Possibilities for Nicaraguan Mangoes

*A Value Chain Analysis of Dried Mango*
Abstract

Two months of fieldwork was conducted during the summer of 2014 in Nicaragua, through qualitative interviews the aims was to investigate the Value Chain of dried mango and its potential as an alternative income source for livelihood improvements for households in Manzano Uno, Nicaragua.

The idea to investigate dried mango in particular originates from a conversation in the spring of 2012 with Ben Orton, co-founder of local NGO Waves of Hope, who considered the idea after witnessing the huge amounts of ripe mango falling to the ground and rutting away during the peak season in Manzano Uno. The research problem in a bigger context is related to the debate on how developing countries, and rural parts in particular, are often excluded from the benefits that come with a globalized market economy, since they often lack the tools to participate or do so on unfavorable terms.

The idea of a Value Chain Analysis is to detect where along the production line value is added to a product from raw to finished good. Income Diversification comes in to the investigation and contributes to the conclusion that it would be favorable for livelihood improvements to households in Manzano Uno to diversify income sources, to create more secure and higher quality income. The value chain analysis is mainly based on information provided by Sol Simple, an organic-fruit drying plant in San Ramon, Nicaragua and is one out of two fruit processing enterprises in the country. They have been growing every year and have positive expectations of the future.

Dried fruit and mango in particular seems to have good prospects for future demand as export products and one important addition is the sustainable, organic and Fairtrade markets which all enable higher product prices and thereby enable bigger shares to go back to the local producers. The federal incentives in Nicaragua include focus on the foreign investment to the country and quantity secondary education, which is concluded to not always be quality education. The high share of investments and entrepreneurship from foreigners are explained by the high security profile in the country, fertile lands and the lowest minimum wage in the region.
Key Words

Dried Mango, Value Chain, Nicaragua, Income Diversification

List of Abbreviations

HIC- High Income Country
LIC- Low Income Country
MU – Manzano Uno
PNDH – Plan Nacional de Desarollo Human
RQ – Research Guestion
UN – United Nations
VC – Value Chain
UNAN - Universidad Nacional Autónoma de Nicaragua
WOH – Waves of Hope
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Table of Contents

1.1 INTRODUCTION 7

1.2 RESEARCH QUESTIONS 10

RQ 1. WHAT IS THE VALUE CHAIN OF DRIED MANGO? 10

RQ 4. HOW COULD THIS TYPE OF PRODUCTION BE OPERATED TO ENSURE BIG PORTIONS TO GO BACK TO LOCAL PRODUCERS AND WORKERS? 10

1.3 LIMITATIONS 10

1.4 ETHICAL CONSIDERATIONS 11

1.5 STRUCTURE 11

2.1 THEORY 12

2.2 INCOME DIVERSIFICATION 12

2.3 THE VALUE CHAIN 14

3.1 METHODOLOGY: FIELD STUDY WITH QUALITATIVE INTERVIEWS 17

3.2 INTERVIEWS WITH BREADWINNERS AND HOUSEHOLDS IN MANZANO UNO 18

3.3 INTERVIEWS WITH OTHER STAKEHOLDERS 19

3.4 ASSESSMENT OF THE SOURCES 20

4.1 BACKGROUND: CONDITIONS IN NICARAGUA 20

4.2 PLAN NACIONAL DE DESAROLLO NACIONAL (NATIONAL PLAN FOR HUMAN DEVELOPMENT) 22

5.1 RESULT 26

RQ 1. WHAT IS THE VALUE CHAIN OF DRIED MANGO? 26

RQ 2. WHAT ARE THE PRACTICAL DETAILS WHEN DRYING MANGO? 27

5.2 INBOUND LOGISTICS 28

5.3 OPERATIONS 29

5.4 DRIVERS AND WHAT AFFECTS THE COSTS 32

5.5 LINK BETWEEN ACTIVITIES 33

5.6 MARKET AND SALES 33

RQ 2. WHAT ARE THE PRACTICAL DETAILS WHEN DRYING MANGO? 36
RQ 3. WHO ARE THE MAIN ACTORS IN THE WORLD MARKET FOR DRIED MANGO? 36
RQ 7. ARE THERE SEASONAL DIFFERENCES IN THE LABOR SUPPLY AND DEMAND? 37
RQ 5. WHAT ARE THE EFFECTS ON THE SURROUNDING COMMUNITIES IN THE CASES OF
SOL SIMPLE AND MANGOSA? 37

6.1 ANALYSIS 38

6.2 INBOUND LOGISTICS 39

6.3 OPERATIONS AND OUTBOUND LOGISTICS 39

RQ 1. WHAT IS THE VALUE CHAIN OF DRIED MANGO? 40

6.4 THEORY CHOICE 41

RQ 2. WHAT ARE THE PRACTICAL DETAILS WHEN DRYING MANGO? 41

RQ 3. WHO ARE THE MAIN ACTORS ON THE GLOBAL MARKET FOR DRIED MANGO? 42

RQ 5 WHAT ARE THE EFFECTS ON SURROUNDING COMMUNITIES IN THE CASE OF SOL
SIMPLE AND MANGOSA? 43

RQ 4. HOW COULD THIS TYPE OF PRODUCTION BE OPERATED TO ENSURE BIG PORTIONS
TO GO BACK TO THE LOCAL PRODUCERS? 45

RQ 6. WHAT POTENTIAL WOULD THERE BE FOR SUCH A PRODUCTION, AND WHAT
LEGAL, PHYSICAL AND OTHER OBSTACLES WOULD THERE BE? 48

7.1 CONCLUDING COMMENTS 50

8.1 REFERENCES 52

8.2 LIST OF INTERVIEWEES 52

8.2.1 BREADWINNERS IN NICARAGUA 52

8.2.2 OTHER STAKEHOLDERS 52

8.3 PUBLISHED SOURCES 52

8.4 INTERNET SOURCES 55
List of Figures

Figure 1. Correlation between EXPY (export productivity) and GDP per capita 13
Figure 2. Value Chain 16
Figure 3. Nicaraguan Products with Export Potential 22
Figure 4. Nicaraguas Exports, Imports and Trade Balance 2000-2013 23
Figure 5. Regional Comparison of Labour Cost in Agroindustry 25
Figure 6. Map over Different Production Regions in Nicaragua 26
Figure 7. Value Chain of Dried Mango at Sol Simple 27
Figure 8. Cost of Fresh Mango for Sol Simple 28
Figure 9. Operations and Outbound Logistics 29
Figure 10. Cost of Operations and Outbound Logistics 30
Figure 11. Running Cost and Labor Cost at Sol Simple 31
Figure 12. Equipment Investment Cost at Sol Simple 32
Figure 13. Cost of Finished Product 33
Figure 14. Dried Mango 2013 34
Figure 15. Price and Characteristics of Dried Mango on the Swedish Market 35
Figure 16. Top World Producers of Fresh Mango 2012 36
Figure 17. Number of Merchandise Products Each Year by Countries in the Region 48
Figure 18. Herfindahl Concentration Showing Diversification in Nicaragua Imports Relative to Its Exports in 2013 49
1.1 Introduction

The concept of free international trade as catalyzer for economic growth has faced criticism from many in the field, for example Cox (2003), George (2007) and Strange (2007) this last decennia. The development of Critical Theory proposes that the free market has created structures similar to colonial ones, and been exploitative and weakening to the economies of low-income countries rather than helpful. This was obviously not the official aim with the capitalistic privatization of markets when it was presented as the blue print for cost efficiency and balanced economies. Regardless of ones personal opinions, the reality of today’s world economy has come to be of a very interconnected nature.

The question of how to correct inequalities these structures have left with is what is crucial for livelihood improvements in low-income countries and also debated at length in the development society. Inequalities range from national level, with big wage differences within countries (Latin America has the highest Gini-Coefficient in the world) due to the huge gaps between those integrated and benefitting from in the capitalist market and the vast majority of the world’s population living marginalized and isolated by the globalized market. On the international level the inequalities in livelihood quality and income levels could be explained by history, geography, culture, wars, industrialization and other factors that matter for growth possibilities. One important trend to sum up with, which is also relevant to this study, is that international trade has proven to be more beneficial to High Income Countries (HIC) than to Low Income Countries (LIC) (World Bank, 2011).

On the household level in Nicaragua these inequalities manifest in the lack of education, nutritional food, sanitation and overall prospects for the future. In Manzano Uno (South coast of Chinandega) the circle of poverty is maintained due to high unemployment, and the workers being left at the dominant hands of companies with available jobs, often offering poor working conditions and inadequate salary. The lack of family planning is another contribution to the problem as young people often have kids to feed before finishing school, forcing them to take low income and low quality jobs which often do not even pay enough for the basics (Interview, Ben Orton). Having not completed high school
or even elementary school, young adults and teenagers find themselves in the category of unskilled labor, leaving even fewer career options.

Inequalities are also displayed in the export patterns of trade between LIC:s and HIC:s, since LIC:s often export primary goods to relatively low prices set by the world market, and more developed economies generally sell and export more processed value added goods and that way make a bigger profit in their trade (Cadot; Carrère; Strauss-Kahn, 2011). International movements such as Fair Trade, Rainforest Alliance, Organic and similar commitments that demand some level of social, economic and/or environmental responsibility are facing a growing demand from informed consumers (Economic Development Quarterly, 2014).

This thesis will focus its investigation on Nicaragua, Central America’s poorest country after Haiti, although rich in biological and cultural resources. It is known as one of the safest countries in the region, and has since the end of its civil war in 1990 been picking up economic development. The country still faces problems as its HDI ranking is the second lowest in all American countries, indicating that overall development is not following the economic one. The fertile land and the hot temperature create good conditions for growing most things, and like in the majority of developing countries and hot places, there are heaps of mangoes in Nicaragua.

Mango constitutes half of all exotic fruits grown world wide, and 99% of it is grown in developing countries. Though the mango tends to stay in the regional market, the international demand and trade of mango has been growing the last couple of years. Still only an estimated 2 % of the fruit is processed before sold (Stefan, Hau, Von Oppen, 2003). The peak season in Nicaragua is in the spring, starting march or April depending on the type of mango, and then continues for up to three months. During this time there are massive amounts of ripe mango, which causes the price to sink drastically (Burke, Interview).

The primary occupation in Nicaragua is in the agriculture sector and its main exports are meat, coffee and sugar. Through theories on Income Diversification this study will use a Value Chain Analysis to exam possibilities to produce dried mango in the rural settings of Manzano Uno, and the possibilities to create higher and better quality income channels
through such a production. The community is located in the northwest region, which is home to the main agricultural production and also the poorest part of the country (Fairfood International, 2014).

Since dried mango is often processed in a different country to where it grew, the idea is to keep processing close to the local producers in order to enable larger portions of profit and influence in the hands of producers, There is only one company producing and exporting dried fruits in Nicaragua now, and it is located in the central part of the country. It will be used as subject to conduct the Value Chain analysis on, in order to construct a model that can be analyzed and compared to the conditions in Manzano Uno and this way map out what is done there (through the Value Chain analysis), if it could work in another place and how it might impact the local families in MU.

Through interviews with local breadwinners and families, the interviews intend to map out the needs of improvements from locals point of view and areas that could be improved by new income sources, how those should be structured and organized. It was also relevant to get more insight to the role mango has today in the community, along with the current patterns of work for the people living there.

“It would be great if someone could use it [the mango], at least it would clear the roads in the spring” (Justino Jerardo Juarez, 02-07-14)

Other stakeholders that were interviewed consisted of representatives of the local NGO, from farming co-operatives, private exporters and companies, the head of department and a student from a university in agricultural processing, municipal representatives and two companies in the mango business: Mangosa and Sol Simple. The goal with these interviews was to learn more about the professional industry of mango from people who had first hand experience, and from these different angles reach a more conclusive understanding and in that way make more credible assessments in the Value Chain analysis.
1.2 Research Questions

The main research questions are marked in bold and are followed by sub-questions to answer the main one.

RQ 1. What is the value chain of dried mango?
RQ 2. What are the practical details when drying mango?
RQ 3. Who are the main actors in the world market for dried mango?

This part is empirical to the biggest extent, in order to create a clear analysis of the production of dried mango as done by Sol Simple.

RQ 4. How could this type of production be operated to ensure big portions to go back to local producers and workers?
RQ 5. What are the affects on the surrounding communities in the cases of Sol Simple and Mangosa?
RQ 6. What potential would there be for such a production, and what legal, physical and other obstacles would there be?
RQ 7. Are there seasonal differences in the labor supply and demand?

These questions will be answered by analyzing the production of dried mango and through the interviews with stakeholders and breadwinners in MU. The results are backed up by theories of the benefits in diversifying income for the stability and growth of an economy (McLaughlin, 1930), which will be further developed in the theory chapter. The roundup hypothesis is that drying mango, creating a processed new good, would be beneficial for the people in Manzano Uno in improving their economic situation.

1.3 Limitations

The limitations of this project are part that there is only one company and one community in Nicaragua that is studied, a comparison to other rural communities in low-income countries, other businesses or neighboring countries would make for a more overarching analysis. Also the fact that the majority of the information is collected through interviews
may affect the credibility of the result. However it made sense to do this study in a “local” and qualitative way since it does not include professional feasibility study data such as earth samples, investment appraisals or baseline studies but rather focuses of the socio-economic situation. This way the focus is shifted more towards the household and development aspect in the analysis and that way fits better in the Peace and Development subject.

Another difficulty has been data accessibility. Dried mango is a relatively new and specific product and there are not international or domestic statistics kept in Nicaragua over production or trade. The numbers in the VC analysis are to a large extent relying on the interview with the general manager of Sol Simple and cannot be confirmed by a third party, unlike the interviews with breadwinners, stakeholders, WHO and Fairtrade informants who’s information is compared and confirmed since it often overlapped.

The data available in statistical banks like FAOSTAT (2013) and UN data (2014) are categorized by labels like “Guava, mangosteen and mango – fresh or dried” which likely does not reveal enough about the role dried mango products have on its own. Instead internet searches for dried mango prices has been the turn to. Beside this, the biggest limitation has been the time frame and narrowing down of this research problem, which would ideally be investigated with investment appraisals, impact studies and physical earth samples in order to give a more in depth and overarching conclusion instead of this relatively shallow and specific investigation.

1.4 Ethical Considerations
Ethics need to be considered since interviews were conducted. The option to be anonymous was displayed to all the interviewees along with the possibility to all participating parts to receive a digital copy of the ready thesis was offered. It would be both environmentally unfriendly and unpractical to intend to print it, however if the time frame allows it a Spanish version would add significantly to the interest and reach of this research.

1.5 Structure
In the introduction the thesis is summarized in regards to research problem, research
questions, analytical framework, methodological design, restrictions and ethics. In the theory chapter 2.1 the concept of Income Diversification is covered as well as a more in depth description of the Value Chain concept. Following this chapter is the Methodology section 3.1, explaining the methods used in the research and a summary of the limitations in the selected method. The Results display the empirical data the research has generated. This is followed by an Analysis of these results, going more deeply and interpreting the answers retrieved through the research in respect to the research problem and research questions. Lastly, the Conclusion sums the thesis and presents the results and findings in a concise way and put them in a bigger perspective in a more normative manner.

2.1 Theory

2.2 Income Diversification

If one rests its belief on that traditional trade theory as proposed by Smith (1776) and Ricardo (1817) are right in the fact that export is a successful way to develop your economy, there are yet more aspects to consider. The traditional trade theory will recommend specialization in an economy’s production and exports and argue that this is the answer to produce effectively.

The discussion on income diversification and its importance for economic growth is however a not a new one either. McLaughlin (1930) was one of the first to look into the relation between industrial diversification and stability in an economy. His research was done in cities in the US and the hypothesis he confirmed was that the economy of a community will be more stable with a wider range of business. With more industries that compliment each other’s different seasonal and cyclical swings, one can expect a more stable economic growth. Also due to the different capabilities and qualities of workers, with one or few businesses the likelihood is that these working tasks require one specific type of workers and leaves other groups unoccupied whilst a diverse working market is more capable to tend to different qualities and time tables in order to create more efficiency (McLaughlin, 1930).

The conclusion drawn by Hausmann, Hwang and Rodrik (2005) is that what a country produces and exports is important for its economic performance, also that countries are better off producing things that are produced in high-income countries now. They also
suggest policy implications from governments are important since they might hinder or encourage entrepreneurship, which is essential for what they refer to as “Cost Discovery” and means basically the leap of faith to see if a new type of production is successful in the new setting (Ibid). The positive relationship is shown through the high correlation between GDP growth and EXPY, which is an indication for level of productivity, related to the export goods. The EXPY represents the productivity of the export basket. So a higher value of EXPY is correlated with a higher GDP growth as is demonstrated in the figure below (Hammouda; Karingi; Njuguna; Jallab, 2006).

**Figure 1. Correlation between EXPY (export productivity) and GDP per capita**

![Figure 1. Correlation between EXPY (export productivity) and GDP per capita](image)

(Boccardo; Chandra; Li; Osorio, 2007)

Nicaragua is outlined with a red circle. The Nicaraguan export basket shows high level of productivity relative to the level of GDP, when comparing to the general trend of the countries examined. For example the majority of the countries with lower EXPY readings
than Nicaragua are African, but Uganda, Sudan and Rwanda still have higher GDP readings. This suggests that the strategy in Nicaragua to expand the export market is to an extent that is higher than the general trend. Other countries that show EXPY values that stand out from the trend are Nepal and Pakistan (with values similar to Nicaragua’s) as well as India and China who are known for being big export production countries.

Ellis (1998) presented a study of rural livelihoods in developing countries (primarily south Africa), in relation to diversified non-farm income sources and came to the conclusion (amongst others) that diversification in the income activities equal stability, flexibility and less vulnerability than undiversified households. He also concluded that with income diversification comes benefits of less seasonal vulnerability in food security caused by fluctuations in the labor season as well as external shocks to the farm activities (1998). Gender equality was another benefit highlighted, as Ellis found just like McLaughlin that diversification enabled women to participate since it creates more options for occupation in fields where women have equal or better advantages than men (ODI, 1999). In this sense, poverty reduction was also pointed out as a consequence of diversification since redistribution of money from men to women often means more investment in nutritional food and education (ibid).

2.3 The Value Chain
Micheal Porter first presented the concept of a Value Chain in his book Competitive Strategy, first published 1980 (2004). It is a way to analyze a production in terms of different categories that Porter suggests are all interconnected in the final outcome of profit of every production of goods or services. They need to be analyzed together as they all are linked and each individual category driver might also influence the following ones. When doing this analysis from raw to finished product, the aim is to discover where the costumer value is added in the chain and to what proportion (Fregert & Jonung, 2005). The categories are divided between primary activities and support activities (see picture) and their joint quality determines the end margin. The practical part of the analysis is done by mapping out each action, the cost of each action, the linkages between actions and finally weaknesses and possibilities to improve the production (Fregert & Jonung, 2005).

An example of a product that is profitable to produce is diamonds. They are cut in mines or strained from water, which can be done to a low cost in the countries where diamonds are
found. The cost of cutting diamonds is also small relative the value addition this generates, since an uncut diamond is not worth nearly as much as a cut one. As long as the demand for diamonds is kept high, the profitability for those working along the supply chain is big, to various extents depending on where along the chain ones role is (Stellenbosch: University of Stellenbosch, 2011).

Applying this concept to dried mango will enable an overlook of how much of the consumer price can, theoretically, go back to the producers and how much is absorbed by other steps and costs along the way (Todaro & Smith, 2011). By doing this the idea is to display more transparently and to get a better insight to how the production chain in terms of which steps are efficient and which could be improved. The analysis can be done either based on cost efficiency or based on differentiation. Depending on if the aim is to compete by changing strategy regarding quality in differentiation or by cost competition (Strategic management insight, 2013).

The method of analyzing value chains has been used in agricultural development as a means to enhance the interconnectedness between producing farmers in rural areas to more lucrative markets (FAO: UN, 2014). The approach has been applied by different development organizations, both federal and non-governmental, either to assess where improvements can be made or to promote new production chains (ibid).

The labor force and households can be incorporated in any of the different steps of the chain, depending on the type of product or service being analyzed. For example if there is bad communication between the Operations and Marketing and Sales (two categories distinguished in the value chain, see picture), lets say a farming cooperative want to sell their products but lack the right connections in the lucrative markets abroad. Then it matters less how efficient their production is, since there are bad opportunities to distribute and market the products. Good linkages and connection between the steps is crucial in order to have a successful overall production. This is why the linkages between the different steps in a value chain are relevant to look at in any company, additional to each of the steps independently.

This original framework as elaborated by Porter has received critique saying it excludes
vital aspects of a business situation such as the importance of leadership, goals and culture (Presutti & Mawhinney, 2013) as well as additional consideration to socio-economic and environmental aspects (European Journal of Operational Research, 2014).

**Figure 2. Value Chain**

![](image)

(Strategy Management Insight, 2013)

With regards to the time frame the limitation of this study will be made only to the primary activities and focusing on the first three steps of this chain, which are described more in depth below.

1. Inbound Logistics: all the activities related to the supplier of the primary goods or input. In this case the fresh mango and the farmers who grow it and Sol Simple’s relationship of these.
2. Operations: all the activities involved in the process of turning primary goods (inputs) to finished product (output). In this case this is includes all the steps in the drying process at the facility.
3. Outbound Logistics: all the activities related to the storage, collection and transportation of the finished products/ output. Here this is the storage and shipping of dried mango to its buyers in the US.
4. Marketing and Sales: the promotional actions taken in order to target the right consumer group to buy the products or services, this is done by different promotional strategies.
5. Service: this is the support, guarantees or warranties that are offered from the company after the product or service has been sold, in the form of costumer service for example.

3.1 Methodology: Field Study with Qualitative Interviews

The research is comprised of two main categories for data collection: firstly the fieldwork in Nicaragua was based on ethnographical work with semi-structured interviews. Focus was on breadwinners in Manzano Uno, as well as the business sector of processed fruit and mango and other relevant stakeholders found. This was done in order to map the local situation in terms of possible livelihood improvements, nature of the work situation, locals attitude to the idea and the overall conditions and experiences people had with processing exports and what structures they deemed suitable.

Since qualitative research aims more at depth, and involves a more personalized approach to the problem as well as it involves observations and open-ended questions to find more dimensions to the problem (Bekhet & Zauszniewski, 2012), this method was used in the interview outlining. By using semi-structured interviews the idea is to access new answers that perhaps where not included in the questions and in order for the participant to talk more freely about what they find most important, event to focus more in-depth on some topics of the interview more with some interviewees, again in order to dig deeper and cover the topics better. This way each person that was interviewed was able to voice their opinion in a way where his or her own experiences or knowledge could take more space and importance in what he or she chose to say.

For example most of the breadwinners did farming at least part time, and were more fit to answer questions about the general work situation in the village than perhaps the university professors in the UNAN Agro-possessing department were. In the same way the breadwinners in Manzano Uno are not as likely to have the technical knowledge of food processing nor the market knowledge that the people working in the export business have (for example one interviewee was the local representative for a real estate company called Century 21 and had tried to export fruit and vegetables from the area on behalf of his company)
The second part of the investigation is of a more empirical nature and aims to analyze the value chain of dried mango through the production of Sol Simple in Nicaragua. Since this company is already operating in Nicaragua it made sense to look at how they do it, in order to see if there is room for re-establishment. The overall goal is to see if such a production would enable breadwinners in Manzano Uno to get income that is higher and of better quality than it is today.

The theoretical focus is also on income distribution, and the findings will seek to be descriptive and analytical in the combining the result of semi-structured interviews in Manzano Uno with the value chain analysis of dried mango at Sol Simple. In order to answer the research questions, they will be presented separately in the Result chapter and then combined using the theoretical framework of income distribution and value chain in the Analysis chapter. The two differentiated groups of interviewees are described below.

3.2 Interviews with breadwinners and households in Manzano Uno

These interviews were done to understand the economic situation and possible livelihood improvements that can be made to the current situation. The delimitation of interviewees was breadwinners of the household, since they ideally have a good understanding and first hand experience of the income situation in their community. A total of five breadwinners were located, three men and two women, with the intention of interviewing people in different family situations, and with different ages and social status. This was done to enlarge the spectra of opinions and experiences as much as possible in order to paint the picture as fair to reality as possible.

Besides breadwinners, other interviews in Manzano Uno was with a representative of a real estate company with knowledge of land business and with first hand experience of privately exporting fruit. Another one was done with the founder of an agricultural co-operation of 22 farms in the neighboring community, this cooperative sold their produce to the company ‘Wal-mart’ and also had first hand experience of exporting fresh fruit. Lastly there was a focus group with representatives from Manzano Uno and neighboring communities where the topics covered possibilities and goals for their agriculture in the future.
Through focus groups or group interviews the benefit of a discussion and elaborations (George & Bennet, 2005), which was also added to the data collection: the participants perhaps have different ideas of how their income situation is and identify different obstacles. These differences triggered interesting discussions. My role in these conversations (debates) was more that of a moderator to keep the subject in focus and to ask follow up questions to match the information needed.

3.3 Interviews with Other Stakeholders

These interviews were done with the private sector and aimed towards the export climate and economic situation in Nicaragua at large, since they can be expected to know more about these topics. Another focus group was done with the head of department together with two associate professors at the department of Food Processing at a public university in León (UNAN). A student majoring in agribusiness was also interviewed in order to get yet another perspective.

Two functioning farmers/producers were visited: Mangosa who export fresh mango to the US and Europe and employ over 800 contractors each year. This is the only Nicaraguan company that export fresh mango. The second and more extensive interview and visit was to Sol Simple, who provided data for the Value Chain analysis. The stories of each company and its journey gave a good insight to the business culture in the country, again from a new angle.

The trip to Sol Simple and the interview with founder/manager William Burke provided enough information to account for the costs and actions of their production. This data was categorized according to the topics suggested by Porter (1985) in order to construct their value chain. First the inbound logistics (primary goods) were identified, then the Operations in the different steps from fresh to packaged dried mango, the Outbound Logistics (finished product), the Marketing and Sales as well as the Service of their company were analyzed and presented in tabled in the chapter Result.

3.4 Assessment of the Sources
The selected interviewees that represented breadwinners in Manzano Uno consisted of two females and three males. Since they were aware of my objective as a student, they theoretically did not have a reason to not answer rightfully to the questions. However the possibility that they connected me with Waves of Hope, the local NGO which I worked with in 2012, was taken into consideration and in order to avoid this association in was prioritized to make my role as a student clear. All the same this could still have affected the conversation in the sense that they might answer in ways believed beneficial to them. In some cases the interview was conducted in the presence of other family members and those answers could have been corrupted by the lack of privacy. Other stakeholders and particularly the private sector could have agendas of making their company or organization look good, but that aspect would be of a bigger concern if this study was an investment appraisal or had another purpose that was not academic.

4.1 Background: Conditions in Nicaragua

Nicaragua is the second poorest country in Central Amerika after Haiti and the forth-poorest country in the Western Hemisphere, more than half of its citizens are living under 1 USD/ day. The total population was estimated just under 6 millions in 2011 and 76 % of them are under 39 years old (UN, 2014).

The country borders to Honduras in the North and Costa Rica in the South, has beaches both to the Pacific and the Carribbean coast, and exports exit through five deep water ports: three on the Pacific coast and two on the Carribbean Coast. These are Puerto Cortés and San Lorenzno in Honduras, Puerto Limón and Puerto Cadera in Costa Rica and Corinto in Nicaragua (Mangosa, 2009; ProNicaragua 2014).

The country is the biggest in size in Central America and the least densely populated. This has led to problems of land grabbing, deforestation and uncontrolled use of pesticides, due to lacking regulation and implementations (FSD International, 2014). Also because of the civil war that ended 1990 there are a lot of people living on land that is not officially theirs, land disputes and land grabbing is still common across the country (Ibid).

Economic problems are related to low productivity especially in the agriculture sector,
which employs most people. 45% of the population lives in rural areas, and a majority is dependent on agriculture and subsistence farming, which makes for unstable and fragile income because of changing weather conditions and occurrence of natural disasters and droughts (New Agriculturist, 2014). Nicaragua is ranked the second most vulnerable country to hurricanes and a tropical storm due to its geographical location. According to the Inter-American Development Bank (2014) Nicaragua has experienced 53 natural disasters within the last 40 years, which have resulted in economic losses to a value of 2728 billion USD (ibid).

The years of civil war in 1980-1990 led to a decrease of 50% in exports and brought a GDP drop of 2/3. Nicaragua’s location in the center of the Americas and the good water access from its lakes however provide Nicaragua some of the most fertile lands in the region (EMPAZA, interview) and has been facing an average compound economic growth of 16% between the years of 2008-2012 (ProNicaragua, 2014). Especially since the change back to Sandinista government in 2007, there are plenty of NGO’s in the country and multiple micro financing projects and agencies, such as FINCA International, Paz y el Tercer Mundo and BANEX.

ProNicaragua (2014-07-27) is working on behalf of the government to promote investment and export in Nicaragua. This is a list of agricultural product they present on behalf of the Ministry of Development (2004), where mango is found in place number 9 under “very high potential” for export.
4.2 Plan Nacional de Desarrollo Human (National Plan for Human Development)

Was presented 2008 and is an initiative from the government elected 2007, led by president Daniel Ortega. The ambition is to improve Nicaragua’s conditions through 12 strategies that involve poverty reduction, clean water access, electricity in rural areas, economic stability and growth. The ninth strategy involves technological and informational development in order to produce higher value products. The plan also includes the goal of strengthening the micro-financing sector to create more competitive small businesses and better relations to the suppliers. (Politica de Comercio Interior, PNDH). It also suggests improvements in the logistic conditions in order to ease distribution. In the second paragraph under the topic of Balance of Payments, it is stated that the aspiration is to eliminate unnecessary paperwork in foreign transactions in support of a diversification and strengthening the foreign trade market (Balanza de Pagos: PNDH, 111).
Figure 4. Nicaragua’s Exports, Imports and Trade Balance during 2000-2013

As is shown in the graph above, the exports as well as the imports have been generally growing in the country, which increases the dependence on the international market and is a trend confirming the step towards a more globally integrated economy. The trade balance has been decreasing since 2011 and is now the closest to zero it has been during the last 10 examined years.

The plan also states that it continues to seek bilateral agreements also with non-members of the Paris Club. The expected balance of trade for the period 2012-2016 is –14.8 % of GDi, which is a decline to previous years and explained by a drop in the export commodities of coffee and sugar in combination with an increase of the import commodities such as oil. In order to continue the promotion of foreign investments and trade collaborations, there is a federal incentive to create a dialogue between producers in the private sector and the government in order to better understand problems and thereby create a shared agenda for the economic development of the country.
In 2012 there were adjustments in the Tax Concentration Law (law 822) to promote exports and production of greater value. For example article 298 excludes the agro-industry sector from Import Custom Duty and Value Added Tax, the products excluded are raw material, intermediary and capital goods, spare parts, machinery parts and accessories and equipment for agro-industry and forestry use. Another example of legislative incentives to promote export is in the Temporary Admissions System (law 382) which states that companies who export directly or indirectly a minimum of 25% of its total sales (with a minimum value of 50 000 USD/ year) are eligible to:
- exemption on taxes and rights for machinery and equipment purchase and imports,
- exemptions on rights and taxes on raw material imports,
- exemptions on sales taxes from purchasing local goods and raw material (Ibid).

Free Zones Incentives Law (Decree 46-91) means that any transformational or value adding process with export market outside the Central American region is excused from income tax, municipal tax, value added tax and import taxes for machinery, equipment, and raw materials (ProNicaragua, 2014). Some of the countries competitive advantages include strategic location in the middle of the American continent, competitive cost for labor intense work and fertile land with plenty of water supplies. Some of the less attractive facts are the unstable weather, the high poverty rate and the low productivity in agriculture.

The “Nicaragua Canal” is to be dug in the future with Chinese investment and is thought to multiply Nicaragua’s economy by five, which could get rid of extreme poverty, and help reach longed developmental goals (PNDH). The Nicaragua Canal is meant to be complimentary to the Panama Canal.
The salary in Nicaragua is lowest in the region; this has two sides to it. First is that it makes investment in labor intense work attractive since it is clearly cost competitive. Secondly, it says something about why the standard of living in the country is low and could explain more aspects of the low growth and poverty. This has already created problems with raising food prices for basic commodities such as rice and beans, since they like most other products depend on the world market price. Many families who count on subsistence farming for survival are unprepared for fluctuations in prices (Zarate, Interview).

The agribusiness sector contributes by 60% of the countries total export value, excluding tax free zones. In the pacific region the majority of fruits, vegetables and tubers are grown here. The northern part of the pacific side is known as "Occidente" and is where the majority of the industries working with oil seeds, meat and shrimp are located (Fairfood International, 2012). The cities Managua, León and Chinandega are accountable for the majority of Nicaraguas agribusiness and food industry activities.
The problems with exporting can be explained as logistical and physical rather than legislative according to the general manager at Mangosa (Esther, Interview).

**Figure 6. Map over different production regions in Nicaragua**

(ProNicaragua, 2014)

The map above aims to demonstrate the suitability for different activities in different areas. The dark green area referred to as “Pacifico” is the main agriculture district since it the hottest part of the country, in combination with fertile ground because of good natural arrogation. Manzano Uno is found off the coast of Chinandega in the northwest.

**5.1 Result**

This part is empirical to the biggest extent, in order to create a clear analysis of the production of dried mango as done by Sol Simple.

**RQ 1 What is the value chain of dried mango?**

There is currently two companies producing and exporting processed fruit in Nicaragua: Frozen Fruit S.A and Sol Simple. Frozen Fruit shares facilities and is the sister company to Mangosa, the only Nicaraguan mango-exporting company in the country. Behind Frozen Fruit is a Guatemalan investor. The fruit that is being processed and exported
has been discarded from fresh sales (Fresh Fruit Portal, 2012; Central American Data, 2012).

Sol Simple is producing dried fruit, nuts and pulp. Their biggest product is dried mango, which is exported to the US via Miami and New Jersey. Other fruits they process are pitaya (dragonfruit), pineapple and banana. The company’s founder and general manager is American and the company was set up in 2007. For the first five years it was the only fruit processing company in Nicaragua, before Frozen Fruit started operating.

The plant is partly powered by the regions biggest solar panel and all the products are organically certified. The dried fruits and nuts are also distributed in supermarkets around Nicaragua to a small extent, since the focus and market in mainly abroad. Due to the growing trend and demand for healthy snacks and organic products, Sol Simple have been doubling sales every year for the last five years, but claim they are still not growing as fast as the market demand (Burke, Interview).

**RQ 2. What are the practical details when drying mango?**

**Figure 7. Value Chain of Dried Mango at Sol Simple**

(William Burke, Interview)
5.2 Inbound Logistics

The price of fresh mango fluctuate depending on the harvest each year, which depends on weather and environmental conditions. During the year the price goes down dramatically during peak season in March-May. For example the farmgate price last year 2013 was 40 cordoba (1.51 USD)/100 mangoes (19.1 kg) this year it was 60 cordoba (2.27 USD) because the rain came to early so the flowers and pollution was disturbed, and with a smaller harvest the price went up in 2014.

The farmers are organically certified at the expense of Sol Simple. The product is not Fairtrade certified but the production still aims to use fair trading conditions and are considering to go for the certification in the future (Burke, Interview). To buy the mango at Fairtrade price is estimated to be around 68 cordoba (2.57 USD)/ 100 units according to Burke (Interview 2014) and this aspect is accounted for in the primary cost compilation below. Hence Fairtrade certification would theoretically mean an increase in the farmgate price of 0.3 USD/ 100 units. The logistics are organized with the farmers belonging to one of six different "centros” where Sol Simple comes to pick up the fresh mango. It is bought at a $\frac{3}{4}$ ripeness, ideally leaving them 1-2 margin days before processing.

**Figure 8. Cost of Fresh Mango for Sol Simple**

<table>
<thead>
<tr>
<th>Weight &amp; Cost</th>
<th>1 organic mango</th>
<th>100 organic mango</th>
<th>1 Fairtrade mango</th>
<th>100 Fairtrade mango</th>
<th>Organic: 1 kilo buys</th>
<th>Organic: 1 USD buys</th>
<th>Fairtrade: 1 kilo buys</th>
<th>Fairtrade: 1 USD buys</th>
</tr>
</thead>
<tbody>
<tr>
<td>pounds</td>
<td>0.42</td>
<td>42</td>
<td>0.42</td>
<td>42</td>
<td>2.327</td>
<td>0.055</td>
<td>2.327</td>
<td>0.062</td>
</tr>
<tr>
<td>kilo</td>
<td>0.191</td>
<td>19.050</td>
<td>0.191</td>
<td>19.050</td>
<td>1</td>
<td>0.121</td>
<td>1</td>
<td>0.137</td>
</tr>
<tr>
<td>cordoba</td>
<td>0.6</td>
<td>60</td>
<td>0.68</td>
<td>68</td>
<td>3.151</td>
<td>26.015</td>
<td>3.564</td>
<td>26.015</td>
</tr>
<tr>
<td>USD</td>
<td>0.023</td>
<td>2.306</td>
<td>0.026</td>
<td>2.614</td>
<td>0.121</td>
<td>1</td>
<td>0.137</td>
<td>1</td>
</tr>
</tbody>
</table>

(Source: Own compilation based on interview with William Burke. Exchange rate 2014-07-27, XE currency converter[08.28 AM] and one pound: 2.327 kg)
5.3 Operations

Figure 9. Operations and Outbound Logistics

- **Collecting**
  - Fresh mango in bough at "centros" from local farmers and transported to the farms in the companies trucks, moved to Sol Simples bins and left in the bodega to ripe. Mango is individually checked and selected before drying. Over ripe mangoes are desposed of.

- **Washing**
  - 3-step washing, scrubbing and controlling: fresh water, chlorinated water and fresh water again in to get the mango clean.

- **Peeling**
  - Peeling is done using potato peelers or knives, the peeled mango is put in buckets and goes to the cutting station.

- **Cutting**
  - Mango is cut using Deli Pro knives to make sure the thinkness is right. At this point 50 % of the weight has been removed from the fruit in peel and seed.

- **Drying**
  - Mango slices are placed on stainless steal trays and dried for 14-16 hours. Here another 90 % is removed in water weight.

- **Packaging**
  - The dried mango is weight and packaged in bags using nitrogyn flash guns. Bags are packed in boxes and stored in fridges until shipping to keep its appearance and to keep from oxidizing. When the order goes out, the amount is collected on pallets for shipping.

- **Shipping**
  - The pallets of dried mango are transported in trucks to Managua where a freight forwarder takes over and ships the products through puerto el Rama to Miami and New Jersey.

(Source: Own compilation based on interview with William Burke, 2014)
(Source: Own compilation based on interview with William Burke, 2014) As can be seen in this chain of production, most of the steps include manual labor: from picking the mango to washing peeling cutting weighing and packaging it, the majority of activities are done by hand.
The cost compilation below demonstrated the different production costs of machines and labor in order to get insight to what costs what.

**Figure 11. Running Cost and Labor Cost at Sol Simple**

<table>
<thead>
<tr>
<th></th>
<th>Number of workers</th>
<th>Wage/ Month in Cordoba</th>
<th>Wage/ month USD</th>
<th>Working hours/ day</th>
<th>Working hours/ week</th>
<th>Working hours/ month</th>
<th>Fridge container</th>
<th>Monthly running cost of plant, USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>1</td>
<td>3 200</td>
<td>122.82</td>
<td>8</td>
<td>48</td>
<td>192</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Per shift</td>
<td>16</td>
<td>51 200</td>
<td>1 965.12</td>
<td>8*</td>
<td>768*</td>
<td>3072*</td>
<td>1000</td>
<td>400</td>
</tr>
<tr>
<td>Two shifts</td>
<td>32</td>
<td>102 400</td>
<td>3 930.24</td>
<td>16*</td>
<td>1536*</td>
<td>6144</td>
<td>1000</td>
<td>800</td>
</tr>
<tr>
<td>Three shifts</td>
<td>48</td>
<td>153 600</td>
<td>5 895.36</td>
<td>24</td>
<td>2304</td>
<td>9216</td>
<td>1000</td>
<td>1200</td>
</tr>
</tbody>
</table>

* When the plant is running during the night, the shift is fewer hours, but the employees are paid the same salary. (Source: calculations based on interview with William Burke, 2014)

This table presents the running cost of electricity and labor at Sol Simple. The wage is set according to Nicaragua’s minimum wage at the time of the investigation (WageIndicator, 2014-08-17) and the cost of running the plant is per shift, during peak season the plant can be running 2-3 shifts per day. The working hours are 8 hours longer per week, or one day more than for example in Sweden. The minimum wage in Nicaragua is the lowest one in the region, a fact that is further developed in the Analysis chapter. Ultimately Nicaraguan manual labor is very cheap, at 122.82 USD/ month. Compared to neighbors like Costa Rica: 401.21 USD/ month (Costa Rica Law, 2013) or compared to a Western country like Sweden (with 8 hours less work a week): 3 716.8 USD (XE Currency converter, 17-08-14).
**Figure 12. Equipment Investment cost at Sol Simple**

<table>
<thead>
<tr>
<th></th>
<th>Rent for the land and plant</th>
<th>Vacuum nitrogen flash sealer</th>
<th>Ovens type 1</th>
<th>Ovens type 2</th>
<th>Fridge container</th>
</tr>
</thead>
<tbody>
<tr>
<td>USD for purchase</td>
<td>2 000</td>
<td>43 000</td>
<td>12 000 x 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD/ month</td>
<td>1 600</td>
<td>50</td>
<td>80</td>
<td>80 x 4 = 320</td>
<td>1000</td>
</tr>
<tr>
<td>USD for maintenance, and spare parts/ year</td>
<td>300</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The sunk cost of licensing the producers to be organic is not included in the calculations as well as smaller equipment such as knives, buckets and trays. (Compilation based on interview with William Burke, 2014)

The process looks to be as low impact as possible and by using solar energy they are shrinking their fossil footprint by 30-40%. The waste biomass (seeds, peels and overripe mangoes) is brought to a fermenting facility where it is processed to biogas.

### 5.4 Drivers and what affects the Costs

The minimum wage has been going up every 4-6 months, to start out the wage for employees at Sol Simple was 40% above it but today it is not possible and salaries are now following the minimum wage, which is currently of 2 300 Cordoba or 88.4 USD per month (XE currency converter, 2014-07-27 14.40 PM). The cost of labor is the primary driver in the cost of Operations since the majority of the work is labor intense. The price of fresh mango differs from year to year and is also affected by natural phenomena. The cost of primary products has the stronger affect as driver on the cost of inbound logistics. Other drivers that affect the costs are gas price, electricity price, and productivity of workers.

Other drivers are gas price and electricity cost, which also differ to some extent but does not have a major impact on the cost structure since gas and electricity are only included in step 5 and 6 in the production chain. In the same concept, the amount of sunshine hours affects the solar panel, but since Nicaragua is quite stability a sunny place, and also because it is only responsible for 30-40% of the electricity contribution, it is not identified as one of the major drivers.
5.5 Link Between Activities
The cooperation with suppliers is important in order to harvest the mango at the right level of ripeness, to consider the lost of throwing away overripe mango. Communication and coordination with the producing farmers is essential, since the fruit otherwise needs to wait many days to mature before it can be dried, making efficiency in drying harder to coordinate. The energy usage and dependence on fossil fuels is connected to the disposal of biodegradable waste like peel and seeds since it is being converted to methane gas, and thereby creating new energy (Burke, Interview).

5.6 Market and Sales
There are two distributors who take care of all sales in the US and also brokers promote the branding. The dried fruit is distributed in 30 stores in the US. There is currently no a domestic distributor but that is a temporary situation (Burke, Interview). As can be seen in the cost schedule in figure 13, there is a big price difference in kilo price and thereby added value in the packaged products compared to the bulk product. The exported products are naturally more expensive since the price level in the US compared to Nicaragua is higher a lot higher (World Bank, 2013) along with the demand for dried fruit.

Figure 13. Cost of Finished Product

<table>
<thead>
<tr>
<th>Weight &amp; Cost</th>
<th>Pounds</th>
<th>Kilo</th>
<th>Ounces</th>
<th>USD</th>
<th>USD/ kg</th>
<th>SEK/ kg</th>
<th>FG price + CIF shipping USD/ kg</th>
<th>FG price + CIF shipping SEK3.67/ kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk</td>
<td>1</td>
<td>0.453</td>
<td>16</td>
<td>5.89</td>
<td><strong>13.002</strong></td>
<td><strong>106.6</strong></td>
<td>13.462</td>
<td>110.27</td>
</tr>
<tr>
<td>Packaged, domestic market</td>
<td>0.375</td>
<td>0.170</td>
<td>6</td>
<td>2.99</td>
<td><strong>17.588</strong></td>
<td><strong>144.1</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Packaged, export market</td>
<td>0.375</td>
<td>0.170</td>
<td>6</td>
<td>3.73</td>
<td><strong>21.941</strong></td>
<td><strong>179.8</strong></td>
<td>22.401</td>
<td>183.47</td>
</tr>
<tr>
<td>CIF price for shipping</td>
<td>1 000</td>
<td>460</td>
<td></td>
<td>0.46</td>
<td><strong>0.46</strong></td>
<td><strong>3.8</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 14. Dried mango 2013

<table>
<thead>
<tr>
<th></th>
<th>KG</th>
<th>USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Quantity dried mango produced</td>
<td>8 000</td>
<td>*3 260 668.3</td>
</tr>
<tr>
<td>- Bought fresh mango</td>
<td>166 666,7 (+ disposed overripe mango)</td>
<td>20 166,7</td>
</tr>
<tr>
<td>- Cost of labor</td>
<td></td>
<td>** 8 843,04</td>
</tr>
<tr>
<td>- Cost of rent + electricity + nitrogen + maintenance</td>
<td>13 500 + 300 (yearly maintenance)= 13 800</td>
<td></td>
</tr>
<tr>
<td>- Cost of freight forwarder</td>
<td>8 000</td>
<td>3 680</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Income from sales</td>
<td>3 260 668.3 USD</td>
</tr>
<tr>
<td>Expenses</td>
<td>46 489.7 USD</td>
</tr>
<tr>
<td>“Possible profit”</td>
<td>3 214 178.6 USD</td>
</tr>
</tbody>
</table>

* estimating 80 % was sold as packaged export, 10 % in bulk and 10 % packaged domestic market. ** the mango season is 4.5 months, estimating that during that time all workers were only dedicated to mango, with the plant running one shift per day. (Source: compilation based on interview with William Burke)

This compilation does not say much about the actual net profit from dried mango production at Sol Simple, but rather aims to give insight to the different expenses of production and relations between these. To use estimations in a diagram should incline the reader to take the information at a discount, since the estimation of proportions in sales between packaged, bulk and exported goods has not been confirmed by Sol Simple and is therefore only estimation. From the “Possible profit” many costs are not deducted, such as salaries to the brokers and administrative personal working for the company both in Nicaragua and the US, as well as the employees and expenses of the Market and Sales step in the chain and the Service step just to name some. The first three steps are more relevant for this investigation and hence are given more space in the calculations and data collection.

Since Sol Simple produces more goods than dried mango it is hard to say exactly how much of the workload is used separately to mango. For example the pitaya/dragon fruit pulping was the main focus during the factory visit in mid July, and similarly during the mango season it is estimated that the majority of labor will be put to mango drying. Attention should also be drawn to the fact that the sunk cost in purchases of equipment are not included in the calculation above. Another cost that has not been accounted for are the trucks, which are used
for all the production at Sol Simple. Gas costs, as well as initial cost of buying the trucks are not included. The conclusion than can be drawn is that the production of organic dried mango at Sol Simple according to the available numbers held a relatively high profit in relation to the cost of labor and production in the first steps in a value chain (Inbound Logistics, Operations, Outbound Logistics).

Figure 15. Price and characteristics of dried mango on the Swedish market

<table>
<thead>
<tr>
<th>Reseller</th>
<th>Type of mango</th>
<th>Organic</th>
<th>Ecological</th>
<th>Fairtrade</th>
<th>Origin</th>
<th>SEK/KG</th>
<th>SEK/KG Sol Simple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Råvarubutiken.se</td>
<td>Kent Supreme</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>Burkina Faso</td>
<td>438.0</td>
<td></td>
</tr>
<tr>
<td>Gröngåva.se</td>
<td>Amelia</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Burkina Faso</td>
<td>299.0</td>
<td></td>
</tr>
<tr>
<td>Ecodirekt.se</td>
<td>Brooks</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Burkina Faso</td>
<td>300.0</td>
<td></td>
</tr>
<tr>
<td>Nu3.se</td>
<td>Govida</td>
<td></td>
<td></td>
<td></td>
<td>Thailand/Germany</td>
<td>256.0</td>
<td></td>
</tr>
<tr>
<td>Naturgodis.se</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Sri Lanka</td>
<td>362.5</td>
<td></td>
</tr>
<tr>
<td>Cooponline.se</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td>Burkina Faso</td>
<td>233.3</td>
<td></td>
</tr>
<tr>
<td>Powerfruits.se</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>570.0</td>
<td></td>
</tr>
<tr>
<td>Myprotein.se</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>298.0</td>
<td></td>
</tr>
<tr>
<td>Handla24.se</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>276.7</td>
<td></td>
</tr>
<tr>
<td>Apotea.se</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>331.3</td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>336.5</td>
<td>183.5</td>
</tr>
<tr>
<td><strong>Difference</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>153.0</td>
<td></td>
</tr>
</tbody>
</table>

(Source: authors compilation based on market search among web resellers of dried mango, 2015-01-27)

In figure 17, the average price of dried mango bought online from 10 different resellers in Sweden is compared to the price + CIF from Sol Simple (183.5 SEK/KG). The prices among
investigated resellers differ between 233.3- 570 SEK/ KG depending on where you buy it. The certifications and origin countries also differ among the different products. The comparison to the price from Sol Simple is quite substantial, not taking in to account the price level difference between the US market (where Sol Simples mango is exported) and the Swedish market, difference between buying dried mango in Sweden and from Sol Simple is 83 % (153/183.5 SEK/KG). That is almost double the price and indicates that the last steps in this value chain (between the factory and reseller) are quite lucrative.

**RQ 2. What are the practical details when drying mango?**
At Sol Simple the type is Rosa, and has a redish peel. It was selected after a number of quality considerations such as taste, price, bricks etcetera. This tree takes around five years to bare fruit and the fruit has a sweet flavor. It is mostly grown in Brazil, but in San Ramon it is grown by farmers in the area and then sold to Sol Simple. The season is usually from mid April until the end of August (Burke, Interview) which differs depending on where the mango is grown, for example Brazils season starts in mid August and runs until mid- November while Mexico’s season starts already in Februari (National Mango Board, 2014). In Burkina Faso the Amelie and Brooks type are used for drying and in Philippines the Carabao type is most common (Burkina-agro, 2014; Hílas, 2010).

**RQ 3. Who are the main actors in the global market for dried mango?**
India is the biggest producer of mango in the world, and is also where the fruit was first grown over 4000 years ago (Stefan, J; Hau, A; Von Oppen, M. (2003). The biggest exporter of mango however is Mexico, and is responsible for 35 % of the worlds total export of fresh mango which is four times the amount that runner up China and India export (ibid).

**Figure 16. Top mango producers in the world 2012**
When it comes to dried mango however, or rather the group of “Guavas, Mango and Mangosteen, fresh or dried” the statistics are different. The biggest exporter in value of USD according to UN Comrade (2014) is as before Mexico, but is followed by India, The Netherlands, Thailand, Brazil and Peru (who together with the Netherlands are not even on the list of top producers). Nicaragua is on spot 23 for this export commodity. The biggest importers by trade value are USA, China, Netherlands, Germany, UK and Canada (UN Comrade, 2014). The Netherlands are able to be on this list since they simultaneously the second biggest importer of mango, and then re-export 80 % of it (FreshPlaza, 2014).

RQ 7. Are there seasonal differences in the labor supply and demand?

In Manzano Uno the main activity of work is in the wet season and in harvesting times. The biggest employers in the agriculture sector are sugar cane, rice, corn, peanuts and cattle. In the dry season it is harder to find pasture for the cows while in the wet season they do not require much attention. The other work is very much seasonal, with employment shifting after harvest quantity and competition (Mohiqua, Interview).

For example the animals for cattle runners produce the least during April and May since it is the end of the dry season and hard to find food. The corn and rice are harvested in July and in general the workload is biggest in December for most in agriculture operations (Lopez, Interview). The peanuts are usually harvested and sown in August- September (Mohiques,
RQ 5. What are the affects on the surrounding communities in the cases of Sol Simple and Mangosa?

Sol Simple has created around 100 jobs through their industry in San Ramon and pioneered the production and supply of organic products. It was also the only fruit processing company in Nicaragua the first five years (before Frozen Fruit started). By employing single mothers they impact the socio-economic developments possible for these women and their families.

Mangosa also created jobs through their production, although they work with seasonal contractors mainly (Esther, Interview 2014). Their presence also convinced the municipal to improve one of the main roads, since the plant is in a rather remote place the company fills many of the functions of a normal small town. They have a doctor living in the area and they are one of the few owners of vehicles. There is also a special kind of “store bodega” inside the plant, only for workers, which sell basic commodities at more favorable prices. They have financed local schools and helped pay for well restoring in the surrounding community.

When looking at the income of local workers, Sol Simple pays them a little above minimum wage. To make it higher, one possibility is to cut transporting costs by having the mango trees as part of the drying facility or closer to it. The original idea of drying mango, as discussed with Waves of Hope separately from this study, was to use the waste mango that is rutting away on the ground. Problems that might arise from that, is that this type is different to the one that is being used for drying today, more on this in the analysis.

6.1 Analysis

6.2 Inbound Logistics

In the future the hope is to do quantity measurements at Sol Simple when buying mangos using weight instead of units, in order to make pricing and accounting easier and more (Burke, Interview). The idea is to put scales at the centros so that the farmers are able to observe the weighing and to create confidence in the change. The primary good is fragile in the sense that the price fluctuates depending on the seasonal supply, which is in the hands of Mother Nature. The operations do however create a bigger demand for the farmers, who
would not produce or sell the same quantities of mango Rosa if Sol Simple was not buying it. In this sense it benefits the growers since they have a permanent buyer once they are certified.

6.3 Operations and Outbound Logistics

(again) Figure 13. Cost of Finished Product

<table>
<thead>
<tr>
<th>Weight &amp; Cost</th>
<th>Pounds</th>
<th>Kilo</th>
<th>Ounces</th>
<th>USD/kg</th>
<th>SEK/kg</th>
</tr>
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<tr>
<td>Bulk</td>
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<td>0.453</td>
<td>16</td>
<td>5.89</td>
<td>13.002</td>
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<td>0.170</td>
<td>6</td>
<td>2.99</td>
<td>17.588</td>
</tr>
<tr>
<td>Packaged, export market</td>
<td>0.375</td>
<td>0.170</td>
<td>6</td>
<td>3.73</td>
<td>21.941</td>
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<tr>
<td>CIF price for shipping</td>
<td>1000</td>
<td>460</td>
<td>0.46</td>
<td>3.8</td>
<td></td>
</tr>
</tbody>
</table>

(CIF: Cost, Insurance and Freight

Source: Compilation based on interview with William Burke. 1 ounce = 0.0625 pounds = 0.0283 kg)

The price of 2.33 USD (60 cordoba) /kg fresh organic mango, compared to the finished price of 17.59 USD/kg for packaged dried mango for domestic sales, which excludes the CIF cost of shipping and insurance, means an increase of 655% in USD/kg. The price of dried
mango in bulk is 13.00 USD/ kg so the activity of packing can be assumed to add a value of 17.59-13.00 USD: 4.59 USD, which is equal to 35% of the total price. It is difficult to
determine which one of the preparatory activities add what level of value, the mango would
not be dried if it was not cut and it needs to be cleaned to keep in line with sanitary
regulations etcetera. The organic certification of mango growers from Sol Simple spares
them the need to be exposed to pesticides and fertilizers, as well as helps the nature to keep
in balance as a counter act to the heavy spraying and pollution of Nicaraguan products
mentioned in the background chapter.

One of the remarks made as potential for improvement (Burke, Interview) was that the
peeling is slow since it is done by hand. There is no nutritional value in the peel but since
the fruits are organically grown, there would not be any harm in eating them. There is
another fruit drying company in Costa Rica called “Natural Sins” (2014) who dry their
products a little longer to attain a more crispy character. Their mango is dried with the peel
left on, so perhaps it could be one way to save time and thereby create efficiency in the
chain. Another possibility for improvement is to fill the drier ovens fully to not waste energy
by running half full driers, which is more a matter of planning and communicating in the
production steps (Burke, Interview).

**RQ. 1. What is the value chain of dried mango?**

The way the analysis of Sol Simple’s production was done should be considered more of an
insight than a basis of management recommendations, since it left out parts and because all
parts are relevant when assessing a value chain. In this study however the main goal was not
to conduct a business administration rapport, but rather to connect the conditions of the
existing private sector with the theories on income diversification and thereby seek
possibilities and linkages between theory and reality.

The chain showed promise in the sense that their production is increasing annually and since
there is no competition for fruit drying in Nicaragua. The differentiation made to organic
products and their marketing as socially and environmentally responsible also adds value to
the product and enables a higher price, while at the same time has the advantage of not using
chemicals in the production, which is good for both the environment and producers. There
are barriers to enter the market, since the sunk cost of buying ovens, fridges, trucks and
other equipment is high relative to the standard of living in Nicaragua. This makes Sol
Simple more competitive since those kind of purchases require financial tools or investment that the majority of Nicaraguans do not have access to.

Only one out of the five breadwinner interviewees in Manzano Uno was content with the possibilities to loan, the other ones named it as one of the things that needed improvement in order to improve their family’s livelihood possibilities and the development of their community. The problem with micro financing seems to be that in order to get micro credit loans, you need to have something as security or guarantee such as land property or a house (Lopéz, Interview). The other problem identified by the majority was that the interest rates are to high for the loans to pay of (Leticia; Busto; Lopéz, Interview). The way lending possibilities are perceived by the majority of the interviewed breadwinners, the micro loans in reality exclude the most needing and indirectly enlarge the gap between those who have nothing and the low-middle income.

6.4 Theory Choice
The choice to use a classic value chain, as it was first drawn, was mainly to keep the findings clearer and less detailed, since the weight of the thesis aimed also towards income diversification as well as the value chain analysis. The option to use a supply chain was also considered but did not fit the study design as well since its focus is rather on the transportation between different activities along the chain, while the hypothesis here included keeping the levels of production close by. Another alternative would have been to use one of the newer versions of the chain analysis, such as of the Sustainable Value Chain (Brandenburg; Govindan; Sarkis; Seuring, 2014) or the the Green Supply Chain (Sarkis, 2014). The hypothesis that Income Diversification is beneficial for the productivity and economic development of a country seems to have been confirmed in the sense that Sol Simple did manage to enter the dried mango market internationally, successfully, and in doing so also created new jobs for a new labor group using sustainable methods.

RQ 2. What are the practical details when drying mango?
The packaging turned out to be one of the activities adding a lot of value to the product and more research on sustainable solutions, like biodegradable packaging for dried mango, would be relevant from a value adding perspective since it would further differentiate the product and potentially make it more cost competitive as well as sustainable. The issue of
high costs for packaging is well known in the Philippines, a country which produce a lot of dried mango, but cannot compete with the prices of neighbor Thailand who have lower costs and cheaper packaging techniques (Fresh Plaza, 2013). Another interesting insight from this article is the competitiveness that Thailand has because in the agglomeration in their production, hence sharing facilities and closeness with the different levels in their chain, while the example Philippine company is located on an island and therefore suffers higher logistics costs when transporting. Another point made in the analysis is that the peel could theoretically be left on and save time and labor cost, as mentioned in the result. This would likely require no use of chemicals at all and perhaps other practical measurements as well, which need to be investigated professionally.

At Sol Simple they use a type of mango called Rosa. It was chosen based on quality tests of taste, cost, bricks (sweetness), availability etc. There are more than 1 000 types of mango in the world. Some of the common ones in Nicaragua are Metjuvo (stringy type, mostly stray mango), Liso, Rosa, Caranja, Tommy Atkins (grown for commercial purposes) and Luna. Different types need different conditions of rain and altitude (UNAN, Interview). The Tommy Atkins is a crossing invented in Florida and is the typical sort you can find in most supermarkets, it is also the type Mangosa grows and sells fresh to the biggest part (Mangosa, 2014). The average time for a Tommy Atkins tree to bear fruit used to be 8-9 years, today it can be done in 4 with fertilizers and modern techniques. In Manzano Uno the type Metjuvo is most common and can be found along the roads and on most of the properties. This type is not traditionally considered suitable for drying since its consistency when mature and relatively small size do not make out for easy peeling or cutting (UNAN, Interview 2014). Instead the Metjuvo mango is often used for freeze-dried mango powder, for juice concentrate or as it is for mango flavor (ibid).

RQ 3. Who are the main actors on the global market for dried mango?
As seen in the result, the biggest producers of fresh mango are not the biggest exporters of dried mango. However it is hard to say with confidence since the grouping of statistics do not differentiate between dried and fresh mango and since there are other fruit in the category as well, but what can be remarked is that the Netherlands and Peru, whom of none is a world top mango grower were both found higher on the exporting list than for example Kenya, Indonesia or Pakistan who are in fact top producers.
Since mango is not grown naturally in the Netherlands this re-exporting of both dried and fresh mango is a result of the extensively integrated world market where countries (like the Netherlands) are able to extend their export income simply by buying from one country and selling to another. Much like the value chain dialogue, this is one step that would not be necessary if the communication between producers (remember 99% of the countries where mango grows are developing countries) and consumers in high-income countries. Fewer steps means less pieces to share the cake of profit among.

USA is the biggest importer and is responsible for more than 50% more the value of runner up importer China in 2013 (UN Comrade, 2014). This suggests that the biggest market in country terms is without doubt in the US. You would need to sum up the import quantity of Holland, Germany, UK, France and Belgium (the biggest importers in Europe) to reach the same volume as USA imported in 2013. One can conclude that the US market is a promising one for mango, especially relevant when looking at its closeness to Nicaragua.

**RQ 5. What are the affects on the surrounding communities in the cases of Sol Simple and Mangosa?**

The majority of Nicaraguan households are female headed but in the agricultural sector the type of labor often requires body strength where men are often believed to hold advantages. Also due to cultural and traditional reasons, this has resulted in boys being sent off to work at the age of 10-12 while girls work at home until they are around 14 years old (Zarate, Interview 2014). The concept of Income Diversification also covers the need for a diversity in the labor force, with more variety in occupations there is also a bigger chance that the right type of worker, skills and qualities, can work were he or she is most efficient (Hammouda; Karingi; Njuguna; Jallab, 2006). **Sol Simple** employs single mothers in order to improve their lives and the lives of their families, there are not many “official” jobs to find for women in the Nicaragua countryside so this idea certainly serves a purpose in the question of employment. This is of course a noble goal, and this selectiveness in labor is likely to have an effect on the consumer group Sol Simple’s products appeal to, since this concept adds to their image of sustainability and fairness.

The fact that plantations have been organically certificated also helps in limiting the farmers contact with pesticides and dangerous pollutions that they are other wise interacting with
through fertilizers, pesticides and other chemicals used to secure the harvest (FSD International, 2014-07-27). When buying the raw produce from farmers at a set price, they also contributed to setting a fixed price on the market for mango in Nicaragua, and the farmers are getting more from selling to Sol Simple than they would from selling the fruit to the local market (Burke, Interview). In this order of ideas, the production has indirectly contributed to a bigger production and need for workers in the mango growing business in addition to the people occupied at the plant and in their offices.

**Mangosa**, unlike Sol Simple do not buy from any third hand producers in order to keep 100% control of their products quality and origin. Since the mango is fresh there are more restrictions in exporting, for example the fruit needs to be ran through hot water in order to kill any potential fruit flies as specifically required from US import law (Mangosa, Interview 2014). The production plant is located in a remote area outside León but is neighbors to a big rice factory with whom they are able to share and rent equipment in a somewhat agglomerated factory environment.

The majority of Mangosas labor force are seasonal contractors, and they also rent the tractors used during harvesting season. The main product is in exported mango but they are also growing and selling plantains (grown for Frozen Fruit), yucca/cassava and other small project products for the domestic market in order to versatile their profile. Recently Frozen Fruit, a sister company in which Mangosa owns 50% of the shares, started operating a fruit processing factory, which resulted in that after Mangosas season was over in April, their labor force started working for Frozen Fruit and are that way able to find work all year long (Mangosa, Interview 2014). The use of contractor does however take away the security for employees since they can all be replaced or un-needed one season to the next one. Still Mangosa offers employment that is not small scale or subsidizes farming, and is in that sense helping to diversifying Nicaraguas export profile. Their social responsibility to the surrounding community is significant but not as much as extensive as in the past.

“This is because before there was a bigger need to help, workers used to walk long distances to come work, now they have bikes or motorbikes even”
(Ester Incháuestegui Menéndes, general manager at Mangosa, 2014)

Mangosa employs both men and women to almost equal numbers, in planting and seeding
there are mainly women and in harvesting there are mostly men. Some examples of their social work involved donation of 30 computers to the three local school, contribution to fixing a broken well simply because the community demanded it with 70 people depending on the well, Mangosa paid 70 % and the community paid 30 %. Because of the altitude of the plant, 50 meters above sea level, arrogation and water problems is one of the difficulties with their production. The impact Mangosas water consumption has for the community is another aspect that would be interesting to add to the analysis. In addition to this, the work opportunities for are around 800 every season, when there are not enough workers in the surrounding communities they collect workers by cars from communities farther away. The workers are selected by and rapport to work leaders who are in charge of controlling the job. The shifts are 12 hours long, they used to be shorter but the work was inefficient in that form (ibid).

**RQ 4. How could this type of production be operated to ensure big portions go back to the local producers?**

The presence of an industry would bring more work to the community, which is one of the main things pointed out as a needed improvement in order to raise the standard of living. Bot companies Sol Simple and Mangosa seem to have brought with them new opportunities for the surrounding communities in their areas, considering Manzano Uno is located in a more rural part of the country, the differences in terms of real income would be significant compared to the current situation. Industrializing the work culture and having that security of employment, in contrast to seasonal labor, which is often the scenario in agriculture, also bring with it the possibility for families to plan their budget and investments in ways that is not possible now. Things like improved living conditions (like houses with real walls and floors), nutritional food and school supplies for education was suggested from the breadwinners (Leticia, Mohiqua, Interviews).

One of the hard parts of exporting goods from Nicaragua is that there is no domestic access to the Atlantic, which usually means good are shipped through Costa Rica on bad roads. Costa Rica also export a lot of fruit and this occasionally results in full ships with insufficient space for Nicaraguan exports (Esther, Interview). One of the major headlines of the Plan Nacional de Desarollo Human (National plan for human development) is the announcement of the Nicaragua Canal, a Chinese investment with the goal of connecting
the Atlantic with the Caribbean Sea and complement the Panama Canal (PNDH, 2007). This investment has been criticized for the potential ecological and environmental impact it could have, but at the same time praised as the answer to practical growth problems from the federal side.

The workers at Sol Simple are receiving a little over minimum wage. Evidently, minimum wage in Nicaragua is one of the lowest in the region, and probably one of the main reasons the country attracts a lot of foreign investments and business. Minimum wage is better than no income, or unstable and low quality income. But in order to enable bigger parts to go back to local workers, both in the mango growing and in the plantation working, one option could be Fairtrade products. Sol Simple do not have Fairtrade certificated products yet though that might be an interesting approach to consider. The Fairtrade price is set in two parts: at a minimum price which is higher than the world market price, and is the set price that the producer should be paid for his or her goods. The minimum price rests on the market price, which is set by supply and demand and the quantity of the harvest, and also on the quality of the products (Fairtrade International, 2011). The second part of the Fairtrade price setting is a “Premium” which should go directly to the producer (ibid) and that might up the value in growing mango (and other fruits) at fair conditions.

Another simple improvement in the production line witnessed at Sol Simple would be to limit or cut the transportation costs by making the business model more of a co-op, with less distinction between mango farmer and drying processor. For example participants could be responsible for bringing their mango and then be paid directly at the facility, this was also suggested by two of the interviews when asked hypothetically how these types of projects should be managed (Mohiq; Zarate, Interviews). However, there was a lot of criticism regarding the co-op concept. More of the interviewees were skeptical and also had personal bad experiences from working with cooperative farmers.

One of the value chain activities taking a lot of time is the peeling of mangoes. There is a company in Costa Rica called Natural Sins (2014), who dry their mango with the peel and make it more of a thin crispy version. This is only a reflection but the point is that there are many ways to go about mango drying. For example there are no set types of mango that are “ideal” for drying since it is a matter of taste and consistency, if you want it sweet or sour, chewy or soft.
The importance of leadership is a point that needs more stressing. Through the fieldwork and also in the literature (Presutti; Mawhinney, 2013) its importance especially in new projects becomes clear. The make it or brake it could very well depend to a large extent to how the management and organization is executed. The big question is not weather or not it is possible to produce dried mango, but rather how it can be done best. Coming in to this investigation the original hypothesis was that this kind of project should to be done on a local cooperative level, and that the need for better income channels would be a strong enough trigger for farmers to collaborate and make it work. At the other side of this fieldwork and after conversations with actors in the private sector and also in regards to the culture, history and reality of the working climate in Nicaragua, specifically on the countryside, that preconception has shifted to the belief that organization needs to include one responsible leading actor.

Another thought the field study has brought is that foreign investment and entrepreneurship seems to almost need to come with some kind of social responsibility attached to it, at least when there are informed consumers questioning the origins of products, together with effective certifications that are followed up. The reach of this social responsibility might depend on personal interests and other circumstances related to the situation or the business, but bottom line and one of the positive findings is that profitable private businesses has and should be related to some level of socio-economic standards, even if it is only in order to promote a brand or sales: the effects are still better than the original situation without employment at all.

The answer behind why most businesses in Nicaragua are ran by foreigners and not Nicaraguan have its answer in a many ways, some of which are demonstrated above and also because of the simple math: most Nicaraguans do not have the financial tools needed to start new projects and businesses. Also if they did, they would be more likely to invest in something more secure to make profit and not chance on a concept they are unfamiliar with and a production that they have no knowledge of. None of the farmers nor other locals or other people (not directly in the industry) had ever heard of dried mango or understood why you would take the water out of a fruit. The culture and habits of consumer in higher paying markets are simply better known by foreigners who themselves have first hand experienced
Education is another perspective to add. On more than one occasion the topic of working morals and academic preparation came up in the interviews. In Nicaragua the university career is often done through classes only on Saturdays or Sundays, and it can be done simultaneously with the high school degree. “The government seems to prefer to have 10 engineers that are not prepared instead of two well-educated ones. Some of them cannot even write properly” is how the general manager of Mangosa phrased it (Interview 2014). Four out of five of the breadwinners in Manzano Uno suggested lacking morals and standards from the workforce as one of the reasons why there is not more economic growth and possibilities. Another reputed answer was that the governments is not doing its job or not running the countries in the favor of the people (Zarate; Lopez; Mohiqua; Busto, Interviews 2014). All though these might only be personal feelings of beliefs, the fact that the government is not doing its job is relevant coming from these people, since the federal publications and laws are all set up to work in favor the economic development through, amongst others, agricultural exports.

RQ 6. What potential would there be for such a production, and what legal, physical and other obstacles would there be?
Nicaraguan's biggest trading partner today is the US who buy 30.4 % of its exports, followed by Venezuela at 13.3%. The biggest exports from Nicaragua are coffee, beef, peanuts, banana, lobsters, sugar, dairy products, beans and sesame. These products constitute 67 % of Nicaragua's export earnings. Compared to other countries in the region, Nicaragua has some of the lowest numbers of products exported, never higher than any country accept Belize since 1995, despite the fact that it is the biggest country of them all.

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<td>106</td>
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</table>
Table shows number of merchandise products exported each year by the Central American countries. (UNdata, 2014)

| Panama | 156 | 183 | 218 | 228 | 239 |

The range of goods in an economy is not only determined by government policy but also by the numbers of entrepreneurs willing to “take the chance” of doing the cost discovering needed to modernize sectors of the economy (Hoffman & Rodrik, 2003). This is one reason why FDI is so important for the economic growth of a country in such an interconnected world, in order to allocate the capital needed for these investments. Nicaragua has a negative trade balance, meaning they import more than they export. Another dimension to that is the Herfindahl index below, showing the level of diversification in the imports relative the exports, showing below that the imports are more than twice as diversified compared with the exports.

Figure 18. Herfindahl concentration showing diversification in Nicaragua’s imports relative its exports in 2013

In the interview with Ben Orton (founder of NGO WHO, 2014) some of the physical improvements that he imagined were quite basic, and were shared with some of the
interviewees as well. These improvements could be better houses: concrete instead of dirt floor, solid walls and roofs that do not leak during rainy season. Also infrastructural improvements in water power and waste management was seen as potential future improvements to come with new income possibilities, the diet would likely change to more nutritional food as well as how often chicken fish or meat is consumed (Orton; Mohiqua, Interview 2014).

The machismo culture is another problem, which might be tackled through a more diversified income to the households. Sol Simple only employs single mothers, which potentially shifts some of the power away from the classical employers in the sugar and peanut fields, who systematically favor men. With more options, more people would be able to work and there would be less monopoly on the type of worker to get employed.

One of the obstacles is that mango is a seasonal fruit and that people require year round employment. One solution to this could be investigating other products suitable to process using the same facilities and thereby prolonging the season and creating more work. In order to make sure locals get a share of the profit the best way to organize it according to Orton (WOH Interview, 2014) would be to have a profit business where the producers share profits in bonuses with the owners of the business. This would be a different set up of operation than at the Sol Simple plant, but might very way work as a way of making up for the low minimum wages, and it is also shares some similarity with the Fairtrade concept of pricing that was explained in previous chapters.

7.1 Concluding comments

According to the findings in this study, the current dried mango business in Nicaragua seem to be doing well, however there are some traits in Manzano Uno that differ from those at Sol Simples plant. Firstly the type of mango that is used is grown specifically for the drying purpose, while those in MU would be of the type Metjuvo, which was considered a juice –and powder mango because of its quality. Surely there is possibility (and even existing) for mango growers to operate in the area, but those plants take some years to bear their full fruit capacity.

There are only two companies currently processing fruit, and it seems to be a promising
industry considering the large foreign market and Nicaragua’s fertile land and good investment climate. The different export supporting policies presented by the government makes it easy to export products, instead of having countries like the Netherlands import mangos and then re-export, there is possibility for higher marginal profit if it could be exported directly from the company to the consumer destination. Establishing the cultural and professional contact with foreign markets would also be desirable for the development and integration between Nicaraguan companies and foreign ones.

It appears that it would indeed be beneficial for the local community if these kind of operations established, since diversification in income enables a bigger portion of the work force to be occupied and creates more secure income. Today the majority of work is in the agricultural business, which is fragile in the threat of potential natural disasters or changes in weather along with growing and fluctuating food prices that the world market offer.

It was also found that processed goods generate more growth than primary goods, such as coffee and sugar that is being produced now. This is likely one of the reasons the government are focusing heavily on attracting more FDI to the countries different export sectors. The presence of businesses tends to bring with it improvement for the surrounding community and also open doors for more industries to invest.

More research should be done on possibility to raise the minimum wage without scaring away foreign investments, since low wages is not a sustainable way for a country to grow. Education is one key component to long-term growth and the policies and priorities of the government matter a lot in this question.

Since the packaging turned out to be one of the bigger value adding actions, this should be focused on in potential business of dried mango. Perhaps a package that is recycled or made from material that is biodegradable. Attention to environmental aspects of the productions in the future. The reverse Value Chain of this kind of process, for example using the waste for fueling the plant (as is the case in Mangosa) and the bio waste at Sol
Simple being used to create new fuel, in order to keep the process as low impact as possible and sustainable for the environment in the long run.

8.1 References

8.2 List of Interviewees:

8.2.1 Breadwinners in Manzano Uno
Busto, M. Fisherman and cattle owner (2014-06-18)
Leticia, D. Land owner and one of the first ones to settle down in MU (2014-06-16)
Lopez, R. Cattle owner and farming (2014-06-16)
Mohiqa, J. Susidise farmer and seasonal agricultural work (2014-06-22)
Zarate, P. Cattle and land owner (2014-06-13)

8.2.2 Other stakeholders
Argenial, A. Agricultural ingenieur student (2014-06-23)
Burke, W. General Manager Sol Simple (2014-07-09)
Fon Seca, M; Goterrez, B; Lugo, S. UNAN (2014-06-27)
Incháustegui Menéndez, E. General Manager Mangosa (2014-06-30)
Lopéz, B. Century 21 real estate with exporting experience (2014-06-21)
Medina, O. Founder and in charge of farming co-operative EMPAZA (2014-06-20)
Orton, B. Co-founder of NGO Waves of Hope (2014-08-02)

8.3 Published Sources

Boccardo, J; Chandra, V; Osorio, Y, (2007). *Why export Diversification matters for Growth*
PowerPoint presentation, PRMED


Stefan, J; Hau, A; Von Oppen, M. (2003). *An Analysis of the World Market for Mangos and its Importance for Developing Countries*, University of Hohenheim, Germany


8.4 Internet Sources


Central American Data, March 12 2012, *Getting the Most out of Fruits* [online]

Central American Data, (2012-10-25). *Market For Healthy Snacks*
[Accessed 14-04-04 at 8.47 AM]

http://www.costaricalaw.com/Labor-Law/costa-rica-minimum-wage-scale-for-2014.html [accessed 17-08-14 at 4.00 PM]


UN data, (2014). *Nicaragua*, Country web page [online],

UN data, (2014) *Trade of Guava, Mango and Mangostan*, Statistical web page, [online]

University of Cambridge, IfM: Institute of Manufacturing, *Porters Value Chain*
[online] http://www.ifm.eng.cam.ac.uk/research/dstools/value-chain/ [accessed 24-07-14 00.00]

Wage Indicator, (2014) [online]
http://www.wageindicator.org/main/salary/minimum-wage/nicaragua [accessed 17-08-14 at 8.03 PM]

Stellenbosch: University of Stellenbosch, (2010). *The impact of the global financial crisis on the diamond supply chain: Namibia as a case study*, [online]
http://hdl.handle.net/10019.1/8580 [accessed 11-05-14]

Swedish International Development Cooperation Agency; SIDA. (2014-05-23),

XE currency converter, 2014- 07-27 06.30 AM. [Online]
http://www.xe.com/sv/currencyconverter/convert/?Amount=60&From=NIO&To=USD [accessed 27-07-14 at 08.28 AM]