry and Fisheries. The assumption is that the sale price of the exporter should at least be the same as the retail price at the local market. (see appendix)

-The prices provided by the different actors in the Netherlands.

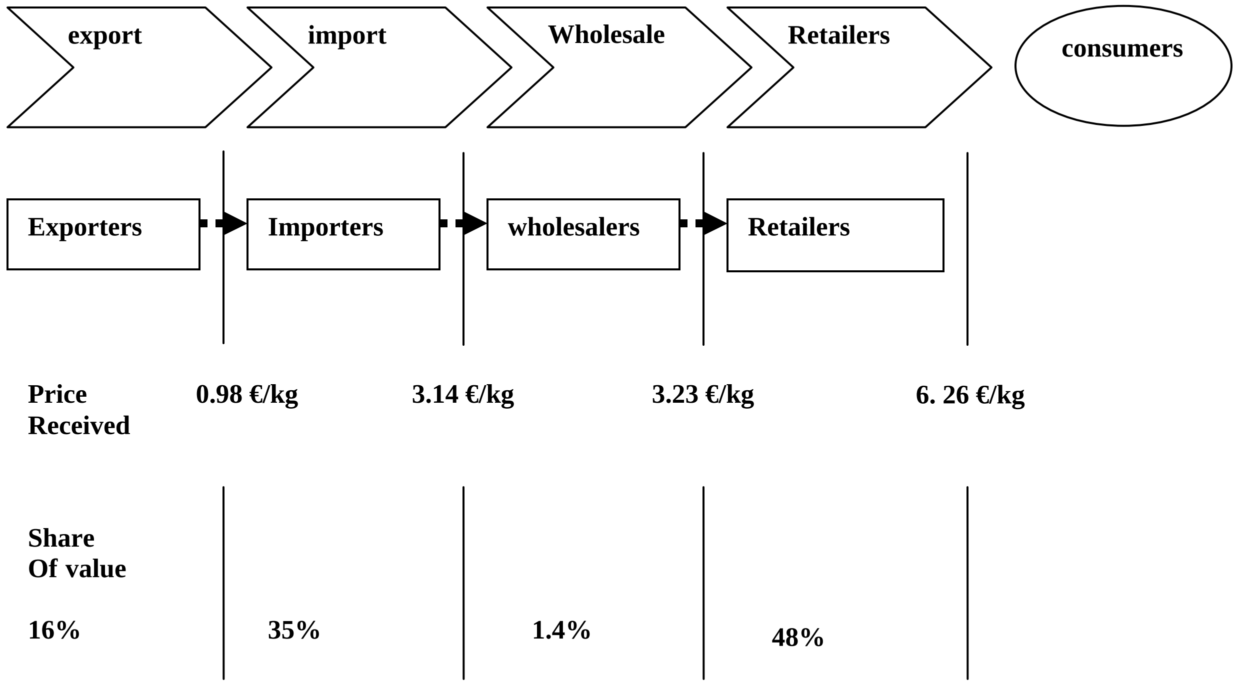


Figure 5.4. Added value through the chain

For calculating the value added through the chain the average price at the level of the different direct actors have been used. This is done because of the indication given by a importer how he calculates his prices (see appendix) From the exporter he gets a fax with the total price and amount of produce supplied. From there on he adds the freight cost and other cost and divide it by the total amount purchased (price/kg). Depending on the crop he adds or remove some euro cents. This is why at the importers levels (see results table) the price differences between hot pepper and the other fresh vegetables is not so big as at the retailer level. By this case is also demonstrated the complexity of cost/prize calculation.

From figure 4 we see the share of value is increasing downward the chain with the retailers having the biggest share of value. This just a rough estimate to give a view of the pattern how the share of value is developing down ward the chain . Usually as mentioned before the wet market traders and greengrocers are purchasing their produce directly from the importer.

From the information that was provided by the different actors in the chain the researcher was not able to calculate the cost/profit margins. The figures given just are not sufficient enough (see appendix). Still useful is to compare the share of value with the cost given. By doing it is still possible to make a rough assessment which of the direct actors is benefiting the most in the chain.

Table 5.3. Comparison share of value with cost

Actors	Exporter	Importer	Wholesaler	Retailers
Price received				
share of value	16%	35%	1.4%	47%
Average price	0.98 €/kg	3.14 €/kg	3.23 €/kg	6.26 €/kg
Cost	1 Collecting 2 Transport 3 Packaging 4 Handling cost (0.06 €/kg) 5 Labor cost	1 Freight cost (1.32 €/kg) 2 Clearance (0.35 €/kg) 3 Transport cost 4 Storage cost 5 Labor cost 6 Waste 10% (0.27 €/kg)	1 Transport 2 Storage 3 Labor cost 4 Waste	1 Transport 2 Storage 3 Labor cost 4 Waste 2%
Margin Other cost +profit	0.25 €/kg	0.17 €/kg	-	-

From data collected in the field a estimate of is calculated of the cost/profit margins of the different actors (see appendix). From assessing table it is very likely that the retailers are having the highest margin of profits and the profit margin is going down upward. The wholesalers are selling the produce probably just as a convenience to their clients who are purchasing a wide range of products at the wholesalers. In the case of hot pepper the consumers are probably paying to much.

A other aspect of looking at the share of value especially in the case of global food supply chains is were the biggest shares of values geographically is located. The lowest shares of values is located in the Surinamese part of the chain and the highest shares of value are located in the Dutch part of the chain. This is important because when talking about upgrading the chain you also have to look at which of the actors (or parts of the chain) have to do the biggest investment. If upgrading is to be successful redistribution of profits is also important.

In appendix a swot analysis is given of the chain. From this swot analysis a short explanation will be given about certain points mentioned in the table. These points are:
- Although the adoption is low exporters were assisted with the implementation of a “trace back” system by the ministry of Agriculture, Animal Husbandry and fisheries. This system makes it possible in case of product safety issues to trace the producer of the vegetables. In sequence with that producers are also being assisted with the implementation of gap practices. Also in this case the adoption rate is low.
-There is a demand for convenience but actors are not utilizing these opportunities. For example pre-cut and pre-packed food. Other competing chains are utilizing the opportunities. For example pre-cut frozen yardlong bean from China, pre-packed frozen okra from Thailand.
-For the consumers beside appearance and price the issues as safety a fair price for the producer is also important. The direct actors are not satisfying these needs of the consumers.

From the data collected the actors have indicated that the information sharing is low and there is almost no collaboration. To explain this behavior Porter's five forces model will used.

Starting with the exporter the following can be mentioned:
Threat of entry:
The technology needed are a pick-up or van and packaging is done in a shed. Packaging material is available. All the exporters can be described as small businesses. This makes it easy to enter the market and become a competitor. Treat of entry is high
Treat of substitutes:
This is high because the importer can replace the produce that is offered. Substitutes are being sourced from different parts of the world. For example Dominican Republic, China etc.
Bargaining power buyer:
There are a few buyers (10-13) and the switching cost for the buyer are low. Most buyers are well known with the market in Suriname.
Degree of rivalry:
For the small market there are a enough competitors (8) that can offer the same produce. Degree of rivalry is high
To protect his position the exporter is not collaborating with others and is not sharing information. Against the exporter he has a low bargaining power.

The importer:
Threat of entry:
The technology is easy to copy and the investments are not to high. The businesses are medium-large sized. It is relative easy to enter the market and become a competitor. Treat of entry is high
Treat of substitutes:
This is low because the substitutes are also purchased by the importer . The substitutes are sourced from different parts of the world . For example Dominican Republic, China etc. .
Bargaining power supplier:
There are enough suppliers (exporters) that can offer the same produce and switching cost is low. Bargaining power supplier is low
Bargaining power buyer:
There are a lot of buyers (retailers) and the switching cost are high. Bargaining power buyer is low
Degree of rivalry:
There are a enough competitors that can offer the same produce. Degree of rivalry is high.
The importer has a high bargaining power against the exporter and also against the retailers. The competition is also high. His experience and knowledge are important assets to compete.

The wholesaler:
Threat of entry:
The technology is easy to copy and the investments are not to high. The businesses are medium-large sized. It is relative easy to enter the market and become a competitor. Treat of entry is high.
Treat of substitutes:

This is high because the customers can replace the produce the wholesaler is offering by purchasing it directly from the importer.
Bargaining power supplier:
The supplier (the importer) doesn't need the wholesaler to sell his produce. Bargaining power supplier is low
Bargaining power buyer:
There are a not many buyers and the switching cost are also low. Bargaining power buyer is high.
Degree of rivalry:
There are a enough competitors that can offer the same produce. Degree of rivalry is high.
The wholesaler has a low bargaining power against the importer and also against the retailer.

The retailer:
Threat of entry:
The technology is easy to copy and the investments are not to high. The businesses are small sized. It is relative easy to enter the market and become a competitor. Threat of entry: is high.
Treat of substitutes:
This is high because the consumers can also buy produce at other retailers.
Bargaining power supplier:
The supplier (the importer) is offering produce that are important for the retailer. Switching cost also high. Bargaining power supplier is low
Degree of rivalry:
There are a enough competitors that can offer the same produce. Degree of rivalry is high.
The retailer has a low bargaining power against the importer. The competition among retailers is high.

This analysis shows that the horizontal competition is high (among the same actors). In the export chain of Surinamese vegetables the exporter has the highest bargaining power.

An issue to discuss is the of high air freight cost. BY the interviewees the indication is given that the high cost of air freight are one of the main problems of not being competitive. In table the air freight cost from Bangkok to Amsterdam are given. The air freight cost to Amsterdam of a load 2000 kg of fresh vegetables is around 2.90 €/kg (from Suriname the cost are 1.32 €/kg (see appendix) . Besides these cost the importer has to pay also import tax which is not paid when importing from Suriname. Despite these high cost fresh vegetables are imported from Thailand. Some of these that are being imported are okra and water spinach. So the argument of high air freight cost doesn't hold up. From the interviewees the indication was given that quality is very good.

CHAPTER 6 CONCLUSION

The export chain of Surinamese vegetables is a short chain. The market value according to the CBI report , “The fresh fruit and vegetables market in the Netherlands” (2008) in 2006 was around 1,62 million euros. The quantity that has been exported last year is around 2400 ton. The biggest group of consumers are immigrants particularly of Surinamese descent. Geographically the market is concentrated in the municipalities with high numbers of immigrants. These are Amsterdam, Rotterdam and Den Hague. The market the Surinamese export chain of fresh vegetables is servicing is a niche market with a high value. There are also other players active in this market and the competition is stiff. Some of these competitors are Dominican Republic, Thailand, China, Costa Rica, Uganda, Kenya. The important produce being exported are okra, african eggplant, aubergine, bitter melon, hot pepper and yardlong bean. The prospects for market growth are positive especially because of the fact that also supermarkets chains are starting to sell these produce.

There are a few actors in the chain (exporter-importer-wholesalers and retailers). The amount of actors upward is small (around: 8 exporters, 10-13 importers) and big at down ward retailers. The retail channels with the highest share are the greengrocers and wet market traders. The relationship that exits between these actors can be defined as spot market. The regular transactions between the direct actors is the way how the flow of produce is organized. The only information that is exchanged between the direct actors is amounts and prices. There is no collaboration among actors. This has also lead to discontent between the actors because of misconceptions. A good example of misconception is the aspect of quality. The consumers conception of quality doesn’t corresponds with that of the exporter. The aspects of safety, fare share and appearance are not being satisfied.

The added value is high at the Dutch part of the chain and low at the Surinamese part of the chain. The share of value of at retailers level is the highest . Calculations of cost and profits is complex and not transparent. An example is the prize development of hot peppers through the chain.

The chain can be characterized as a supply driven chain that doesn’t serves the needs of the consumers in the Netherlands. Most of the production is sold on the local market (Suriname) and a small part is exported. The local demands influences the availability of produce for export. Sustaining this market is important not because of the foreign revenues it is generating but also of the fact that it balances the demand and supply at the local level (Suriname).

The chain doesn’t use any quality standards. The control points for checking if the sanitary and phyto-sanitary regulation are not violated are the ports of export and that of import.

The rivalry among actors is high and an away to protect their interests is by not sharing knowledge and experience. The reason for this rivalry in the chain is because of the threat of entry and substitutes is high.

CHAPTER 7 RECOMMENDATIONS

From the collected data and analysis we have seen that there is discontent among actors especially between the exporters and the importers. For support service organizations a possible way to facilitate the process of chain upgrading is to use the 5 components of chain intervention (Mundy ed. 2006). The interventions components are:
-Chain assessment
-Building engagement
-Chain development
-Monitoring and evaluation
-Learning and innovation

An issue when assessing the chain is prize calculation. From the data provided by the different interviewees it was not possible to calculate the cost/prize margins at the different stages of the chain. This will very important in the monitoring and evaluation process. A necessary step in this process is to do a comparative chain assessment and simulation by looking at the export chain of fresh vegetables of the Dominican Republic to the Netherlands. As seen from the data collected the export chain of the Dominican Republic is serving the same consumers and has a competitive advantage. The quality is better and its market share possibly already exceeded that of Suriname. When doing the assessment and simulation it is important too look at the cost of upgrading. Which part has to do the investments. In the case of the export chain of Surinamese fresh vegetables it is the part in Suriname that has to do the investments. Looking back at the share of value, the highest share of value is in the Netherlands. In order to have a successful upgrading it is therefore important that the direct actors in the chain agree on a redistribution of value of share, so also of redistribution of profits. Literature review have shown that upgrading can lead to unequal distribution of benefits (Wijnands et al. n.d. cited in Bijman et al. eds. 2006). Possible way to solve this problem is to look at the waste (produce unfit for sale) aspect. The collected data have given an indication of 10%. The researcher opinion is that it must be higher because from figures indicated from literature it a figure of 33% is mentioned under uncontrolled conditions (Revell & Liu n.d. cited in Bijman et al. eds. 2006). From appendix shows that a waste percentage at importers level alone increases the cost roughly with 0.27 €/kg. A suggestion there fore is that the profits of waste reduction is redirected to the part of the chain in Suriname.

A possible way to start the process of building engagement is to organize joint visit trips. The actors of one part of the chain (Suriname) visit the other part of the chain (Netherlands). At every component it is important not to forget the producers. The actors of the different parts of the chain can learn what the activities and constraints are at the different levels of the chain.

When looking at the step of process upgrading an important issue to consider is the freight cost. From looking at the different components of the cost when comparing the cost from Suriname and Thailand is the handling cost in Thailand it is a fixed amount and in Suriname it depends on the volume of export. An important point is that the upgrading of the export chain of Surinamese fresh vegetables also depends on efficient functioning of the support chains. For upgrading the product it is important to look at the market trends in the Netherlands (health and convenience). Some concerns of the consumers as seen from the questionnaire is safety and equity in the chain. These concerns can be used for upgrading. Suggestions are: organic and or fair trade labeling. The advantage of the before mentioned options is that it also tackles the problem of inequity in the chain. To solve the problem of produce sold as Surinamese and to increase sales branding is a option. An important thing when talking of certification is the introduction of standards and grades which don' t exist in the chain at moment. In establishing grades and standards it is important that the actors are involved. A positive effect of certification is that it makes the chain more transparent which is not the case at the moment. It also creates the environment for collaboration among actors which is lacking at the moment in the chain.

At the monitoring and evaluation stage again the issue of the distribution of benefits is important, who is gaining and who is losing.

An important component in the intervention is that the actors learn from each other and initiatives are taken for innovation. This a characteristic that chain desperately needs because if we look at the long tradition of the chain things hasn't change very much.

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APPENDICES

Appendix 1

List of Vegetables Mentioned in this report

Scientific Name	Popular Name
Brassica oleracea var. capitata	Cabbage
Phaseolus vulgaris	French beans
Vigna sinenses (var. sesquipedales)	Yardlong bean
Lycopersicon esculentum	Tomato
Brassica chinensis	Chinese cabbage
Xanthosoma sagittifolium	Taro leaves
Cucumis sativus	Cucumber
Hibiscus esculentus	Ocra (lady finger)
Solanun macrocarpon	African eggplant
Capsicum annuum	Hot pepper
Momordica charantia	Bitter melon
Solanum melongena	Aubergine
Cestrum latifolium	Unknown
Dolichos lablab	

Appendix 2

Production and export figures of vegetables in Suriname

Table 1.1 Production and export figures of vegetables in Suriname

Description	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Production area (ha)	1,258	975	967	1,092	1,034	994	1,111	947	1,041	825
Production (ton)	21,185	15,021	15,758	17,073	17,138	16,144	18,536	15,123	17,800	14,367
Export (ton)*	2,221	2,211	2,160	2,725	2,448	2,675	2,395	2,475	2,390	2,783
Export value (USD x 1000)	634	641	593	673	737	904	900	1,103	1,290	1,586

Remarks: In the export weights is also included root and tuber crops
Source: ministry of LVV/department of statistics

Appendix. 3

Interview list importers

Semi – Structured Interview

This list is designed for collecting information from the importer of Surinamese fresh vegetables.

Date:……………………….

Questions

1. What sorts of Surinamese fresh vegetables do you import?
2. Do you also import fresh tropical vegetables from other countries? If yes, which countries and what kind of produce?
3. What are the differences between the fresh vegetables from Suriname and those from the other countries?
4. Some Surinamese vegetables are also cultivated in the Netherlands (bitter melon/hot pepper/taro leaves). What do know about that?
5. What trend do you expect for the coming 5 years regarding the import of Surinamese fresh vegetables?
6. As an importer of Surinamese fresh vegetables, in what activities are you in engaged?
7. What regulations/guidelines do you take into account as an importer?
8. Can you define the relationship you have with the exporter(s)/customer(s)?
9. How do you control the quality of the produce?
10. How you do you assess the satisfaction of your customers?
11. The consumer price in the Netherlands is at least 5 times the price paid to the farmer. What are the factors that influence the sale price?
12. Can you describe the logistical system used to import (and distribute) the produce?
13. What market information do you exchange with the other chain actors (exporter/buyers)?
14. If you look at the chain. It is very important that the flow of the products is not stagnated. Any stagnation will influence the freshness negatively. How do you manage it?
16. What do you know about the end consumers of the produce?
17. What can u tell me about the market you supply with Surinamese fresh vegetables?
18. What are the weak/strong points of the chain?
19. How do you collaborate to resolve common problems?

Appendix 4

Interview list exporter

Semi – Structured Interview

This list is designed for collecting information from the exporter of Surinamese fresh vegetables.

Date:……………………….

Questions

1. What sorts of Surinamese fresh vegetables do you export?
2. Do you also export fresh tropical vegetables to other countries? If yes, which countries and what kind of produce?
3. What trend do you expect for the coming 5 years regarding the export of Surinamese fresh vegetables?
4. As an exporter of Surinamese fresh vegetables, in what activities are you in engaged?
5. What regulations/guidelines do you take into account as an exporter?
7. Can you define the relationship you have with the importer(s)?
8. How do you control the quality of the produce?
9. How you do you assess the satisfaction of the importer?
10. Can you describe the logistical system used to export the produce?
11. What market information do you exchange with the other chain actors (producers/importer)?
12. If you look at the chain. It is very important that the flow of the products is not stagnated. Any stagnation will influence the freshness negatively. How do you manage it?
13. What do you know about the end consumers of the produce?
14. Can you elaborate on the factors that influence your sale price?
15. What can u tell me about the chain you supply with Surinamese fresh vegetables?
16. What are the weak/strong points of the chain?
17. Do you collaborate to resolve common problems?

Thank you so much!!!

Appendix 5

A swot analysis of the export chain of Surinamese vegetables

Table 5.4. Swot analysis of the export chain

Strengths	Weaknesses
A short chain with a fast flow of produce (24-25 h) A export chain with a long tradition The produce have a high market value Some experience with a quality assurance system (gap and trace back). Efforts are being taken by some actors to improve quality (use of foam boxes, cold storage) A large population of Surinamese descendants The flavor of the produce is perceived as exceptional	Low quantities Supply is influenced by local demand Absence of grades and standards No information exchange between actors Not well informed about consumers needs Low quality of the exported produce Improper packaging material High air freight rates The chain is not innovative
Opportunities	**Threats**
Market growth in the import of tropical vegetables Supermarket chains are also selling tropical vegetables now Imports are duty free	Stiff competition from other developing countries (e.g. Dominican Republic, Thailand, Costa Rica, Uganda, China). Local production Sale of produce from the Dominican Republic as Surinamese

Appendix 6

Value added through the chain

Name vegetable	Farm gate price over the month july in Suriname €/kg	Average retail price over the month july in Suriname €/kg
African eggplant	0.57	0.77
Aubergine	0.97	0.99
Bitter melon	0.57	0.69
Yardlong bean	0.92	1.28
Hot pepper	0.80	1.11
Okra	0.57	0.69
Average price €/kg	0.73	0.92

Source:

Calculation freight cost (see table):
Calculation is based on a freight of fresh vegetables of 2000 kg

Handling cost:	60 + 120=	180	$
Freight cost:	2000 x 0.40=	800	$
Fuel surcharges:	2000 x 1.25=	2500	$
Security fee:	2000 x 0.10=	200	$

		3500	$
Added value tax 8%:	8 x 35=	280	$

Total freight cost		3780	$
Total freight cost/kg	3780/2000=	1.89	$= 1.32 €/kg

Exchange rate:
1$=0.7 €

Exporter
Handling cost : 180/2000= 0.09 $/kg= 0.06 €/kg
Average sale price vegetables by the exporter: 0.92 + 0.06 = 0.98 €/kg
Margin: Other cost + profit = 0.98 – 0.73= 0.25 €/kg

Continued Value added through the chain

Importer

Price paid to the exporter:	0.98 €/kg	
Freight cost for the importer:	1.32 €/kg	
Clearance cost (inspection etc.):	0.35 €/kg	(average cost indicated by a importer)

	2.65 €/kg	
Waste 10%:	0.27 €/kg	(average indicated by a importer)

	2.97 €/kg	

Margin: Other cost + profit= 3.14 - 2.97= 0.17 €/kg
(3.14 €/kg is the average price of produce at the importer)

Further breakdown of cost/profit at the level of wholesaler or retailer was not possible because of insufficient information

Appendix 7

A comparison of the export chains

Table: Comparison of the export chain of Suriname with that of the Dominican Republic

Country	Suriname	Dominican Republic
Freight cost	High	Lower Around 0.70 €/kg cheaper
Price	High	Lower 0.25-1.00 €/kg cheaper
Export chain	Not cold	Cold chain
Quality	Bad packaging No uniformity in size, maturity Short shelf life Fluctuation in the supply	Good packaging Uniformity size, maturity Longer shelf life Continuity in the supply

Source: Information provided by the interviewees