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MAASTRICHT SCHOOL OF MANAGEMENT

IMPACT OF SUPPLY CHAIN MANAGEMENT ON BUSINESS GROWTH

THE CASE OF "INYANGE INDUSTRIES LTD"

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ABSTRACT

This research "Impact of supply chain management on business growth: The case of Inyange Industries Ltd" was conducted aiming at analyzing why Inyange Industries Ltd which is mainly producing milk products is producing at about 40% of its designed production capacity, yet farmers are crying that, their raw milk perishes for lack of market and Inyange milk products are either scarce or expensive on the national market comparatively to the imported milk.

The problem was to analyze whether Inyange Industries Ltd can increase its production, meet both the suppliers' and distributors' needs and at the same time keep its business growing. The study had to analyze the impact of supply chain on business growth as Inyange Industries Ltd as case study.

The research established that; Inyange Industries has 16 suppliers of raw milk and they are mainly located in the Eastern Province of Rwanda. Compared to the demand, suppliers' capacity is generally underutilized, especially during the rainy season and they don't have any other alternative customer.

The company has an installed capacity of producing 26.4 million liters of milk per year and, currently, the plant operates 40% of its capacity. The production keeps growing as demand increases. The company relies on both suppliers to produce quality raw milk and distributors to increase market share penetration in order to increase its production. Currently, the company produces only fresh milk, pasteurized and homogenized milk, UHT and yoghourt. No matter the demand, Inyange's production is backed with yet unutilized capacity. The company has the potential to buy all cow milk produced in Rwanda if the market is available.

The company has six distributors who cover the whole country. The City of Kigali has two distributors. Every Province is covered only by one distributor. All the distributors said that; Inyange products have the potential to dominate the market because of the increasing demand which depends on their good quality. However, the capacity of

penetration is limited because of lack of technical support from Inyange Industries, registered irregularities in supply of finished products leading to poor management of the entire supply chain.

The research established that, supply chain management has a significant role on business growth, especially for Inyange Industries Ltd which was the case study.

DEDICATION

To Almighty God, the greater he is, and greatly to be praised;

To my late parents Jean Baptiste and Euphrasie;

To my beloved daughter, Queen Pacifique, and my lovely wife, Beata;

To my brothers Mathias, Deogratias and Theoneste and my sisters Speciose and Delphine;

To my colleagues and supervisors at work, especially James Musoni;

To the Rwandese Patriotic Front;

I dedicate this work.

ACKNOWLEDGEMENTS

DECLARATION

I, NGENDAHIMANA Ladislas, ID RW/SFB/PM/050949, I hereby declare the work hereby submitted to the Maastricht School of Management for the degree, Master of Business Administration, is my original work in design and execution, I explicitly state that this work is free of any kind of plagiarism or forgery and that all materials contained therein have been fully acknowledged and that this work has not previously been submitted by me or anyone else for a degree at this school or any other institution.

SIGNATURE PARTICIPANT:………………………….

SIGNATURE SUPERVISOR: ……………………………

DATE: 22/05/2014

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ACRONYMS

AMR   : Advance Manufacturing Research

EAC   : East African Community

GDP   : Gross Domestic Product

ICT   : Information, Communication, Technology

ISO   : International Standards Organization

Ltd   : Limited

MBA   : Master of Business Administration

MINECOFIN   : Ministry of Finance and Economic Planning

MINICOM   : Ministry of Trade and Industry

MRP   : Manufacturing Resources Planning

MSM   : Maastricht School of Management

NISR   : National Institute of Statistics of Rwanda

RBS   : Rwanda Bureau of Standards

RPF   : Rwandese Patriotic Front

SFB   : School of Finance and Banking

TQM   : Total quality management

UHT   : Ultra Heat Treated

USD   : American Dollar

CHAPTER ONE: INTRODUCTION

1.0. Background

Majority of Rwandans live on agriculture and livestock (NISR, 2012). Cattle hold the big share of livestock in Rwanda, especially following the "*One Cow per poor family*[1]" program, generally known as "*Girinka*", which was introduced in Rwanda early 2006. This leads to increasing milk production and national economic growth.

Inyange Industries is the leading food processing company in Rwanda. It takes 80% in mineral water, 70% in juices, 65% in pasteurized milk, 5% in UHT and 70% in Yoghourt (Inyange Industries, 2010:2). On average, the company holds more than 60% of the total market share of domestic agro-processing industry products. It is a limited company by shares.

According to the National Investment Strategy (MINECOFIN, 2002), the Government of Rwanda aims at sustainable economic growth led by the private sector. This vision is also supported by the Economic Development and Poverty Reduction Strategy (MINECOFIN, 2007). Increased domestic production and consumption as well as increase in exports will contribute positively to the current deficit in balance of payments and gross domestic product in Rwanda.

Inyange Industries Ltd was incorporated locally in Rwanda in 1997 and it started its operations in 1999. It has a vision of becoming a global competitive agro-business company known for being a benchmark for quality products and services (Inyange

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[1] "**Girinka**" or "**One Cow per Poor Family**" is one of home grown initiatives which falls in the Rwanda's national social protection programs. The program dates back as of 2006. It mainly gets funds from the Government of Rwanda and it is implemented by Rwanda Agriculture Board and it works in partnership with other development partners and supporters, especially the Ministry of Agriculture (MINAGRI), Private Sector Federation and local governments. The main objective of this program is to fight malnutrition through drinking milk. The manure from cows increases crop productivity. Surplus milk on home consumption increases family income. The program covers the whole country with a particular focus on most vulnerable districts.

Industries, 2010). This requires the company to be mainly leading in supply chain management.

In the beginning, the Company's activities were limited to processing and selling exclusively yoghourt and pasteurized milk. It was in 2001 when the factory started processing and packaging mineral water from the springs of Gicumbi district in the Northern Province of Rwanda. In 2004, the shareholders started the plant's expansion project worth about thirty five million American dollars. The new is in Masaka sector, Kicukiro district, which saw the company production capacity increase tenfold (Inyange Industries, 2010). This increased capacity can fulfill the local demand and has the potential to feed regional and international markets, with open opportunities like Rwanda being part of the East African Community (EAC), among others. Moreover, since the world business has become a global village, with a consistent supply chain, Inyange Industries has potential to serve regional and international markets.

The company's objective is aligned with the Government's priorities, since the Government of Rwanda committed respectively 10% and 15% of its 2010/2011 and 2011/2012 (Rwangombwa, June 7th 2011) budgets to agriculture, aiming at ensuring food security and price sustainability whilst maintaining sustainable growth.

Inyange Industries has a vision which is "to be a leading beverage brand producing high quality products while enhancing shareholder value" and its mission is "to gain regional market share by producing high quality products that satisfy and exceed customers' expectations while enhancing shareholder value" (Inyange Industries, 2010:5).

Inyange Industries manufactures a wide range of products. It deals with procurement of raw materials, processing and distribution of finished products. For the growth to be sustainable, it is important to ensure the supply chain management and to reconcile it with the company's balance sheets.

1.1. *Statement of the problem*

Rwanda is a land locked country from the heart of Africa. Its economy is largely dominated by agriculture and livestock. According to Rwanda's Vision 2020 (MINECOFIN, 2000), one of the Government of Rwanda's goals is to transform the subsistence economy into a market based economy.

For these goals to be achieved, the poverty reduction strategy of the Government of Rwanda focuses on the intensification, diversification and transformation of the agricultural sector. Inyange fits within that vision and it was created from this perspective.

Despite the national shortage in skilled human capital, leading to constant outsourcing of skilled labor, Inyange Industries kept growing, both in size and in wealth. It is therefore very important to understand such a "paradox" for an agro-processing industry in Rwanda, operating in non-professional agriculture and livestock sector with poor rural roads infrastructure, where produce is not well connected with markets.

Supply chain management is all about operations management. It concerns the supply, manufacture, service, transport and delivery. The responsibility of supply chain management, therefore, is to ensure that all forces are well connected, especially by managing supplier-customer relationship (source, make, deliver and return components) at minimum cost. For this to be successful, there are three pillars of operations management as foundation for supply chain management: forecasting, inventory and capacity (Dingli, 2010).

In managing supply chain, matching demand and supply is difficult. However, both qualitative and quantitative forecasting helps the management in dealing with that constant challenge. Qualitative forecasts are very subjective and quantitative forecasts are scientific and objective. Every organization has a social corporate responsibility, thus the imperative of using both forecasting methods, which is a challenge for all business companies, including Inyange Industries.

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Inyange has grown up over years. Its' share capital has increased from RwF 124 million in 1997 (equity when it was incorporated locally) to RwF 22 billion in 2010 (to the tune of 50% equity and 50% debt). It was anticipated that, sales revenues would grow to RwF 21 billion by 2014 and the company would break even in 2013 (Inyange Industries, 2010). For this to be achieved, a consistent business plan and supply chain management must be in place.

The raw materials are supplied from different parts of the world. Milk and most fruits are supplied from both different cooperatives and individual farmers in Rwanda, whereas other types of raw materials are purchased from abroad.

From the beginning, Inyange Industries has been specializing in milk processing in order to add value to one of the basic Rwandans' needs. In order to increase its productivity, Inyange Industries Ltd purchased, in 2012, Savannah Milk Processing industry in Nyagatare. This factory produces concentrated milk. Inyange Industries also subcontracted different companies to supply parking materials from both within Rwanda and abroad. The company has been investing in supporting farmers' cooperatives with hope to get better quality of milk supply as raw material.

It has been established that, "the local market is dominated by unprocessed raw milk consumption due to low income constraints but gradual eradication of poverty is going to increase milk demand" (Inyange Industries, 2010). How is the company prepared to attract demand and hence increase its revenues?

The company's main raw material for pasteurized milk and yoghourt is "cow milk" and the market is normally determined by three forces, namely; product, price and place. Some countrywide farmers claim that, the milk produced by their cows is not sold and perishes for lack of market, though Inyange Industries Ltd would need it as raw material. Some others say that, the company's exports are still minima as compared to markets abroad. The company produces at 40% of the designed and usable capacity, as per the Company's Management, whereas the Ministry of Trade and Industry said that; the company "has surplus product of milk which has no

market" (Kanimba, 26 July 2011). On the other hand, domestic market is still having imported pasteurized milk at a relatively lower price. Though there is no one size fits all formula in business, all the above problems need to get answers. Can Inyange Industries increase its production, meet both the suppliers' and distributors' needs and at the same time keep its business growing? And what is the impact of supply chain in that whole process?

1.2.   Research objectives

The objectives of this research are motivated by the key activities concerned with supply chain management such as procurement, production and distribution. The research objectives, both general and specific, are defined in the following section.

1.2.1. General objective

The overall objective of this research is to assess and to analyze the supply chain management at Inyange Industries Ltd and its' likely impact on company's business growth.

1.2.2. Specific objectives

- To analyze the company's[2] business plan especially on supply chain management

- To analyze the company's supply chain management and its' impact on business growth as compared to the standard supply chain management principles

- To provide useful information that could help managers, researchers and investors to make more successful and profitable business while maximizing revenues in minimizing costs.

As for any other academic and scientific research, the findings will be used for analysis, conclusions and recommendations.

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[2] Company stands for Inyange Industries Ltd

1.3. Research questions

In order to conduct this research, a number of questions could be asked. However, the following questions have been selected, among others:

1. How does Inyange Industries Ltd manage its supply chain and how beneficial or costly has it been to the company's business growth?

2. What are the causes of the difference between the plant's installed capacity and its' current utilization rate?

3. How does the company manage procurement of raw materials and what are the challenges being faced?

4. How is the production process handled?

5. How does the company manage the supplier-customer relationships?

6. How are logistics and distribution handled?

1.4. Research hypotheses

This research is premised on two hypotheses formulated as follows:

Null hypothesis: Supply chain management has a significant impact on the company's business growth.

Alternative hypothesis: Supply chain management does not play any role and has no impact on the company's business growth.

1.5. Limitations of the research

This is a single case and it is not a comparative study. The research was conducted within a defined scope: it covers a period of four (4) years from 2009 to 2013.

The research is aware of the limitations related to secondary data that were used. It cannot guarantee the disclosure of all required information, because, the company operates in a seriously competitive environment, where there are many players in the

sector. Thus, some information was not fully disclosed since it is classified as "confidential" for the company to maintain its comparative advantage.

The research has mitigated those limitations to achieve the intended objectives. The researcher guaranteed the confidentiality of the data used. The company allowed him to use all the available information on condition that, the thesis should not be put on public domain before a period of two years at least. Since market forces are dynamic, both the company and the researcher believe that, after that period of time, the currently "confidential" information shall mainly become obsolete at that time.

1.6. Report structure

This research is divided into four chapters.

Chapter one consists of the general introduction. It is about background, problem statement, research objectives and questions, hypotheses and motivation of the research. This chapter also presents the limitations of the research as well as mitigation mechanisms and the report structure.

Chapter two is about literature review including definitions of key concepts. Chapter three is about research methodology. Chapter four presents, analyzes and interprets data collected and findings thereto. The last chapter summarizes key findings, conclusions and recommendations as well as possible policy implications.

CHAPTER TWO: LITERATURE REVIEW

2.0. Introduction

Inyange Industries Ltd is an agro processing industry located in Kigali, Rwanda. Since its deals with demand and supply, its core activity is handling the process of supply chain.

Thus, different publications have been consulted for proper understanding of the concept of supply chain as well as customer and supplier relationship. It is in this regard that, logistics management shall be discussed as key to production and distribution processes.

2.1.   The concept of supply chain

Supply chain management aims at balancing customers' demands and maximization of profit for business growth. In this regard, many firms have moved aggressively to improve supply chain management (AMR, 1995).

They focused mainly on the following as main issues; organizational structures and associated relationships; supply chain coordination; inter and intra enterprise communication; sourcing; manufacturing orientation; inventory and cost management (Copacino, 1997).

Mabert and Venkataramanan (1998) define "supply chain" as "a series of units that transforms raw materials into finished products and delivers the products to customers".

With regard to the supply chain of the company's products, the starting point is the farm and farmers. They own cows. They have also the raw milk which is purchased by the company and transported to the dairy. It is processed and packaged. Thereafter, the finished products are either stored or distributed up to the end consumer.

This process can be summarized by the following chart:

Figure 1: Dairy supply chain from farm to consumers
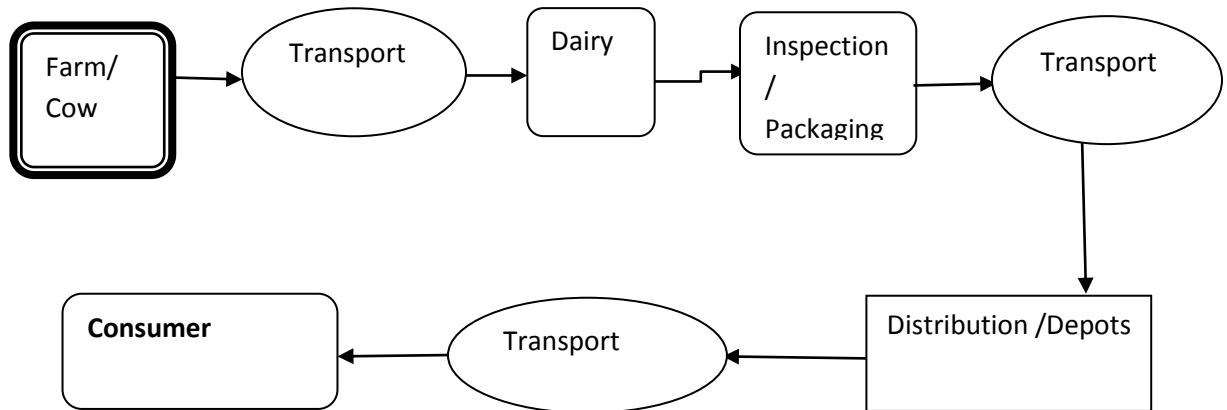
Source: Conceived by the researcher

For supply chain management to be successful, it requires an appropriate strategy and that is the purpose of this study. Inyange Industries ltd, being an agro-processing industry, needs to align three components which are; procurement of raw materials, production and distribution of finished products up to the end consumer. A very good combination of the above components derive from a successful supply chain strategy, which is very dynamic following markets forces (Mehrjerdi, 2000).

It is important to understand the relationship between supply chain management and the logistics systems as well as their impact on the business growth of any company. Researches have established that; they all impact on organizational performance.

2.2. *The impact of logistics and supply chain on business growth*

Logistics is associated with supply chain in every organization. Both of them have direct impact on organizational performance and business growth. Organizational performance is very linked to the human resources management which determines the business growth, among others (Becker and Gerhart, 1996; Hilletofth, 2011).

Researchers have established that; companies can develop sustained competitive advantage only by creating value in a way that is rare and difficult for competitors to imitate (Barney, 1986, 1991, 1995). This implies that; firms should very carefully evaluate their decisions to outsource human resources responsibilities because of their various impacts, especially on sales and marketing as well as technology management (Kenneth *et al.,* 2008; Suhong et al., 2006).

According to their research, this applies especially on strategic supplier partnership, customer relationship, level of information sharing, and quality of information sharing (Knigge, 2013). Following their findings, higher levels of supply chain management practice can lead to enhanced competitive advantage and improved organizational performance and competitive advantage can have a direct positive impact on organizational performance (Suhong *et al*., 2006).

Logistics is described as being at the center of supply chain management because it has a direct impact on company business growth (Stank *et al*., 2005) and, thus, it plays also a big role towards the performance of any agro processing organization as well as its business growth.

2.3.   *Customer service management*

Customer service management is very important in supply chain management. Customers interacting with the company find either what they see or what they get. The way the company is responsive to the customers' needs reflects its true image. Customer care is essential to organizational performance or business growth (Keely *et al*., 2001).

Inyange processes and sells milk and its derivatives including yoghourt and others. Before being processed to the plant, the raw milk must be tested because it must conform to basic food safety standards. During the production process line, raw milk is pasteurized and homogenized before it is packed as finished products. That brings taste and quality which is required to attract customers. The company has a competitive advantage on the food products market because it is the only one in

Rwanda which has both International Standards Organization (ISO 220000:2005) and Rwanda Bureau of Standards certificates for food safety.

Both the offer and the demand should consider the customers' needs and the company's production and supply capacities. The aim of customer service management is to respond to customer's demands both effectively and efficiently while sharing the process improvement benefits with the customers. The process needs to develop alternative plans which can make it competitive in a dynamic business environment (Vollmann et al., 1997; Keely, 2001).

Every business needs customers for it to grow. This requires the company to be responsive to the customers' needs. And for a business company to meet the customer's requirements by fulfilling orders, supply chain management is paramount (Kumar and Graham, 1992).

Because of dynamic markets forces that determine the appropriate strategy for any business, by developing contingent plans in management of supply chain, the company reduces uncertainty and stays relevant despite market changes and dynamics (Towill, Denis and Peter, 1999).

2.4. *Managing supplier relationship and product development*

This function is seen as an important factor to the business growth. This process defines strategies for a company to interact with stakeholders, especially customers (both suppliers and consumers). It is therefore imperative to take advantage of the existing ICT infrastructure and tools and to always move ahead of possible challenges associated with communications, which can create competitive advantage for the company.

Another element to be considered in the supplier customer relationship is returns management. Effective returns management is a critical part of supply chain management because it may also bring an additional competitive advantage to the company, either through recycling or improving on the production process to

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minimize returns (Rogers *et al*., 2001). Therefore, returns management is both a strategic and operational process.

This is very important because, either raw or finished milk products are either sometimes rejected after every processing test or some finished products are defect and need to be returned to the Company either for replacement or compensation.

CONCLUSION

Throughout this chapter, the focus was put on introduction of technical terms and general principles being applied for an effective and efficient supply chain management or those guiding the process.

The philosophy of supply chain management is to balance customers' demands with the need for profitable. This philosophy implies reconciliation of logistics, supply chain and organizational performance as well as business growth. Human resources management is a critical success factor to this end.

A set of principles for a successful supply chain management were introduced. Those are customer and supplier relationships and services management as well as information flow and returns management.

CHAPTER 3: DATA COLLECTION

3.0. Introduction

The study on the impact of supply chain management on business growth for Inyange Industries ltd intends to understand different challenges facing the company which does not use its entire installed capacity while raw materials are produced in excess and perish for lack of markets. On the other hand, the fact that the company which still underutilized suffers from surplus product needs to be critically analyzed.

This is the first academic research conducted into this matter for the company. In the context of changing dynamics in the Rwandan economy and deficiencies in the existing theoretical, empirical, and analytical literature on supply chain systems in Rwanda, this study was initiated to look into the farmers' profitability, the challenges they face with regard to access to markets, challenges facing agro-processing industries in Rwanda especially Inyange Industries with regard to the company's supply chain. Above all, this research intended to be a contribution to investors and policy makers who wish to transform Rwanda into a market based economy from subsistence farming.

This research was, therefore, motivated by both economic and corporate factors. Different methods and techniques were used in data collection and analysis. The following sections examine the research methodology employed in the context of this research project and motivate the choice of the research topic. They deal also with research design, sampling design as well as research instruments and data analysis.

3.1. Justification of "Inyange Industries Ltd" as case study

Inyange Industries Ltd is an agro-processing industry established in Rwanda's capital –Kigali- whose main raw material is cow milk and fruits. This sector is constantly growing, and there are many players or entrants in this industry, namely; Inyange

Industries, Sulfo Rwanda, Alpine, Urwibutso Enterprise, Gasabo, Rubirizi Diary, Nyanza Dairy, Savana Dairy, Huye, Sonafruits Ltd, etc. There are also several imports from different countries.

Majority of Rwandans rely on agriculture and livestock for their survival, and the primary sector contributes at more than 40% to the GDP. Those both micro and macro-economic factors show how the sector is worth big investment. According to available information (Inyange, 2010), Inyange Industries leads the market for mineral water, juices and pasteurized milk in Rwanda.

In 2008, it also opened an expansion processing plant worth thirty five million USD. For such an industry to be profitable to the investors, it needs to perform well at three ends, namely; the supply of raw materials, the production process and the distribution of the finished products. Thus, this study aims at establishing the impact of supply chain on company's business growth.

Thus, besides academic requirements, this research was motivated by two major factors; economic and corporate factors.

3.1.1. Economic factors
Every investment aims at making profits for the investors, the communities and for the country as a whole.

For the investors, it is obvious they aim at maximizing profits while minimizing costs. Thus, for any food processing industry including Inyange Industries Ltd, the supply chain has a very big impact on its growth, basing on the losses or profits that can be caused by the supply chain management.

At micro economic level, the company's operations are linked with communities and its performance affects the welfare of the citizens as individuals. At macroeconomic level, its operations have impact on the national economy as it contributes to the gross domestic product (GDP) through paying taxes, creating jobs for employment (for

almost 300 people in 2012) and contributing alike to both suppliers and distributors'
business.

3.1.2. Corporate factors

Majority of Rwandans –almost 80% of the general population- rely on agriculture and
livestock for their survival. Inyange Industries Ltd is an agro processing private
company. The vision of the Government is to diversify sources of household income
and one way is to increase off farm activities. The country expects to become a private
sector led economy by 2020. Thus, that company is well positioned to contribute
substantially towards the national vision in transforming farmers' lives.

The company's effective supply chain management can contribute towards its
corporate responsibility by meeting the country's vision of promoting off farm
activities and improving the lives of its stakeholders, thus transforming the
communities both economically and socially.

3.2. Research design

Research design is a careful systematic study or investigation in some field of
knowledge, undertaking to establish some facts or principles. In this perspective, the
research design aims at establishing the process of research in order to find answers to
both research objectives and questions for this subject.

In addition to reviewing studies pertaining to the subject that already exist, both
quantitative and qualitative data as well as primary and secondary sources were used.

Exploratory research was used to gain an insight in the supply chain management at
Inyange Industries and its dealings with both suppliers and distributors so as to be
responsive to the suppliers and customers' needs. At this level, the researcher
contacted the Management of Inyange Industries and they held discussions.

Also, field observation was conducted to get an idea of the practice and challenges on
the ground. It was established that; Inyange has sixteen suppliers of raw milk who are
grouped into farmers' cooperatives and they are mainly located in the Eastern

Province. For the distributors, every Province had only one appointed distributor and the City of Kigali had only two distributors for all its three districts[3].

Thereafter, a formal request was made to the Management of Inyange Industries Ltd in writing. The objective of this request was to have access to information, including the "classified" or "confidential" data. The request was granted. The researcher has analyzed the strategic business plan, financial reports, internal reports and communications and held discussions with the Management.

A questionnaire was developed in English and was agreed upon with the supervisor before it was administered to the suppliers of raw milk. Because the suppliers of raw milk are basically farmers who don't speak English, the researcher physically visited every cooperative. He sat together with the Management and he assisted them in filling the questionnaire. All questionnaires were filled and analyzed.

Interviews were scheduled with every distributor of Inyange Industries milk products as well as the selected managers from Inyange Industries Ltd. Data were put together and analyzed before the report was produced.

In addition to exploratory and structured interview schedule, quantitative data were collected from both suppliers and Inyange Industries. For this purpose, data covering the period from 2009 – 2013 were collected and analyzed. Those data mainly included procured raw milk, quantities of both processed and rejected raw milk, amounts paid to suppliers of raw milk, quantity produced and sold as well as amount recovered from sales.

This final report is the compilation of the findings, analysis and observations from both the reviewed literature and field research on the topic.

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[3] Article 4 of the Organic Law No 29/2005 of 31/12/2005 determining the administrative entities of the Republic of Rwanda defined the Province and the City of Kigali as the highest administrative entities in Rwanda, which are divided into districts, sectors, cells and villages. Rwanda has four Provinces: Eastern Province, Southern Province, Western Province, Northern Province and the capital City of Kigali.

3.3. Types of data and sources

This research employed different types of data and sources. Among others, the research used both quantitative and qualitative data. As per sources, it used both primary and secondary sources. Instruments that were used include questionnaires and interviews.

3.3.1. Primary and secondary data

Primary data are those data collected through first hand sources. Secondary data are those collected by others to be "re-used" with levels of processing and analysis.

Concerning the primary data collection, both questionnaire and interview schedule were employed. Questionnaire helped in establishing supply chain management as perceived and understood by milk farmers who are the suppliers of raw milk to Inyange Industries ltd. Also, the Management of Inyange Industries and distributors of Inyange milk products were interviewed. Information collected was compiled, analyzed and used. As per secondary data, different documents including administrative and financial reports as well as policy documents were obtained, analyzed and used in the research.

Secondary data have their own limitations: besides being initially collected for different purposes; there are problems of comparability over time; lack of awareness of sources of error or bias; limitations of survey data as well as limitations of documents.

Despite those challenges and limitations, both primary and secondary data were used. This research is not a scientific innovation and it doesn't intend to make discoveries. That is why, it needs to be linked and connected with previous researches for the purposes of analysis and interpretation as well as logical conclusions.

3.3.2. Sources of data

During this research project, both primary and secondary data were used. Primary data were collected through questionnaires and interview schedule. Sources of primary data

include the suppliers, the Management of Inyange Industries ltd as well as its distributors.

Secondary data were obtained by searching the published and classified documents including the "Inyange Strategic Business Plan" and financial statements, the company procedures and operations and policy documents, research papers, books and electronic sources.

Specifically, qualitative sources were either consulted or used, including literature in general, handbooks, policy statements, planning documents, reports, historical and official documents, interviews and questionnaires.

3.3.3. Sample size and sampling techniques

Suppliers of raw materials and distributors of Inyange Industries are many and they are located both in Rwanda and abroad. All milk and most of fruits being used as raw materials are supplied from within Rwanda. The research work focused exclusively on supply chain management for milk as raw material and distribution of its derivatives in form of finished products.

3.3.3.1. Population

Throughout this study, by a "population" is meant a discrete group of units of analysis and not just "populations" in the conventional sense. The following table presents all the suppliers of raw milk as raw material to Inyange Industries Ltd, which suppliers compose the entire population of the study.

Table 1: Suppliers of raw milk to Inyange

Cooperative	District	Province	Total
Kirebe Zirakamwa	Nyagatare	East	13
Matwoki	Nyagatare	East	
Muvumba	Nyagatare	East	
Zirahumuje	Nyagatare	East	
Rwabiharamba	Nyagatare	East	
Isangano	Nyagatare	East	
Nyagatare Dairy	Nyagatare	East	
Abashumbabeza	Nyagatare	East	
Terimberemworozi	Nyagatare	East	
COKAF	Nyagatare	East	
KAMDAMACO	Nyagatare	East	
Abarwanashyaka	Nyagatare	East	
CDA	Rwamagana	East	
IAKIB	Gicumbi	North	1
CODERU Kivu Dairy	Rubavu	West	2
KAMU	Rubavu	West	

Source: Inyange Industries, March 2013

Concerning the distribution chain of finished products and according to the company's distribution strategy, Inyange Industries Ltd employs distributors, wholesalers and retailers.

The company has only six distributors for the whole country. Apart from the City of Kigali which employs only two distributors (1 responsible for Nyarugenge district and another one responsible for Gasabo and Kicukiro districts), other regions employ only one distributor for every province. Inyange Industries Ltd also ensures distribution for some "key clients" including some government institutions and it claims not to be involved into retailing operations.

3.3.3.2. Sampling and statistical significance

The issue of sampling is important and must be addressed from the beginning. It deals with some issues that are fundamental to an appreciation of how people or whatever is the unit of analysis should be selected for inclusion in a study and how it is possible to generalize to the population from which people are selected.

As per sampling, the research examines the procedures used for selecting people so that they are representative of the population from which they are selected. The statistical significance raises the issue of how confident we can be that findings relating to a sample of individuals will also be found in the population from which the sample was selected.

Preliminary research established that, Inyange Industries' suppliers of raw milk (which is the target product) are grouped into organized cooperatives and distributors are relatively a small number. The researcher, therefore, decided to target all stakeholders involved at both ends: supply and distribution.

Sampling was done for the employees of the company. Given the complexity and the nature of the information needed, the research targeted exclusively the Supply Chain Manager, the Plant Manager who is responsible for production, the Distribution Manager and the Managing Director.

Due to various constraints, the sample is extracted from local suppliers, staff and distributors.

Thus, this research used judgmental sampling because the specific category of the population which possessed the required information was targeted and selected in advance and the researcher believed that, the entire population was well represented. Hence, findings herein contained can be extended to the rest of the population.

Concerning the statistical significance, the research analyzed how to know if a sample was typical or representative of the population from which it has been drawn. To find this out, we had to be able to describe the nature of the sample and the population.

3.4. Data collection methods

Throughout this study, a combination of different methods or techniques was used. They included; direct and indirect observation; gathering reports and other relevant documents; administering questionnaire and interview schedule.

3.4.1. Causal effect relationship

While using this method, this study intends to establish both the relationship and impact of supply chain management on business growth for Inyange Industries ltd.

3.4.2. Descriptive method

Throughout this study, the descriptive method contributed in describing the supply chain in Inyange Industries in particular, and in agro-processing industries in general, and its likely impact on the business growth. This was applied right from the introduction to the conclusion.

3.5. Data collection instruments

In the course of this study, the following main instruments were used for data collection. They include;

- Questionnaire

- Interview schedule

3.5.1. Questionnaire

The Oxford Advanced Learner's Dictionary (2010:1201) defines "questionnaire" as "a written list of questions that are answered by a number of people so that information can be collected from the answers".

In this study, only one set of questionnaire was designed for suppliers. They deal with Inyange Industries in their business operations. They benefit from its business through either the sale of their produce in form of raw materials. The questionnaire included both structured and open-ended types of questions.

3.5.2. Interview schedule

The "interview schedule" is a face to face conversation between the interviewer and the respondent. It is conducted for the purpose of obtaining information and clarifications on specific subject. In this research, interview schedule was organized and held for both the Management of Inyange Industries and distributors of finished milk products.

This technique assumes that, the respondent to be interviewed has the required information. Such interviews were conducted especially with the Management of Inyange Industries ltd and its distributors, but also with some of the suppliers. It was thus used both as data collection method and instrument.

CONCLUSION

Research methodology is defined as a conceptual process that coordinates a set of investigations operation and techniques to make substantiated conclusions. The research is designed following a deductive process, whereby conclusions derive from premises.

Inyange Industries was chosen as case study because of; its strategic position as an agro-processing industry operating in a growing sector with many players, but also different factors motivated the choice, both economic and socioeconomic corporate responsibility.

Though the company's suppliers and distributors are located both in Rwanda and abroad, the research was conducted in Rwanda only, because of time and resources constraints.

This research used different types of data; both primary and secondary. The method was mainly descriptive. Instruments used are both questionnaire and interview schedule.

The research based on stratified sampling, which ensured that all strata of the population were well represented. Thus, findings herein contained can easily be extended to other players who were not covered by the research.

CHAPTER FOUR: DATA ANALYSIS

4.0. *Introduction*

Supply chain management, especially in agro processing industries involves different stakeholders at different levels and with different responsibilities. The process involves suppliers, processors, distributors and consumers. For the purpose of this research, distributors were at the same time considered as consumers.

The Government of Rwanda has been implementing a set of reforms aiming at empowering the private sector to enable the country to evolve from subsistence livestock to a market oriented livestock. Girinka program has enabled peasants to become mostly farmers who, later, formed organized cooperatives seeking access to formal markets.

The Rwandan milk processing industry has been dominated by either informal business or scattered small industries across the country which, over time, some of them succumbed to the pressure of competition, as new ones emerged. It is in this context that, Inyange Industries Ltd was established in 1997, with a vision to "be a leading beverage brand producing high quality of products while enhancing shareholder value" (Inyange Industries, 2010).

For any agro processing industry to achieve its goals, there are three key players; supply of inputs, production process and distribution of finished products. These players are also at stake in the case of Inyange Industries Ltd supply chain management.

The mission statement of Inyange Industries being "to gain regional market share by producing high quality products that satisfy and exceed customers' expectations while enhancing shareholders' value" (Inyange Industries, 2010), this chapter shall assess the supply chain management of the industry and establish whether this mission can be achieved with the current systems and management style.

Though this research examined Inyange Industries' Ltd business growth over years since its establishment, the researcher concentrated on the period of 2009-2013. A questionnaire was administered exclusively for suppliers. Interview schedule was conducted for the Management of Inyange Industries and its' distributors. Below are the findings and analysis.

4.1. Business profile of the raw milk suppliers

4.1.1. Experience of the suppliers

The survey data show that the population of the study is characterized by a relatively high proportion of "fresh" suppliers who started their activities after 2009. This is shown by the table below:

Table 2: Suppliers' experience with the company

		Frequency	Percent
Valid	1-5 Years	14	87.5
	6-10 Years	2	12.5
	Total	16	100.0

Source: Primary data, December 2013

All these respondents are formal cooperatives organized under the "Milk Collection Centers". These cooperatives were created after 2009. Among them, 85.7% have not more than five years of experience in supplying to Inyange Industries, whereas 14.3% have six to ten years of experience in supplying raw milk to Inyange Industries Ltd. The research did not get any respondent who would have been in this business for over ten years.

After Inyange Industries started entering in partnership with suppliers of raw milk who were organized into farmers' cooperatives, the company kept growing both in procurement of raw material of good quality and in production. The new plant with an annual production capacity of 26.5 million liters was inaugurated in 2010 and new

organized suppliers are the ones feeding its production and market of finished products. The Management told us that; these organized farmers who joined the supply chain after 2009 have been supplying better quality raw milk.

4.1.2. Periodicity of supply

This question aimed at establishing frequencies or periodicity of supply of raw milk to Inyange Industries ltd. The survey data established that; 13 out of the 16 respondents supply daily to Inyange Industries. This is equivalent to 81.3% of the suppliers; and 3 out of 16 said that; they supplied weekly. This was equivalent to 18.8% of the suppliers. The data is recapitulated in the table below:

Table 3: Periodicity of supply

		Frequency	Percent
Valid	Daily	13	81.3
	Weekly	3	18.8
	Total	16	100.0

Source: Primary data, December 2013

With regard to the objective of the research, it was established that some of the produce is not sold and it ends up perishing at the farmers' risk. Though the supply is done mainly on daily basis, most of the suppliers wished to have the frequency increased, because most of them supply during morning hours and the evening produce remains with them. They said that; at their homes, they don't have enough consumption capacity and that causes some losses for them.

It is deducted that; both suppliers and the company's growth is negatively affected. On one hand, raw material is not sold and, on the other hand, finished product cannot increase because some of raw materials are not used.

4.1.3. Suppliers' capacity compared to the demand

Any industry that deals with raw materials, especially perishables, should know the capacity of its' suppliers in order to meet customers' needs.

The survey data indicated that; 12 respondents which is equivalent to 75% said that, their capacity is underutilized vis-à-vis the demand; 1 of them said they are over utilized and 3 said that their capacity is normal compared to the demand. However, all of them conceded that, they fail to meet the demand during the dry season, especially from July to September.

Table 4: Suppliers' capacity vis-a-vis the demand

		Frequency	Percent
Valid	Underutilization	12	75.0
	Overutilization	1	6.3
	Normal	3	18.8
	Total	16	100.0

Source: Primary data, December 2013

When asked if they had any other customer, all the respondents said that; they only supplied to Inyange Industries ltd.

In fact, research revealed that; Inyange Industries Ltd is the only company that has the potential of covering the whole country purchasing raw milk. Especially, when Inyange Industries took over Savannah Industries which was operating in Nyagatare district as a competitor of Inyange, the later enjoyed the monopoly of purchasing raw milk from farmers in the region for milk processing.

This step was an opportunity to Inyange to gain a competitive advantage operating alone without competition; it however created another challenge of covering the whole market both in terms of supply and demand. And farmers don't have any other

alternative apart from feeding only the demand and capacity of Inyange Industries, which leads to underutilization or overutilization depending on the suppliers' capacity because there is no alternative customer who can buy the farmers' produce. This is reflected in the table below:

Table 5: Alternative supply

		Frequency	Percent
Valid	No	16	100.0

Source: Primary data, December 2013.

4.1.4. Supplier's satisfaction vis-à-vis frequencies of supply

The survey data indicated that; 62.5% are happy with the frequencies of supply; 18.8% said that they are not happy and 18.8% are indifferent.

The research revealed that; ordinary farmers don't care about the frequencies because what matters most is to get income regardless of the costs involved. However, farmers who have alternative income may finance their farming activities from other income, and when the entire produce is not sold, they incur losses. They recommend the frequency to be increased to both morning and evening. The figures are shown in the table below:

Table 6: Suppliers' satisfaction vis-a-vis the frequency of supply

		Frequency	Percent
Valid	Yes	10	62.5
	No	3	18.8
	Indifferent	3	18.8
	Total	16	100.0

Source: Primary data, December 2013

4.1.5. Means of delivery of raw milk to Inyange Industries ltd

The survey wanted also to establish means of delivery of raw milk from suppliers' place to Inyange Industries ltd. Data show that; 12.5% said that, Inyange Industries collected the milk from their places and 87.5% said that; they make some distance transporting raw milk before it is delivered to Inyange Industries ltd.

Both Inyange Industries and suppliers conceded that; the more suppliers make the distance in transporting raw milk, the more the risks of perishability. Therefore, farmers who are near the collection centers have more chances to sell better quality milk which is likely to be accepted by the company after test. Alternatively, suppliers who make a relatively long distance transporting milk of above two hours incur more risks.

Table 7: Means of delivery

		Frequency	Percent
Valid	The company collects them from the supplier's place	2	12.5
	Supplier makes a distance transporting milk	14	87.5
	Total	16	100.0

Source: Primary data, December 2013.

4.1.6. Payment modalities

The totality of the respondents, which is 100%, said that, the payment is made after delivery of raw milk. Neither suggested any other means, be it advance payment or upon delivery. The table 8 below illustrates the responses obtained:

Table 8: Payment modalities

		Frequency	Percent
Valid	After delivery	16	100.0

Source: Primary data, December 2013.

4.1.7. Storage of raw milk before delivery to Inyange Industries ltd

Milk is perishable and needs to be well kept all the time. Especially, quality milk requires appropriate processing. That is why; the survey looked into the storage modalities before delivery. The survey established that; 81.3% of the respondents keep it in coolers whereas 18.8% keep it in safe houses. The figures are illustrated in the table 9 below:

Table 9: Storage of raw milk before delivery to the company

		Frequency	Percent
Valid	Keeping it in cooler	13	81.3
	Keeping it in safe house	3	18.8
	Total	16	100.0

Source: Primary data, December 2013.

4.1.8. Profitability of supplying raw milk to Inyange Industries ltd

The same as Inyange Industries ltd as any other business company aims at business growth, the suppliers of raw milk aim also at maximizing profits. This question intends to establish their appreciation towards the profitability of their partnership with Inyange Industries ltd.

The survey data as indicated in the table 10 below shows that; 87.5% find profitable the business, 12.5% find it is not profitable but continue with it and none of the respondents finds it very profitable.

The degree of profitability depends mainly on the alternative source of income on the farmers' side. For those farmers who rely exclusively on their livestock and milk to get income, they care less on the costs associated with farming and they are making the majority of the respondents. For this category, the degree of profitability is higher than for those who have other sources of income and who sometimes finance their farming activities with their alternative income.

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For them, they recommend increase in both frequencies and price, whereas ordinary farmers without other sources of income are relatively comfortable with what they get.

Table 10: Profitability of business

		Frequency	Percent
Valid	Profitable	14	87.5
	Not Profitable	2	12.5
	Total	16	100.0

Source: Primary data, December 2013.

4.1.9. Level of technical support provided to farmers

All of the respondents are farmers involved in supplying raw milk to Inyange Industries ltd. In order to improve the quality of supplied raw milk, Inyange Industries ltd provides some technical support to the farmers who supply the raw milk.

The survey data show that; 6.3% said that; the technical support provided is very good; 87.5% find it "good" and only 6.3% find it "poor".

Inyange Industries Ltd has distributed coolers on credit to farmers' cooperatives which had failed to install them as their initial investment. Trainings are also regularly organized on how better to keep, to transport and to store raw milk before delivery to Inyange. This kind of technical support has been well appreciated. According to suppliers, this support has significantly contributed in reduced losses due to lack of hygiene and conservation while keeping raw milk.

However, though all the suppliers recognized the existence of the technical support provided by Inyange Industries Ltd to its suppliers, none of them found it "excellent" as indicated in the table 11 below:

Table 11: Suppliers' satisfaction vis-a-vis the technical support provided

		Frequency	Percent
Valid	Very good	1	6.3
	Good	14	87.5
	Poor	1	6.3
	Total	16	100.0

Source: Primary data, December 2013

4.1.10: Risks associated with competition

Farmers' cooperatives involved in supplying raw milk deal exclusively with Inyange Industries ltd, especially after the former independent Savannah Industries Ltd established in Nyagatare was purchased by Inyange Industries Ltd in 2012 and became its' subsidiary. The survey asked respondents if they would consider quitting if they had other companies willing to buy their raw milk.

The survey data as illustrated in table 12 below show that; 31.3% would consider quitting and 68.8% said that; they would stay with Inyange Industries Ltd. Those who would consider quitting said it would mainly be due to getting better prices (competition). This was called the threat of competition. Those who would stay said that; they couldn't betray "their" company.

Table 12: Threat of competition

		Frequency	Percent
Valid	Yes	5	31.3
	No	11	68.8
	Total	16	100.0

Source: Primary data, December 2013.

4.2. Supply Chain Management from the perspective of Inyange Industries Ltd

While collecting data from Inyange Industries ltd, the researcher used both primary and secondary data. They included interview schedule, financial reports, policy documents and strategic business plan documents, among others.

Interviews were held with the plant manager who was responsible for production, the supply chain manager who was responsible for procuring raw materials, the distribution manager who is also responsible for marketing and the Managing Director.

This step aimed at understanding the company's perception of the supply chain management and its' likely impact on the company's business growth.

4.2.1. Inyange Industries Ltd business plan on supply chain management

The company's strategic plan (Inyange Industries, 2010: 8-28) allocated a big part to supply chain management, right from procuring raw materials to the distribution of finished products, especially for milk products. This part consulted different documents as well as interviews.

The company envisaged to support farmers' cooperatives and milk collection centers by entering into contracts of supply and purchase as well as encouraging farmers to supply clean and quality milk. Inyange believes that; by contracting farmers to produce the raw milk and Inyange providing the market, a symbiotic relationship shall be created. It is in this regard that the Farmers' Cooperatives Department was introduced in the structure of the company. This element was confirmed by suppliers who appreciated the level of technical support in terms of logistics and capacity building.

The research established that; Inyange planned to invest in milk collection trucks which will collect the raw materials from particular collection points. This would ensure quality products and facilitate both farmers and the processors. Suppliers

recommended that; the number of trucks should be increased and they should penetrate the farms as far as possible to facilitate them in transporting raw milk. However, this would affect the company's overhead costs associated with production.

Inyange Industries has established a specific department responsible for sales and marketing according to the company's strategic plan (Inyange, 2010).

Annual milk and milk products sales are expected to grow as follows: In 2011, sales shall grow to the tune of 5 million liters. In 2012 and 2013, they would grow to 6.7 million liters and 8.4 million liters respectively.

Apart from the local market coverage, the business plan envisages exporting Inyange products to the neighboring countries such as Uganda, Burundi, Tanzania and Democratic Republic of the Congo. Exports towards Bujumbura, Bukavu, Goma, Kampala, Arusha, Dodoma and Dar-es-Salaam started formally in 2012.

Concerning the distribution, the company believes that; the objectives and mission could not be achieved without a consistent distribution strategy. This includes, but is not limited to; appointing, training and developing credible distributors or agents; developing an effective and efficient distribution system; developing company image through signage, print and electronic media; investing in coolers; maintaining a stable pricing policy as a tool for market penetration; exploiting market information in market development and the market expansion would cover the entire country by 2010 (Inyange Industries, 2010).

Basing on interviews held with different players, the research established that; the distribution strategy failed to meet the expectations and it became imperative to review its implementation plan and strategies. This would be effective from January 2014.

4.2.2. Inyange Industries Ltd business growth

The company's objective in financial contribution to the shareholders has been "to achieve and maintain cash operating profit of not less than 20% after tax" (Inyange Industries, 2010).

This objective would only be achieved if sales volumes are expanded to grow revenues; credit terms are negotiated and agreed and prices with suppliers are fixed for inputs in the long term; stringent cost control measures are instituted; opportunity areas are identified to save on costs; continuous review of the performance against budgets and leveraging on global procurement to benefit on competitive pricing and good quality.

Inyange Industries disclosed that; they have been experiencing prices fluctuations, especially due to petroleum products changes in prices and poor quality of raw materials, especially milk, which had negative impact on their pricing systems and forecasting methods.

In fact, some of their products perished for lack of markets and demand. This also affected negatively their books of accounts and the cash operating profit has been below the set 20% over the last three years, which led them to diversifying constantly their products, aiming at meeting market needs, and it has progressively yielded.

The set targets have been achieved and the company has been making profits. However, the company is yet to break even because of heavy investments which have been incurred. The Management did not publish their audited financial statements for confidentiality purposes.

4.2.3. Human resources development value chain
In order to achieve both the mission and the objectives, companies should build on reliable and competent human resources who are capable to bring competitive advantage to the company. Thus, Inyange Industries considers human resources development value chain as critical to business growth which is an outcome of good supply chain management.

Inyange's objective is to ensure that staff and associates are trained and developed so as to satisfy current and future manpower demands to achieve high operating standards

(Inyange, 2010). The company intends also to train farmers, distributors and agents to ensure that the entire value chain is efficient and effective.

This would be achieved by recruiting the full complement in finance, engineering, quality assurance, production, sales and marketing; training all managers and operatives to optimize productivity; developing performance agreements with all senior managers and evaluating them on quarterly basis; mentorship programs for key competencies and facilitating external trainings and exchange programs with other similar processors with evident best practices.

During the research, we have not been able to get the capacity building plan which is key to the successful implementation of this component. The company employs more than two hundred people, with more than one hundred casual staff. The Managing Director said that; the staff capacity building strategy would be available by June 2014.

4.2.4. Production and productivity

According to Inyange's business plan, the company's objective in regard to production and productivity is to "continuously improve efficiency and effectiveness in methods, materials, assets utilization and people with a view to being a low cost producer" (Inyange Industries, 2010).

Inyange Industries do not own any farm. They buy raw milk from private farmers who agree to sign supply agreements with the factory. After the raw milk is supplied, Inyange proceeds with laboratory tests. The raw milk of poor quality is rejected and the supplier is not paid.

Because Inyange Industries could not move house to house to collect raw milk, they organized farmers into farmers' cooperatives and established milk collection centers. All milk collection centers are equipped with coolers and electricity.

Milk collection centers are not only a critical quality point in the milk supply chain but a potential knowledge base for farmers and logistic hub for the supply side network.

Implementation of the designed system would depend on strict discipline as most farms are scattered and there is no electricity to handle cooling of milk within the first 2-3 hours after milking. Inyange installed adequate capacity at all areas with potential high milk volumes supported by contracts with farmers renewable after a minimum of two business cycles (Inyange Industries, 2010)

The research revealed that; the company intends to achieve its objective by implementing an effective maintenance program; putting systems in place to eliminate or minimize double handling; controlling staff complements levels to budget; having an effective demand and operations planning; implementing a quality management system; implementing an efficient and user friendly financial accounting system; implementing a performance appraisal system to evaluate achievements against set goals; developing people through training to realize their full potential.

4.2.5. Sales forecast, capacity and demand potential
The following table gives the projected sales in comparison to the demand as well as the factory's designed capacity. A strong mismatch can be established between the current production and the factory's capacity.

Table 13: Sales vis-a-vis installed capacity for milk products

(Figures in million liters)

Year	Sales forecast	Actual sales	Installed capacity
2011	5.0	3.7	26.4
2012	6.7	6.2	26.4
2013	8.4	9.9	26.4
2014	10	N/A	26.4

Source: Inyange Strategic Business Plan (2010) and Financial reports

It is clear that; the production and sales forecast are far below the factory installed capacity. It was reported that; the gap shall be filled over time as the demand goes on increasing.

The redundant capacity must be explained. The company plans to improve on the quality of its products and to export them to regional and international markets. Also, as the Rwandan population keeps growing and its economy becomes more formal, it is expected that; those who consume unprocessed milk shall start consuming the processed milk from Inyange Industries. This increasing demand shall not become a challenge to the company but, instead, it shall be an opportunity for it to use the maximum of its installed capacity.

4.3. Findings from distributors

During the period of research, Inyange Industries Ltd had only six distributors across the whole country with specific jurisdictions.

The City of Kigali had two distributors namely; Rutayisire in Nyarugenge district and 3GS for Kicukiro and Gasabo districts. Every province was handled exclusively by one distributor as follows; Byagatonda for the Eastern Province; Twizerimana for the Southern Province, G&D Enterprise for the Western Province and ZICO company for the Northern Province.

In the domestic market, Inyange Industries Ltd does not have a relevant competitor in milk products. Other small players include Nyanza Dairy in Southern Province and Rubirizi Dairy in the City of Kigali. The competition on the local market is due to finished milk products imported from Uganda at a relatively lower price.

During this research, the researcher held interview schedule and discussed their partnership with Inyange Industries Ltd as well as their level of satisfaction. Interviews focused mainly on how they were appointed as distributors of the company; types of products they deal with; their level of satisfaction in regards with technical support and

customer care as well as distribution mechanisms. Because they are distributors; they were asked about challenges associated with distribution vis-à-vis their competitors.

4.3.1. Appointment of distributors

All the current six distributors have been working with Inyange Industries since 2009. Before the appointment, every candidate makes a formal written request and, the Company, basing on its discretion, appoints its distributors.

These distributors have been experiencing changes and reforms in supply and distribution chains. They said that; the company has been reviewing its distribution mechanisms almost every year since the year 2009. However, despite those regular changes, the current suppliers have remained loyal to the company, either as distributors or retailers, depending on the system administered.

Interviews revealed that; before March 2010, the company had several distributors. This led to poor productivity and in March 2010, the system was reviewed. About twenty distributors were appointed, with every one of them covering almost two districts.

In March 2011, the distribution system was revised. The company suspended all the distributors and opened warehouses in every province, which warehouses were directly managed by Inyange Industries. This system lasted until March 2012, when new reforms were administered and distributors at provincial level were introduced. This has been the practice until the end of 2013 before new reforms were adopted since the beginning of 2014.

Such short lived reforms can have negative impacts on supply chain management especially because of missing institutional culture and constant changes may cause instability among members of the staff. Thus, regular innovations following such changes can become a hindrance to the need of continuity and institutional memory.

4.3.2. Supply of finished products to distributors

Because of the reforms that were administered over years on the distribution chain, the ways and means of supply have equally kept changing. This research focused on the current distribution system.

The distributor gets the products basing on prepayment mode. Distributors make payments into bank accounts and they take the proof of payment to the headquarters of the company to be served.

The service system is "the first you paid, the first you are served". That is why; it sometimes happened to the distributors to pay for products which are not available, just to keep waiting until the products are available to be served. This process can take an unspecified period of time.

Distributors collect their finished products themselves, and transport is exclusively discounted for distributors operating from provinces. The upcountry company's warehouses are located in strategic cities of the Western Province, namely Rusizi and Rubavu. They serve mainly for exports purposes in the neighboring countries.

4.3.3. Periodicity of supply to distributors

Interviews held with distributors revealed that; there is no specific periodicity in supplies because it depends on demand. After the distributor has effected the payment to the company's accounts and presented the proof of payment, products are supplied immediately.

It was also noted that; sometimes distributors face shortage and delays in supply of some products from Inyange's side, and this affect negatively their business. They mostly complained that; when such shortage occurs, they don't get any explanation from the company. They pointed especially at milk products (small boxes and yoghourt) as scarce products, especially during the dry seasons. This irregularity gives advantages to their competitors and has a negative impact on the supplier-customer relationship as well as to the distributors' own business growth.

4.3.4. Customer relationship and business growth

All the distributors conceded that; Inyange Industries products have a big market share on the domestic market. This is also confirmed by the Management of Inyange Industries.

The research revealed that, stakeholders who are responsible for distributing Inyange products to wholesalers and retailers have been experiencing an "unfair competition" from their supplier, Inyange Industries. In fact, the company is also engaged into distribution and retailing on the same market, thus competing unfairly and reducing the distributors' profit margin because they hardly beat the set targets. This, according to some distributors, may become a hindrance to the company's business growth because of overspending and they advised it should stop this practice.

Another challenge highlighted by the distributors is about distributors who operate like competitors and violate others' jurisdiction. For example, information alleged that; the distributor responsible of the Eastern Province and who resides in the City of Kigali, having taken products from Inyange Industries, may sell them in the City instead of taking them to the Province. This "dumping" also created unfair competition because of the discounted transport given to upcountry distributors contrary to those in the City. Such products are sold at a relatively lower price.

The distributors responsible for the City of Kigali said that; such cases have been reported to the Management of Inyange Industries with evidence at hand, but they did not take any punitive action against those who violated the rules and regulations in place. This practice, according to the distributors, would have discouraged them if the business had not been profitable to them. Inyange products are competitive on the market and consumers like them. Unfortunately, distributors are facing shortages and delays in supply and some of the milk products have become scarce despite a growing demand.

All the distributors have expressed the need for technical support in marketing, branding and logistics, where it would be possible, like it is done for the suppliers.

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4.4. Sales and distribution chain of finished products

Having reviewed both the designed capacity and sales forecast which are equivalent to the current production, the research looked into the ways of finished products distribution as a main factor that may affect the production and sales growth.

Concerning the chain of distribution, interviews were held with the supply chain manager who is also responsible for sourcing raw materials and logistics. The supply chain manager works closely with the director of sales and marketing, who is responsible for sales, branding and distribution. The company's strategy comprises of distributors, wholesalers and retailers before going to the consumers.

It is from this background that; the company decided to establish distribution centers as suggested in its business plan. The distribution centers and distribution mechanisms aim to be a mix focused on reducing inventory within the supply chain and with capabilities for demand and supply, supported by a very capable distribution infrastructure and an ICT-based enterprise resource planning (ERP) capability for strategic supply chain network optimization and enterprise operations and sales planning. The objective is to enhance efforts for the quality chain, link operations to sales and continually evaluate and optimize business processes (Inyange, 2010:18).

According to the Management, for distribution centers to be efficient and effective, Inyange continuously build a team of well trained and dedicated distributors and agents who meet operating standards, render effective service and develop their respective areas per the road map of the company's growth plan.

During interviews held, the research learned that; Inyange plans to develop capability of warehousing, manpower, distribution trucks and customer serve; efficient routes for effective delivery of products; hold regular progress review meetings; continuously train distributors and their personnel on customer service and management skills.

The company has four warehouses among which two are located in the City of Kigali, one in Rusizi which feeds the town of Bukavu in DRC and Bujumbura in Burundi and

the last is located in Rubavu and it feeds also the town of Goma in the DRC. Inyange also does distribution at its own for key identified customers, such as hotels and other institutions. The Management denied being involved in routine retailing as it is claimed by its distributors and retailers.

4.5. Customer care management and relationship

According to the Management, Inyange has established an active website and a telephone line where customers can get information and log their queries. Orders are processed and handled in hard copies. Return claims are handled on case by case basis. The Farmers' Cooperatives Department has been an important tool to facilitate and enhance supplier – customer relationship and the Sales and Marketing Department keep engaging distributors and has been responding to their queries or concerns. However, apart from logging queries, the website does not provide opportunities to place online orders, which can also affect negatively customer satisfaction and supply chain as well as company's business growth

4.6. Longevity of the milk products

In general, the research established that; the maximum longevity of milk products by Inyange Industries is nine months. This product is the UHT which was introduced in 2012 and it is consumed by almost 5% of its consumers. Inyange holds 65% and 70% market shares respectively for pasteurized milk and yoghourt, which are both milk products (Inyange Industries, 2010:2) However, the maximum longevity of both products does not exceed six months, currently, yet they make the majority of the milk products sales.

This factor can have two major negative impacts on the business growth: either the small portion is sold to the detriment of the bigger demand which is not fed or the big part of pasteurized milk and yoghourt perishes because of short longevity. At both ends, this is a problem that should be addressed through both increased longevity and production that meets the demand and the markets.

CHAPTER FIVE: MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0. Introduction

The aim of the research was to analyze why Inyange Industries Ltd which is mainly producing milk products is producing at about 40% of its designed production capacity, yet farmers are crying that, their raw milk perishes for lack of market and Inyange milk products are either scarce or expensive on the national market comparatively to the imported milk. The problem was to analyze whether Inyange Industries Ltd can increase its production, meet both the suppliers and distributors' needs and at the same time keep its business growing. The study had to analyze the impact of supply chain on business growth as Inyange Industries Ltd as case study.

5.1. Major findings

5.1.1. From the suppliers

Inyange Industries has 16 suppliers of raw milk and they are mainly located in the Eastern Province. 14 of them have been supplying Inyange with raw milk for the last five years and they supply on daily basis. Compared to the demand, suppliers' capacity is generally underutilized, especially during the rainy season and they don't have any other alternative customer. They are happy with the technical support given by Inyange Industries and their business is generally profitable. However, they wish the supply could increase so that their produce is sold.

5.1.2. From Inyange Industries Ltd

The company has an installed capacity of producing 26.4 million liters of milk per year and, currently, the plant operates 40% of its capacity. The production keeps growing as demand increases. The company relies on both suppliers to produce quality raw milk and distributors to increase market share penetration in order to increase its production. Inyange Industries has appointed six businessmen as its' distributors to cover the whole country. The company has also started exporting its milk products,

especially in the neighboring countries. Currently, the company produces only fresh milk, pasteurized and homogenized milk, UHT and yoghourt. No matter the demand, Inyange's production is backed with yet unutilized capacity. The company has the potential to buy all cow milk produced in Rwanda if the market is available. Its' distribution strategy kept changing every year and, definitely, constant changes have negative impact on business growth and organizational performance due to lack of institutional culture and memory.

5.1.3. From distributors

Inyange Industries has only six distributors who cover the whole country. Apart from the City of Kigali which has two distributors, every province, despite how big it is, is covered only by one distributor. They all said that, Inyange products have the potential to dominate the market because of the increasing demand which depends on their good quality. However, the capacity of penetration is limited because of lack of technical support from Inyange Industries and registered irregularities in supply of finished products as well as unfair competition which sometimes goes unwatched.

5.2. Conclusions

The research has established that; after its creation in 1997, Inyange Industries began operations and a number of strides have been made towards achieving the targets for the company in particular, the people of Rwanda and the economy in general. Foremost of the achievements is the creation of a readily available market for farmers' produce, an issue that was regarded a big challenge to rural Rwanda before the company's creation, though the whole produce is not sold. It is high time to consolidate what has been achieved and to improve on areas of weaknesses.

Inyange Industries Ltd plant has an installed capacity of processing 5,500liters of milk every hour. With such a capacity, Inyange has the potential to buy all the goods produced by farmers in this line of agriculture sector. This was also confirmed by the Managing Director of Inyange Industries who said; "we have the potential to buy all the farmers' produces both of milk and fruits" (RPF Silver Jubilee, 2012:55).

Among the achievements of Inyange is the growth it has undergone over the years where it boasted an average turnover of US 2million per month in the year 2012, an almost 50% increase from the same in 2011. The Management attributed the increase in turnover to changing market dynamics, with more people having higher propensities to buy. This was also confirmed by the distributors who said that, many consumers like the company's products and want to buy them in a big number.

Currently, Inyange is the sole food processing company in Rwanda that has acquired the International Standards Organization (ISO) certificate, ISO 220000:2005 to manage food safety hazards along the food chain in order to ensure that safe products are delivered for consumption. This makes Inyange a globally accepted brand of standard products that can compete on many markets across the globe.

Supply chain management is critical to any company's business growth. Inyange Industries have been trying to improve on it over time, which led to unstable supply chain strategy over the past five years. Every year, a new strategy was introduced, which might cause inconveniencies to both the company itself and the consumers.

Inyange Industries utilizes both inbound and outbound logistics. The company has one main store at its headquarters in Masaka and its subsidiaries in Gikondo (City of Kigali) and Rusizi and Rubavu in the Western Province. The company subcontracted some trucks to carry its goods but also it owns few ones which are used for transport of raw materials and in its distribution operations.

Customer relationship is another important factor for the business growth and sustainable relationship. Suppliers are satisfied with the way they deal with Inyange Industries. This could be justified by the fact that; Inyange Industries has invested in supporting the creation of farmers' cooperatives.

Distributors on their side said that; the customer relationship is at the distributor's risk, because of many reasons. The company several times does not communicate when there is possibility of delay or shortage of products. A distributor may pay for the

products and have to wait for unspecified period before delivery is made, without any justification from the company. This has negative impact on their customer relationship also, and it hampers their business growth which, in return, has the multiplier effect on Inyange Industries business growth.

The company utilizes until now less than 50% of its installed capacity. Both some of the suppliers claim to be underutilized because some of their raw milk is not sold and distributors or customers also claim shortage and delays in supply of finished products, especially UHT milk and yoghourt. The company said that; the production shall keep growing as demand is increasing.

Basing on both the approach and the findings, I can confirm that; the objectives of the research have been achieved. The company's business plan was critically analyzed with standard principles of supply chain management. It has been established that; supply chain management has a significant impact on business growth. Suppliers of raw materials determine the capacity of production. Also, distributors and consumers determine the quantity to be produced and sold. Therefore, the null hypothesis has been theoretically verified and confirmed. Therefore, its alternative must be categorically rejected.

5.3. Recommendations

Having assessed and reviewed the supply chain management at Inyange Industries Ltd and its likely impact on the business growth, a number of recommendations are formulated to the attention of the Management and other researchers.

1- It should be understood that; main elements of demand and supply chain management include the product itself; the price of the product and its availability or place where it is located (product, price, and place). Therefore, Inyange Industries Ltd should diversify its milk products and strategies to meet the above determinants. Besides pasteurized and homogenized milk, UHT and Yoghourt, the company could consider producing powder milk and other milk products which are still either imported or produced locally with poor quality.

The company should work hard towards enhancing its market penetration by appropriate marketing and distribution strategies.

2- All business companies are operating in a global environment. Information technologies are developing fast and business companies should move ahead of that pressure. The website of Inyange Industries Ltd, www.inyangeindustries.com does not provide room for online sales and orders, which can have a significant impact on its sales growth. Also, for national distributors who pay through bank accounts, they are required to go physically to the company's office for other administration requirements and procedres. Inyange Industries Ltd should take advantage of current ICT infrastructure to provide for online sales.

3- The research revealed that; raw milk is produced in big quantity during the rainy season, and it perishes for lack of market. However, raw milk becomes scarce during the dry season and Inyange Industries lacks raw materials, causing scarcity of its finished milk products. Inyange should increase the volume of raw milk purchased from the current suppliers and get more farmers to engage in the production of milk. However, this shall require the company to increase the longevity of its products as well as analyze carefully the market in order to produce products that the demand needs and all the time.

4- The literature has revealed the role of human resources in organizational performance. The research has revealed constant changes in the distribution strategy. This might be a result of changes in the management of the company, which can have a negative impact on both suppliers and distributors customer relationship. It can also affect the organizational performance since the institutional memories keep changing. The company should have both consistent staff capacity building and distribution strategies which do not change every year.

5- In order to increase the production and meet the demand, appropriate forecasting is recommended. That way, shortages and unnecessary delays shall be either mitigated or minimized. The company needs to reconsider its distribution strategy in order to give opportunity to appointed distributors to exercise their responsibilities.

6- The research revealed that; Inyange Industries has been investing in technical support to farmers, which has yielded. However, distributors are calling for technical support in marketing and branding to increase their volumes of sales. The company should consider the request in order to increase both supply and demand. Distributors are well placed to be marketing agents in their jurisdictions, and the company should work closely with them. This shall help increasing market share and penetration.

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ANNEXES

QUESTIONNAIRE

For suppliers only

This questionnaire has been prepared by Ladislas NGENDAHIMANA, a MBA student at SFB-MSM (School of Finance and Banking in collaboration with Maastricht School of Management), in the Option of Project Management.

The information requested from you is intended for a research project that is part of the academic requirements for the fulfillment of a Master's degree program. It will be treated in strict confidentiality.

The researcher would be very grateful if you could answer the following questions to provide him the information. He can be contacted on his cell phone (250)788353802 and by email to ladis.ngenda@gmail.com

Instructions: Please put a tick in the proposed box corresponding to your answer or fill in the space provided for open ended questions.

1. How long have u been a supplier to Inyange Industries Ltd?

A. 1-5 years
B. 6-10 years
C. More than 10 years

2. What is the frequency of your supply to Inyange Industries Ltd?

A. Daily

B. Weekly

C. Other (specify)…………………………………………….

3. Compared to the demand by Inyange Industries, how do you compare your capacity vis-a-vis the demand?

A. Underutilized

B. Overutilized

C. Normal

4. Do you supply any other company apart from Inyange Industries Ltd?

A.Yes

B. No

For either choice, explain…………………………………..

5. Are you happy with the frequency of supply to Inyange Industries Ltd?

A. Yes

 B. No

C. Indifferent

6. How are your materials supplied to Inyange Industries?

A. The company collects them from your place

B. You make a distance transporting your suppliers to a collection centre

C. You take supplies to the company offices

7. How is the payment modality?

A. Upon delivery

B. After delivery

C. Any other mode (explain)

8. How do you handle raw materials before delivering to Inyange Industries?

A. You keep it in cooler

B. You keep it in safe house

C. Any other mode (explain)

9. How do you find the profitability of your business?

A. Very profitable

B. Profitable

C. Not profitable

10. How do you find the technical support received from Inyange Industries Ltd?

A. Excellent

B. Very good

C. Good

C. Poor

D. Not any

11. Given the opportunity of supplying to other companies, would you consider quitting Inyange Industries Ltd?

A. Yes

B. No

Why?

Thank you for sparing your time!