

**Value chain finance for infant high-value horticultural industries: a
case study of the baby vegetable industry in Swaziland**

by

Mfundo Payday Langwenya

Submitted in partial fulfillment of the requirement for the degree

MSc Agric (Agricultural Economics)

in the

Department of Agricultural Economics, Extension and Rural Development

Faculty of Natural and Agricultural Sciences

University of Pretoria

Pretoria

February 2014

Declaration

I declare that this dissertation, which I hereby submit for the degree MSc in Agricultural Economics at the University of Pretoria, is my work and has not been previously submitted by me for a degree to this or any other University.

M.P. Langwenya

February 25, 2013

Signature

Date

Dedication

This dissertation is dedicated to the cause, to which undertaking this research has contributed.

Acknowledgements

I would like to forward my sincere gratitude to my supervisor, Professor Gerhard Coetzee, for the great supervision and assistance in all the stages of my research. Also, I would like to thank my co-supervisor Professor Johann Kirsten for his guidance. Special thanks go to Professor Bernard Njehia of Kenyatta University for his friendly support and well appreciated contribution to this dissertation. I also send my gratitude to NAMBoard staff, to the owner of Sdemane Enterprises (Mr. Themba Dlamini), and Mr. Mabandla Dlamini for their cooperation and support. Others include Mr. Luzuko Chiya, Mr. Siphon Nxumalo, Mr. Siphon Dlamini, and many University of Pretoria colleagues and staff members. Lastly, many thanks to Katherine Blaine of the Centre for Inclusive Banking in Africa and every member of the Centre for their support and assistance.

Value chain finance for infant high-value horticultural industries: a case study of the baby vegetable industry in Swaziland

by

Mfundo Payday Langwenya

Degree: MSc Agric (Agricultural Economics)
Department: Agricultural Economics, Extension and Rural Development
Supervisor: Professor Gerhard Coetzee
Co-supervisor: Professor Johann Kirsten

ABSTRACT

Having appreciated the changes in global markets that offer lucrative opportunities for high-value crops like baby vegetables; the dire need to diversify the Swaziland agricultural sector; and the versatility of value chain finance, this study takes the Swaziland baby vegetable industry as a case study to determine the applicability of value chain finance to infant high-value horticultural industries lacking guaranteed markets. This study focused on the NAMBoard value chain, employing both qualitative and quantitative methods of inquiry through a desktop study; case study reviews; and in-depth interviews. This study adapted the UNIDO (2011) VCF analytical framework.

This study found that NAMBoard provides direct VCF to its producers, financial institutions provide formal finance, farmer group members provide informal finance to each other, farmers that have some other sources of income self-finance the baby vegetable enterprise, and that there is inter-financing between the baby vegetable and conventional vegetable value chains. Indirect VCF is absent in this value chain. On the other hand, Sdemane enterprise provides direct VCF to its outgrowers and data collected suggests that these don't use other financing mechanisms except self-finance VCF.

Empirical evidence on a sample constituting about 30% of the target population shows that seeds/seedling costs contribute 56.1% to total average production costs. This shows a big financing challenge now that NAMBoard is reluctant to give seeds on credit, while the rest of

the 43.9% still require financing. In addition to that, there is no capital finance loans provided to smallholder producer, but only operational finance is accessible from formal financial institutions. This study discovered that all baby vegetable producers also produce conventional vegetables, and these businesses are inter-linked. There is financing between the baby vegetable and conventional vegetable businesses and thus value chains, sourced from product proceeds. Individual producers, farmer groups and farmer associations form the producer base. A financial analysis on the production stage revealed that there are informal financial relationships within farmer groups. Also, farmer groups use formal finance more than individual producers who mostly prefer self-finance VCF.

A VCF analysis of NAMBoard discovered that there is direct VCF between the SAS input shop and also the NAMBoard input shop, and between producers and the NAMBoard input shop. NAMBoard, in addition to the input shop and provision of extension services, performs three distinct post-harvest services namely: transportation; processing; and marketing, for which a handling fee of 35 percent to the final produce value is charged and deducted from product proceeds. The Swaziland financial system has no financial products specifically for this industry, as there is a very small number of participants borrowing funds from financial institutions. The loan processing procedures are cumbersome and take too long thus formal finance is currently ill suited to producers.

This study rated the risks to the financial transaction reflecting the qualitative interpretation of available information and that obtained in the field through interview schedules with all value chain actors. Risks identified as high are: insufficient production; poor quality produce; failure to meet food quality and safety standards; lack of guaranteed market; and ignorance on price. Catastrophic weather; loss of quality; lack of technical know-how; and failure to manage business profitably were categorised as medium risk. Inefficiency; lack of market demand; and unreliable water sources & electricity are seen as low risk to the financial transaction.

This study also explored the Sdemane value chain, where Sdemane enterprise is the lead firm. It was examined and interpreted as an institutional success story that holds the solution to the NAMBoard value chain ailments. It also has out grower producers to supplement its production. Findings of this research show that a financial bailout ensured the survival and growth of this emerging value chain, which now has secured markets with a market demand

more than achieved output. The model used is able to minimise and diversify risk for both Sdemane and the out grower producers. The manner in which this value chain is organised makes it competitive and exhibits potential which attracted donor funding, and today is an infant value chain that is achieving tremendous growth.

This study concludes that VCF is applicable to infant industries lacking guaranteed markets to a limited extent. Minimising risk increases the availability of finance due to the resultant increase in financial attractiveness and the chain becomes able to produce competitively and meet the strict market conditions. At the end, the value chain would operate as if the market were guaranteed, just by being competitive and successfully delivering products to end markets. With regard to policy, rethinking the underlying NAMBoard business model and learning from success stories including the local Sdemane enterprise is one way to avoid the imminent collapse in exports from this value chain.

Table of Contents

Declaration	i
Dedication.....	ii
Acknowledgements	iii
List of figures	xii
List of tables	xiii
Abbreviations/Acronyms	xiv
CHAPTER 1.....	1
INTRODUCTION	1
1.1 BACKGROUND	1
1.1.1 Changes in agricultural high-value markets.....	1
1.1.2 Overview of the Swazi economy	2
1.1.3 Agricultural finance.....	4
1.2 PROBLEM STATEMENT	7
1.3 RESEARCH HYPOTHESES	7
1.4 RESEARCH OBJECTIVES	7
1.4.1 Overall objective	7
1.4.2 Specific objectives.....	8
1.5 VALUE AND INTENDED CONTRIBUTION OF THE STUDY	8
1.6 DELIMITATIONS	8
1.7 ORGANISATION OF THE DISSERTATION.....	9
CHAPTER 2.....	10
LITERATURE REVIEW	10
2.1 INTRODUCTION.....	10
2.2 RISK.....	10
2.3 REVIEW OF VALUE CHAIN FINANCE ANCHORING THEORIES.....	12
2.3.1 Transaction cost economics	12
2.3.2 Imperfect/ asymmetric information.....	13
2.3.3 Agency theory	15
2.3.4 The property rights theory.....	16
2.3.5 The contract and incomplete contract theories.....	17
2.3.6 The theory of social capital	17

2.3.7	Synthesis.....	17
2.4	INTRODUCTION TO VALUE CHAIN FINANCE	18
2.4.1	The value chain finance concept.....	18
2.4.2	The taxonomy of value chain finance	19
2.4.3	The value chain finance framework.....	22
2.4.4	The significance of value chain finance.....	24
2.5	REVIEW OF CASE STUDY MODELS.....	26
2.5.1	Integrating credit and marketing for horticulture: The DrumNet model in Kenya	27
2.5.2	An effective way to integrate smallholders in value chains: The experience of BRAC.....	31
2.5.3	Frigoken Limited.....	35
2.6	THE ANALYTICAL FRAMEWORK	40
2.6.1	Financial attractiveness	40
2.6.2	Risks to the financial transaction	41
2.6.3	Norms and practices	42
2.6.4	Availability of finance.....	44
2.6.5	Financing gaps.....	45
2.7	SUMMARY	46
CHAPTER 3.....		47
RESEARCH METHODOLOGY.....		47
3.1	INTRODUCTION.....	47
3.2	DESCRIPTION OF INQUIRY STRATEGY AND BROAD RESEARCH DESIGN.....	47
3.3	SAMPLING PROCEDURE.....	48
3.3	THE INSTRUMENTS.....	49
3.4	METHOD OF DATA COLLECTION AND ANALYSIS	50
CHAPTER 4.....		53
A FINANCIAL ANALYSIS OF THE PRODUCTION STAGE OF THE NAMBOARD VALUE CHAIN.....		53
4.1	INTRODUCTION.....	53

4.2	BABY VEGETABLES AND THEIR CONNECTION WITH CONVENTIONAL VEGETABLES	53
4.3	PRODUCER PROFILE	55
4.4	VALUE CHAIN PERFORMANCE INDICATORS	57
4.5	SEGMENTING THE BABY VEGETABLE VALUE CHAIN	58
4.5.1	Variables and method of calculation	59
4.5.2	Individual farmer value chain	61
4.5.3	Individual farmer cash flow	62
4.5.4	Farmer-group value chain	63
4.5.5	Member of farmer-group cash flow	64
4.5.6	Summary of cases.....	65
4.6	ACCESS TO FORMAL FINANCIAL SERVICES.....	65
4.7	FARMERS’ ASSOCIATIONS	67
4.7.1	Ekuvinjelweni Sugar cane Farmers’ Association (Former producer).....	67
4.7.2	Manzimnyama farmers’ association (Current producer)	68
4.8	DISCUSSION	69
4.9	CONCLUSION	70
CHAPTER 5.....	72
A VCF INSTITUTIONAL ANALYSIS OF THE BABY VEGETABLE INDUSTRY IN SWAZILAND.....	72
5.1	INTRODUCTION.....	72
5.2	INCEPTION AND EARLY STAGES OF THE BABY VEGETABLES PROJECT.....	73
5.3	THE BUSINESS CONTEXT AND ENABLING ENVIRONMENT FOR THE BABY VEGETABLE INDUSTRY	74
5.3.1	Macro level.....	75
5.3.2	Meso level	75
5.3.3	Micro level	77
5.4	VCF ANALYSIS OF THE NAMBOARD VALUE CHAIN.....	78
5.4.1	Inputs stage.....	79
5.4.2	Production stage	79
5.4.3	Input-production stages linkage	79
5.4.4	The farmer-technical assistance linkage	80

5.4.5	The farmer-formal finance linkage	80
5.4.6	NAMBoard post-harvest handling stages	81
5.4.7	The farmer-local market linkage	81
5.4.8	The NAMBoard-export linkage	82
5.4.9	The NAMBoard-local market linkage.....	82
5.5	VCF ANALYSIS OF THE SDEMANE VALUE CHAIN.....	83
5.5.1	Inputs stage.....	84
5.5.2	Production stage	84
5.5.3	Technical Assistance	85
5.5.4	Post-harvest handling	86
5.5.5	Financial services	86
5.5.6	Risks to the financial transaction	87
5.5.7	Financing gaps and opportunities.....	88
5.6	CONCLUSION	89
CHAPTER 6.....	90
SPECIFIC CHALLENGES, FINANCING GAPS AND OPPORTUNITIES FOR FINANCIAL DEEPENING IN THE NAMBOARD VALUE CHAIN	90
6.1	INTRODUCTION.....	90
6.2	PREVIOUS FINDINGS	90
6.3	PRODUCER-PERCEIVED CHALLENGES	91
6.4	PRODUCT REJECTION RATES	94
6.5	OVERVIEW OF RISKS TO THE FINANCIAL TRANSACTION IN THE BABY VEGETABLE VALUE CHAIN.....	95
6.6	FINANCING GAPS AND OPPORTUNITIES.....	98
6.7	THE WAY FORWARD	100
6.8	CONCLUSION	102
CHAPTER 7.....	104
SUMMARY, CONCLUSIONS, RECOMMENDATIONS FOR FURTHER RESEARCH AND POLICY IMPLICATIONS.....	104
7.1	SUMMARY	104
7.1.1	VCF in the NAMBoard value chain.....	104
7.1.2	VCF in the Sdemane value chain	109

7.1.3 Comparative analysis	112
7.2 CONCLUSIONS	113
7.3 RECOMMENDATIONS FOR FURTHER RESEARCH	115
7.4 POLICY IMPLICATIONS.....	116
REFERENCES	118
APPENDICES.....	129
Appendix 1	129
Appendix 2	129

List of figures

Figure 2.1: Value chain finance framework	23
Figure 4.1: The link between the baby and conventional vegetables value chains	54
Figure 4.2: Baby vegetables income contribution	57
Figure 4.3: Baby vegetables income trends	57
Figure 4.4: Typical individual farmer baby vegetable value chain	62
Figure 4.5: Typical farmer-group baby vegetable value chain	64
Figure 4.6: Individual farmers' access to financial services	66
Figure 4.7: Farmer groups' access to financial services	66
Figure 5.1: The NAMBoard value chain map	78
Figure 5.2: Sdemane Value Chain map	83
Figure 6.1: Producer-perceived challenges	91
Figure 6.2: Recommended NAMBoard value chain model	102

List of tables

Table 3.1: The sampling structure	48
Table 3.2: List of interview schedules and applied tools	49
Table 4.1: Baby vegetable crops grown in Swaziland.....	54
Table 4.2: Current producer profile	55
Table 4.3: Current producer land size holding	56
Table 4.4: Cash flow of two crops in one production cycle for producer 1 (Case 1).....	62
Table 4.5: Cash flow of two crops in one production cycle for producer 2 (Case 2).....	64
Table 4.6: Summary of cases.....	65
Table 6.1: Product rejection rates	94
Table 6.2: Rating the risks to the financial transaction in the baby vegetables value chain	96
Table 6.3: Production cost structure	99

Abbreviations/Acronyms

ACP:	African Caribbean and Pacific
AVCF:	Agricultural Value Chain Finance
CAADP:	Comprehensive Africa Agriculture Development Programme
DFI:	Development Finance Institution
EU:	European Union
EUREPGAP:	Euro-Retailer Produce Working Group Good Agricultural Practices
FINCORP:	Finance Corporation
GDP:	Gross Domestic Product
GLOBALGAP:	Global Good Agricultural Practices
HACCP:	Hazard Analysis Critical Control Point
IFAD:	International Fund for Agricultural Development
IFC:	International Finance Corporation
IFPRI:	International Food and Policy Research Institute
ITUC:	International Trade Union Confederation
JFPM:	Johannesburg Fresh Produce Market
MEDA:	Mennonite Economic Development Associates
MFI:	Microfinance Institutions
NAMBoard:	National Agricultural Marketing Board
NIE:	New Institutional Economics
NGOs:	Non-Governmental Organisations
RDA:	Rural Development Areas
SAS:	Swaziland Agricultural Suppliers
SDC:	Sustainable Development Capital
SIDC:	Swaziland Industrial Development Company
SIPA:	Swaziland Investment Promotion Agency
SNL:	Swazi Nation Land
SWADE:	Swaziland Water and Agricultural Development Enterprise
TDL:	Title Deed Land
TIF:	Transaction Insurance Fund
UNDP:	United Nations Development Programme
UNIDO:	United Nations Industrial Development Organisation
USAID:	United States Agency for International Development

VCF:

Value Chain Finance

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 Changes in agricultural high-value markets

The change in diet in developed countries and amongst higher income individuals expedites an increase in the import of new horticultural products, creating new value chains in the process. Ideally, the expansion in specialty-vegetable trade called non-traditional agricultural trade has been driven by developed countries' demand, search for foreign exchange earnings, low prices of traditional agricultural commodities for developing countries, and the increased liberalisation of agricultural trade (Davis, 2006).

There is much on-going international debate on globalisation and world agriculture emanating from concerns about how the poor can benefit from the growing markets for high-value agricultural products (Davis, 2006). However, promoting increased participation of smallholders in the growing global high-value markets requires significant smallholder vertical integration into processing and marketing firms. Birthal, Jha and Singh (2007) point out that institutional innovation in marketing improves smallholders' access to markets, quality inputs, technology, information and services. This is something that should ultimately lead to improved productivity and a decline in marketing and transaction costs.

Swinnen, Maertens and Vandeplas (2010:7) posit that the shift towards high-value agriculture is accompanied by an absolute transformation of the agricultural food sector. This transformation includes: the increasing number and stringency of standards (public and private) for food quality and safety; a shift from a fragmented sector to a consolidated¹ one in the value chain; and a shift from spot market transactions in traditional wholesale markets to increasing levels of vertical coordination like supermarket trade. Even though smallholder participation in high-value markets is not a new phenomenon, market requirements like food quality and safety standards and timeliness exposes smallholders to high transaction costs for which economies of scale are prudent (Henson, Jaffee, Cranfield, Blandon & Siegel, 2008).

¹ Usually in the processing, distribution and/ retail levels of the chain

Therefore, it is critical to assist farmers to overcome encountered challenges as well as to exploit new emerging opportunities (Onumah, Davis, Kleih & Proctor (2007:2).

Asfaw (2007:45) considers the horticulture export industry as one of the most dynamic agricultural diversification efforts. Gioè (2006:16-17) suggests that policy makers and trade analysts view diversification of agricultural production as a priority for most Sub-Saharan African countries. Pandey, Nagahari, Venetia, Antonio and Raghavendra (2010:1) submit that horticulture is being put forward in India as an option for marginal farmers by government agencies and private sector companies. In Egypt, trade in high-value crops like fruits and vegetables is increasingly displacing traditional commodity exports (IFAD, 2005:7). According to IFPRI (quoted by Johnson, Weinberger & Wu, 2008:11), vegetable production is a critical component of subsistence systems in more remote and impoverished communities, and is a key industry of its own in specialised peri-urban areas. Population growth and environmental degradation has impelled many policies to champion the expansion of the horticultural sector to offer a major boost to the rural economy and allow the participation of the smallholder sector (Dever, 2007).

Vegetables are among the crops that have been promoted by the Government of Swaziland through the Ministry of Agriculture for more than three decades (Chadha, Mkhathshwa, Gama & Nono-Womdim, 1999:9). The horticulture sub-sector in Swaziland has been thriving for some time now, but the baby vegetable² industry can only be traced back to the late 1990s. Baby vegetables comprise a range of widely consumed and marketed crops. The Swaziland baby vegetables industry continues to gain an increasingly significant share of the export market (Thompson, 2012), and USPG Ireland (2011:6) predicts that they will continue to be in demand.

1.1.2 Overview of the Swazi economy

Swaziland is a developing country that boasts a unique competitive advantage of varied climatic conditions in a year. The fact that several crops can be grown in a year puts the country in an ideal position for export oriented agricultural activities (Msibi, 2009). The

² Baby vegetables, also referred to as miniature vegetables, are vegetables grown and harvested before they reach full maturity and served while still small, delicate, succulent and tasty (Stephen, 2010).

Kingdom of Swaziland is the smallest nation in Sub-Saharan Africa with a population of about a 1,3 million people.

Agriculture is practiced in two kinds of land holdings in the country: Title Deed Land (TDL) is characterised by commercial agriculture; and Swazi Nation Land (SNL) is where subsistence and smallholder farming is prevalent. The SNL is land managed by the Chiefs on behalf of the King, and families are given land to reside and farm on it. However, the Chief can take back the land anytime they want and give it to someone else or hold it. This is what makes investing on this type of land holding, especially farming fields, very difficult. Ongoing efforts are being made to encourage and assist smallholder farmers to practice commercial farming on SNL (Swaziland Investment Brief, 2008). The diverse agricultural activities undertaken in the country include sugar cane production, citrus fruit, maize³ and other cereal crops, cotton, forestry, livestock, poultry, eggs and milk production. Other production is mainly conventional vegetables grown for local consumption and baby vegetables grown mainly for export (Thompson, 2012). The Government of the Kingdom of Swaziland is actively involved in promoting these sub-sectors. The sugar industry has been the mainstay of the Swazi economy since the mid-1950s. There are three sugar mills that contract in excess of 400 farmers⁴, under the nucleus estate model.

Agriculture is the backbone of the Swazi economy and contributed 12.7% to GDP in 2007/8 (ITUC, 2010), which declined to 8.2% in 2012 (Swaziland economy profile, 2012). However, it still remains the major source of livelihood for the majority of the Swazi population. Over 70% of the population relies on this sector for their incomes, especially rural dwellers (Masarirambi, Mavuso, Shongwe, Nkambule & Mhazo, 2010:3334). The major challenge that the Swazi economy faces is creating jobs in high value-adding sectors. The sugar and wood pulp industries were the major foreign exchange earning industries, and the closure of the Sappi Usuthu wood pulp mill in 2010 makes sugar the remaining major export (Thompson, 2012), contributing about 12% to national output. The forestry industry, on the other hand, comprised of about 20% of the country's GDP by 2007/8. This challenge, combined with the need to address food security and poverty, and the reduction in European Union (EU) preferential sugar prices that impacted negatively on the Swazi economy makes diversification a priority.

³ Maize is the staple food of the Swazi people thus the most grown

⁴ Each farmers association counted as one farmer

Smallholder baby vegetable producers have not been successfully integrated into export markets in Swaziland, save Sdemane outgrowers. Producers are not producing for specific end markets, do not follow product specifications in terms of quality and quantity, have no idea of the price at production time, and there is no guarantee that produced output will be successfully marketed. The premise of this research is that with good organization, the baby vegetables value chain in Swaziland holds very good prospects as a foreign exchange earner and a conduit to increase incomes for rural households. Baby vegetables are compatible with the average land holding of about 2 hectares per household recorded in Sub-Saharan Africa. The baby vegetables business has high returns from a small piece of land, and is a very important diversification effort in Swaziland's economy that desperately needs viable avenues to increase rural household incomes. However, this sub-sector has no secured export markets and the local market is too thin. Since finance is a critical ingredient in any development effort, proper financing can help develop this infant industry and assist in increasing its competitiveness even though the market is not guaranteed.

1.1.3 Agricultural finance

The significance of the rural economy for overall economic growth, poverty alleviation, and employment in developing and transition countries continues to be of great interest to governments, development partners and the donor community. This has seen the continued engagement of policies tailor-made to expand rural and agricultural finance. The underlying principles of these policies evolve with time as circumstances change and fresh knowledge is acquired, resulting in the emergence of different rural finance paradigms. Starting from post-World War II, these paradigms can be delineated as the old rural finance paradigm of the 1950s; the microfinance revolution of the late 1970s; the new agricultural finance paradigm that surfaced in the late 1980s; and lastly value chains and clusters, which started gaining interest in the new millennium (Miller, 2007a).

Value chains are what Michael Porter defines as a connected series of organisations, resources, and knowledge streams involved in the creation of value for end-users (Wolf, 2003). Nagarajan and Meyer (2005:5) theorise that rural finance can be effectively examined for a specific cluster or sub-sector using the value chain approach. The approach followed is to explore financial flows among value chain actors, where much emphasis is placed on potential linkages between chain participants and external providers of finance, such as

financial institutions, in pursuit of the goal to improve the growth of the chain or cluster. Nagarajan and Meyer (2005:5) suggest that there's undeniable interest in employing the value chain approach to study rural finance. The increased attention in value chains in the agri-food sector has resulted in a lot of effort in the last 10 years being directed towards utilizing the value chain framework in the quest to make finance more accessible and effective for agriculture. According to Miller (2007a), a key success factor in finance is to know the business and the participants, and those involved in value chains have knowledge and understanding of the risks involved and thus better suited to provide better financial products. In fact, Miller (2007a) argues that financial services that are embedded into the value chain can be expected to grow as production and marketing system integration intensifies in the agriculture sector.

Agriculture in developing countries all over the world is experiencing profound and fast moving changes. Swaziland, where the economy mainly depends on agriculture with about 70% of the population dependent on agriculture is no exception. Given the continual process improvements required to meet global standards and market demand, many value chain actors are left in a 'cash-crunch' during production or trade cycles. This is where appropriate financial service mechanisms are most helpful. Faced with this situation, many participants in a value chain resort to informal financial institutions and trade with them for financing. High interest rates combined with transaction costs prevent most smallholder farmers from accessing formal financial services. Access to sustainable financial service remains limited for many people in Swaziland, especially in the rural poor areas. This is in spite of the fact that access to diverse financial products and services is an indispensable component of successful participation in a market economy and effective development of a value chain.

According to Miller and Jones (2010:3), Value Chain Finance (VCF) offers an opportunity to expand financing for agriculture, increase efficiency, improve repayments and consolidate value chain linkages among actors in a value chain. Moreover, agricultural VCF offers an opportunity to reduce cost and risk to financing, and reach out to smallholder farmers. Hence, VCF makes chains more inclusive by integrating smallholders into higher value markets. In a nutshell, the growth of commercial agriculture in Swaziland is linked, to a certain extent, to the growth of appropriate rural finance mechanisms, including improved direct and indirect VCF.

There is sufficient literature on linking smallholders to end markets and some strands of literature analyse the effect that globalization and the changes in global markets have on smallholder participation in global value chains. In principle, the idea of increasing smallholder participation in global value chains is founded on the premise that without successfully integrating smallholders into these markets, their production would have no guaranteed markets. Such a situation is a big setback for development agenda especially that of increasing rural incomes through the commercialization of agriculture. Thus, efforts are geared towards moving smallholder producers from a situation where the market is not guaranteed to a state where their participation in markets is improved to such a level that the market would seem to be guaranteed (guaranteed market emulation). Africa's smallholders are the targets, and the quest to improve smallholder participation is based on the reality of their unguaranteed market situations. The baby vegetables industry presents a good example of an infant industry that must compete with well-established industries in other countries for a global market share. Furthermore, this industry lacks secured markets and the value chain is not well linked to end markets.

Access to guaranteed markets for produce is a major challenge facing smallholder farmers (Al-Hassan, Sarpong & Mensah-Bonsu, 2006), especially Sub-Saharan Africa. According to IFAD (2011), the rapid integration and globalization of food market chains have opened up new high-value market opportunities for some farms, but made market access more difficult for many smallholders due to high transaction costs and the need to meet creditworthiness requirements. Small agribusiness firms have a lot to gain or lose due to the rapidly changing agricultural scene (Miller & Jones, 2010:5), this does not exclude infant or emerging value chains. IFAD (2011) argue that some small farms have successfully moved into high-value agriculture. Moreover, private financial institutions, Non-Governmental Organisations (NGOs), relief organisations, and community and producer organisations have emerged as fundamental players in supporting smallholder farmers.

Changes in global markets offer lucrative opportunities for high-value crops like baby vegetables. Also, the Swaziland agricultural sector has a dire need for diversification. Lastly, there is the question regarding how versatile is the VCF approach. These, together, motivated this study to take the Swaziland baby vegetable industry as a case study to determine the applicability of value chain finance to infant high-value industries lacking guaranteed markets.

1.2 PROBLEM STATEMENT

Niche markets for high-value horticultural crops are growing globally, but the baby vegetable industry in Swaziland is declining in performance demonstrated by the shrinking of financial services available to its producers. Miller (2007b) argues that VCF can improve the quality and efficiency of agricultural value chains by identifying financing needs, tailor-making suitable financial products, reducing financial transaction costs and mitigating risks. CGAP uses the concept of loose and tight value chains, while this study departs by using the concept of infant and major industries. Even though the value chain finance approach covers the required spectrum, it remains undetermined if its application to an infant industry without a guaranteed market can yield these results. This dilemma creates a need for a comprehensive and holistic industry study that can offer insights not just for practitioners, but for policy direction as well.

1.3 RESEARCH HYPOTHESES

This study has two specific hypotheses:

- Organising and enhancing the value chain of the Swazi baby vegetable sub-sector can lead to the simulation of a guaranteed market condition. That is, subsectors that are organized to meet the market criteria create an environment just like that of guaranteed markets.
- Value chain finance is versatile and fully applicable to infant industries. Infant industries/value chains are characterized by a small number of producers. Even so, such industries can still fully and sustainably use value chain finance.

1.4 RESEARCH OBJECTIVES

1.4.1 Overall objective

The novelty of this research, therefore, is to determine the applicability of the value chain finance approach to infant high-value horticultural industries lacking guaranteed markets as

an example of how better organization of a value chain can lead to VCF even if there is an unguaranteed market.

1.4.2 Specific objectives

- To describe and analyse the Swazi baby vegetable industry using the VCF approach.
- To ascertain the efficacy of the VCF approach in nurturing a guaranteed market for an infant industry.
- To identify specific challenges, financing gaps and opportunities for financial deepening.
- To recommend institutional arrangements; a value chain-financing model necessary to facilitate financial deepening; and the relevant policy implications.

1.5 VALUE AND INTENDED CONTRIBUTION OF THE STUDY

This study will enrich the value chain finance knowledge base of academics, agricultural finance practitioners and policy makers. It captures key issues found in anchoring theories, enlightens on value chain finance, and determines the suitability of VCF to emerging small industries. It will also increase the technical understanding of stakeholders and partners of the Swaziland baby vegetable industry, especially with regard to VCF. This study breaks new ground by venturing into VCF for infant high-value industries and findings in this undertaking shall add a new perspective to extant VCF literature. The findings herein will inform value chain practitioners, development agencies, and government and industry stakeholders on the versatility of VCF to emulate a guaranteed market condition for a value chain. The key contribution of this study is the identification of risks that hinder VCF application and to rate the impact that these risks have on influencing financing transactions. Also, this study will propose an industry-specific model that seeks to improve competitiveness and increase the flow of finance to this industry.

1.6 DELIMITATIONS

This study had a few limitations. This study focused on a small industry that has a very small target population, something that thwarted efforts to perform deeper econometric modeling of

farmer challenges due to the challenge of a small sample. Also, the analysis on farmer associations undertaking baby vegetable production is very thin because only two associations were identified, which is surprising when one considers informing policy on farmers associations' involvement in baby vegetables. This study focused on the predominant value chain organized by the Swaziland government, and analysis on the Sdemane value chain lacks smallholder perspectives. This is mainly because this value chain was discovered in the field and thus the research design didn't cater for its smallholders.

1.7 ORGANISATION OF THE DISSERTATION

Having covered the first chapter, the rest of the dissertation is organized as follows: Chapter two presents a literature review and ends with an analytical framework. The research methodology is addressed in Chapter three. Chapter four presents a financial analysis at the production stage of the baby vegetable value chain. Chapter five gives a detailed value chain finance institutional analysis of the baby vegetable industry. Chapter six explores specific challenges, financing gaps and opportunities for financial deepening. The dissertation concludes with a summary of research findings, recommendations for further research, and policy implication in Chapter seven.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Policy makers liable for responding to global integration pressures are desperate for conceptual frameworks and theoretical constructs to guide their work, which normally involves making hard trade-offs in the face of extremely complex and frequently changing circumstances (Sturgeon, 2008:3). Involved in such complex situations is risk. Risk usually results in development and entrepreneurial efforts not paying-off. Although the various theoretical underpinnings of global value chain and thus VCF sprouts mostly from transaction cost economics, this chapter also reviews several theoretical constructs that are relevant to VCF are then reviewed alongside some case study models relevant to this study. This chapter ends by putting forward an analytical framework that shall be a lens and guide for the analysis.

2.2 RISK

Agriculture is an intrinsically risky sector operating largely in rural space. It is a risky business for financiers and is exposed to extreme and highly correlated risk events like floods, droughts and diseases (Coates, Kitchen & Kebell, 2011). According to Milder (2008), rural finance has been recognized as a crucial element and catalyst to rural community development, but issues like lack of capacity and structures to sufficiently deal with both business and financial risks have caused disappointment. Jaffee, Siegel and Andrews (2008) point out that agricultural value chains may be subjected to several risks, with farmers and firms facing risks from varying sources. These risks can impact on the reliability, costs and efficiency of production, processing and marketing activities.

A major factor that discourages Microfinance Institutions (MFIs) from lending to small farmers is the systemic risk that is persistent in smallholder agriculture (Pearce, Goodland & Mulder, 2004:316). That is, smallholders are susceptible to similar risks: inter-related covariant risks, weather, diseases and plagues. Dellien and Lynch (2007:2) state that smallholder finance providers encounter an array of challenges in their work and such

challenges include understanding the cash flows of rural households and the business cycles that occur in small farms, and estimating smallholders' repayment capacity. One should bear in mind that smallholders usually do not keep records. As a result, MFIs must possess a clear understanding of the risks that small farmers face. Delliën and Lynch (2007:2) name such risks as climate risks, price and market risks, and production risks.

According to Anderson (2001:1), the risks that rural dwellers face are embedded in their local farming systems, climate, infrastructure, and the policy and institutional settings. Also, rapid changes in technology, rules of trade and climate in most cases increase the risks that these rural dwellers face. More than that, poor rural households due to their economic vulnerability suffer financial shocks and volatile commodity prices that affect all producers of a particular product. Rural credit markets tend to be segmented, where a lender's portfolio of loans is concentrated on a group of farmers who face the same income shocks, residents in a common locality that produce the same commodity. These shocks have a huge bearing on the operation of credit markets, especially if they spark a potential same-time default by a group of farmers (Besley, 1994:32). Thus, the impacts of risk in rural development are indeed pervasive, and the work of development agents at all levels in curbing these effects become massive (Anderson, 2001:1).

Value chain risk is a potential threat that if not controlled in time converts into a crisis by ultimately using the value chain system's vulnerability to damage the value chain (Li & Wang, 2011). Li and Wang (2011) categorise the major risks into market risk, information transmission risk, credit risk, systemic risk, and strategic risk. Jaffee *et al.* (2008) categorises the major risks that agricultural value chains face into weather related risks, natural disasters, biology and environmental risks, market related risks, logistical and infrastructural risks, management & operational risks, policy and institutional risks, and political risks. United Nations Industrial Development organization (UNIDO) (2011) categorises agricultural risks into supply risks, production risks, sales/ market risk, management risks, and other risks. All these categorisations successfully cover the basic risks in agricultural value chains. The Li and Wang (2011) and the UNIDO (2011) categorisations are based on the firm level, while the Jaffee *et al.* (2008) categorisation considers the business context and the enabling environment. However, the categorization by Li and Wang (2011) assumes that the value chain is well organized but is a delineation that appears to fit well with infant agricultural

value chains. The UNIDO (2011) categorization is compatible with the Swaziland baby vegetable value chain.

2.3 REVIEW OF VALUE CHAIN FINANCE ANCHORING THEORIES

This section of the chapter adopts three theoretical constructs namely: transaction cost economics, information asymmetry, and agency theory as the main value chain finance anchoring theories to be used as a guide in the value chain finance analysis. These selected theoretical constructs have distinct roles. Transaction cost economics are used to trace financial flows in the value chain and provide explanations on why they take the form they do. The information asymmetry construct is also used to follow value chain information flows, which shall help in establishing where information flows are distorted (not regular, infrequent and non-continuous). The agency theory is mainly used in understanding physical product flows and the distribution of power in the value chain. This section briefly highlights how these strands of literature anchor the principles of value chain finance and provides explanations on how any of the three VC flows (physical product flows, financial flows, and information flows) functions. It also, to a limited extent, links VCF with the contract and incomplete contract theories, property rights theory, and the theory of social capital.

2.3.1 Transaction cost economics

Transaction costs, as defined by Coase (1937), are the costs of providing goods or services through the market rather than having it supplied from within the firm in order to reduce the risk of transaction failure. They can be decomposed into *ex ante* transaction costs and *ex post* contracting costs (Dyer & Chu, 2003:59). Ghani and Williamson (2012:79) talk of *ex ante* incentive alignment and *ex post* governance. The transaction costs theory is founded on the key hypotheses: small number bargaining problems, highly specific assets, frequent relationships, and uncertainty which compel firms to internalize some stages of the production process in a value chain (Vannoni, 1999; Wolter & Veloso, 2008:588). According to Kim and Mahoney (2005), value chains have played a key role as a governance structure that attempts to reduce transaction costs and improve efficiency in an industry.

Literature suggests that most high value-added agricultural products (e.g. in horticulture) are characterised by a high ratio of transaction costs to final value mainly because of the high-

degree of processing involved. Delgado (1999:168) argues that these high transaction costs, reflected in either production or marketing of potentially remunerative products, exclude poorer producers from participating in the growth opportunities availed by markets of high-value products. Also, financial service providers regard the rural sector too risky and possessing a high transaction cost characteristic. This has caused a rural lag in the processes of financial deepening (Gonzalez-Vega, 2006; KIT & IIRR, 2010).

It is believed here that value chains are transaction costs minimising systems that have risen to take the global platform in ensuring that firms belonging to low transaction cost value chains are able to stay at the edge of the competition by keeping their prices low and providing value to the discerning consumer base. The ancillary VCF principle is to increase the efficiency of the three VC flows by minimising transaction costs at each chain linkage or hand-over point and make use of low-cost finance (self-finance, direct value chain finance and indirect value chain finance) so that the value chain remains competitive. These three categories of VCF ensure that value chain actors receive just the right kind of finance, and this reduces transaction costs both on the receiving (demand) and providing (supply) sides.

2.3.2 Imperfect/ asymmetric information

Marketing relationships between buyers and sellers of products are characterised by information asymmetries (Mishra, Heide & Cort, 1998:227). Asymmetric or imperfect information is a situation where one party to a transaction knows more than the other about demand conditions, products, and the chain operations (Kirsten, Dorward, Poulton & Vink, 2009). The reality of absent perfect or freely available information results in risk and uncertainty in transactions (Kirsten *et al.*, 2009), and can lead to moral hazard by clients and adverse selection of clients by financial institutions. Moral hazard and adverse selection are the most prominent co-existing problems in credit markets⁵ (Besley, 1994:35-37; Jensen & Meckling, 1976). As a result, information, risk and transaction costs are inseparable fundamentals in financial markets, wherein information plays a pivotal role (Coetzee, 2002).

Sahin and Robinson (2002:506) postulate that there's a growing strand of literature that attempts to comprehend information distortions in value chains. Sahin and Robinson

⁵ Also see Loggren, Persson & Weibull (2002) and Mishra *et al.* (1998:290)

(2002:507) consider imperfect information and misaligned incentives to be the main cause of value chain ailments. Long-term relationships, information integration, information technology capabilities, and information sharing underpins product flow integration⁶. As a consequence, financial service providers are moving toward embedding their business practices on the entire chain they are lending to rather than to individual actors, and continue to use the attributes of value chains and innovation in their business dealings (Prajogo & Olhager, 2012:519).

The risk of consumers' needs makes information and information innovation very critical to establish a two-way flow of information (Swedel, 2006:16). Information is key in the banking sector to better serve value chains. Farmers who have a technical service provider become appealing to buyers as this improves not only income but their creditworthiness as well. Creditworthiness, improved by the existence of contracts in the chain, can only be observed imperfectly since information is not free. Instead, the bank closely observes the behavior of the institutional buyer and concludes information on farmer's creditworthiness based on this information (Gonzalez-Vega, 2006:61). Also, institutional buyers at recruitment and initial transactions are usually not certain which farmers may become star producers, and they have to incur searching, screening, and monitoring costs, something that makes stable relationships more preferred.

The exchange of information at each linkage of the value chain between chain participants reduces information asymmetries and the frequency of this information exchange contributes to the bank's understanding of how the value chain operates. In-depth knowledge of a value chain make banks more willing to engage with the value chain and take the risk of lending to asset-poor farmers, traders and other rural businesses as risks are manageable (KIT & IIRR, 2010:24). This understanding allows the lender to make informed decisions on how to structure financing so as to minimise transaction costs and risk so that financing becomes attractive (Miller, 2010a). Established relationships and trust within value chains lead to easy flows of information, something that makes VCF an approach that is better suited to overcome information asymmetries in an industry.

⁶ Also refer to Yang, Aydin, Babich & Beil (2009), who study information asymmetries in the context of supply disruptions.

2.3.3 Agency theory

According to Eisenhardt (1988:490), agency theory focuses on the organizing problem called the agency problem, which has a structure that can be applied in a variety of settings including value chains. Jacobides and Croson (2001:203) argue that the key issue in the design of agency relationships is to deal with the challenge of achieving complete gains from exploiting comparative advantage so as to realize joint agency value, while at the same time managing incentive misalignment and enforcing penalties. Contracts that fail to provide incentives and put in place penalties so that agents act in the interest of principals are doomed to bring more problems (Jensen & Meckling, 1976). Anuchitworawong (2010:172) alludes to the fact that good governance practices have the potential to alleviate agency problems, agency costs arising due to hold-up, adverse selection, and moral hazard. As a result, the integral role of finance in value chains should be woven with good value chain governance practices.

There is a central relationship in a value chain that is between a buyer and a seller. Since financial institutions have some limitations and operate under the perception that the smallholder sector is too risky, not very profitable and very difficult to understand, their consolation or margin of trust relies on the type of linkages they observe between buyers and sellers. That means, as you move from vertically integrated relationships to spot market arrangements, the level of trust in smallholder capabilities withers. An agency relationship is seen in value chains on what can be observed as a chain supporter⁷ or service provider engagement. Chain supporters may provide a range of financial services to the value chain for a fee, something that affords value chain actors some services that may be vital to produce the product, convert it into something that someone else wants to buy, and deliver it to consumers.

Agency relationships occur when a product changes hands, where the product owner delegates a certain level of control to the chain supporter performing a particular value addition on behalf of the principal owner. Chain actors at the starting-end of the value chain act as agents for buying firms and must first satisfy all bonding requirements for them to

⁷ A Chain supporter is a participant that performs a service for a fee but does not become the owner of the product being handled (KIT & IIRR, 2010:15).

qualify as suppliers. Firms, on the other hand, put in place systems like outgrower⁸ schemes to ensure that suppliers get the capacity and assistance they need to deliver as expected. Such a relationship extends even into the case where an external financial institution is involved. In value chain finance, financial institutions utilise the organisation of a value chain and the influence of other chain participants on individual actors to induce high performance and ensure loan repayment. A simple example would be a case where the processing firm or buyer of products deducts a loan installment from product proceeds and repays on behalf of the producer and remits the rest to the farmer, depending on specific arrangements.

2.3.4 The property rights theory

According to Demsetz (1967:347), the conclusion of a market place transaction leads to the exchange of two bundles of property rights. First, is the bundle of rights attached to the physical commodity or service. Second, is the value of the rights, which determines the value of what is exchanged. This exchange is denoted by the two opposite flows in value chains; product flows in the right direction and financial flows in the left direction.

Since land is a key resource in smallholder farming, the property rights theory supports the formalization of property rights in land, something that is thought to be a very crucial step towards agricultural practice intensification. However, the formalisation of land property rights in Sub Saharan Africa is seen to linger. Value chain finance moves from hard collateral (i.e. land) to soft collateral (i.e. product) in an effort to increase financial deepening. VCF came as a valued approach that bridges the financial access gap for smallholders, caused by the lack of collateral, by presenting a framework that ensures that chain actors without conventional collateral are bankable and being a member of a value chain is sufficient. In general, the property rights theory focuses on ownership and the concomitant rights. In value chains, the property rights theory mostly focuses on the physical product flows and the expectations at the physical linkages, and its bearing on information and financial flows is indirect.

⁸ It is a producer that has contractual arrangements with a firm to supply produce, and the firm provides technical assistance and sometimes inputs in-kind to ensure throughput. Under this arrangement, the firm owns the produce while still in the field.

2.3.5 The contract and incomplete contract theories

Parties to a relationship write a contract that strives to anticipate all eventualities and caters for all contingencies, but instead an incomplete contract is written since a complete contract supposes perfect information, which is never the case. Today, private traders, retailers, agribusinesses, and food processing companies increasingly contract with farms and rural households that they give inputs and offer services for guaranteed and high quality supplies (Swinnen & Maertens, 2007:92). Value chain financing is centered on contract farming. It is not the interlinked contract that serves as the most promising source of credit, but the mere existence of a contractual relationship⁹ between the chain and a producer, which improves the farmer's creditworthiness in the eyes of financial intermediaries (Gonzalez-Vega, 2006; Swedel, 2006). This is accomplished by allowing the financial intermediary to delegate indirectly part of the risk screening process to a participant in the chain and lowering transaction costs and risk for the financial institution in the process.

2.3.6 The theory of social capital

Trust is an indicator (Nilsson, Svendsen & Svendsen, 2012:188) and a central component to social capital (Patulny, 2005:63). Findings by Dyer and Chu (2003:64) suggest that there's an inverse relationship between trust and transaction costs in supplier-buyer relationships. That is, trustworthiness lowers transaction costs and facilitates information sharing, which in turn improves performance (Nilsson *et al.*, 2012:188). Chain actors give chain credit or trader credit to other participants to keep the chain operational and maintain long-term relationships between trusted business partners (KIT & IIRR, 2010:20). According to KIT and IIRR (2010:24), trust is critical in value chain finance and is correlated to the tenure of relationships and the level of openness with which chain partners exchange information.

2.3.7 Synthesis

It is not one theory that can give adequate explanation on the way value chain finance functions, but a nexus of several theories. Transaction costs economics, for instance, use the reduced information asymmetries and social capital (trust, relationships and networks) to

⁹ Written contract or not written

reduce transaction costs. Such dynamic relationships give way to the point that value chains have played a key role as a governance structure that attempts to improve efficiency in subsectors. Transaction cost economics, imperfect information and agency theories have proved to be compatible with VCF through their alignment with the three VCF flows (information flows, product flows and financial flows) and provide very useful insights on the concepts and principles that shall guide a meaningful analysis in later chapters. The contract and incomplete contract theories, and property rights theories come in, to a limited extent, in the product exchange aspect of the value chain. The theory of social capital has a significant contribution in explaining information flows between relating value chain actors. Value chain finance through the application of these concepts formulates right incentives and contracting systems to eliminate transaction failure. These six concepts covered in this section are only a foundation and not the ultimate concepts underlying VCF.

2.4 INTRODUCTION TO VALUE CHAIN FINANCE

2.4.1 The value chain finance concept

With conventional avenues for credit inaccessible to them, an increasing number of rural producers turn to value chains for finance (Milder, 2008:302). In fact, financial relationships do exist between agribusinesses and producers, and studying them makes it possible to develop new models that can be piloted in an endeavor to deepen financial services for smallholder farmers (Hansel, 2007:109). Actually, key input suppliers and/or output buyers are the driving forces behind the process of developing VCF. Agricultural Value Chain Finance (AVCF) has grown to be a topic of interest for development agencies and has become a business approach that is progressively applied by financial institutions and other practitioners involved in value chains (Fries & Akin, 2004). It covers areas like the changing agricultural scene; use of agricultural alliances; value chain financing as a business approach to finance; innovations; and addressing risk, lessons and policies (Miller, 2011).

Swedel (2010:23) defines VCF as the flow of funds to the different links of the value chain or among these links, designed to improve efficiency and competitiveness, reduce risk within the chain, and also promote and develop the chain. Hofmann (2005:2) posits that VCF is a relatively young discipline, but Miller and Da Silver (2007:96) argue that VCF is not entirely new especially in agriculture as what it offers is not fresher than any other form of finance.

The financing modalities, the interlinking and convergence of agribusiness and finance, and the innovations in value chain financing methods are what is new in VCF (Miller & Da Silver, 2007:96). Even though there are differences as to whether VCF is new or not, it is clear that there has been a shift in focus on competition as it moved from being between individual agribusiness firms to competition between entire value chains. The convergence of agribusiness and finance has caused the birth of this new method of assessing risk, increasing efficiency and competitiveness called VCF. Recognizing relationships along the value chain, mitigating constraints, utilizing opportunities for VCF, and discovering how formal financial institutions can enter the equation can advance the overall effectiveness and efficiency of a value chain (Chalmers, Lennon, Villeda, Heron, Pelican, Charitonenko, Fries, Gonzalez-Vega, Johnston, Meyer & Miller, 2005:1).

2.4.2 The taxonomy of value chain finance

Value chain finance is by design three-fold and is described by three broad categories. The first category is self-finance, which is the most familiar way to finance business enterprises. It has only been introduced recently to existing VCF literature by Singh and Zhang (2012). The second category is direct/ internal VCF, where ideally there is no exchange of money. The third category is called indirect/ external VCF, and involves a financial institution through relational or contractual mechanisms. It should be noted, however, that formal or conventional finance is not part of VCF. UNIDO (2011) has a finance category called informal finance, which encompasses informal financiers (i.e. money lenders, family and friends, groups and associations) and direct VCF. The delineation here shall restrict the definition of informal finance to mean finance provided by informal financiers. Informal finance and direct VCF shall therein be treated as independent of each other. This means informal finance is also not part of VCF. Formal and informal finance shall be used as part of our analytical framework in later chapters. The different VCF categories are then delineated below.

2.4.2.1 Self-finance value chain finance

Self-finance VCF is when value chain actors finance their own value chain activities most probably from the same business' retained earnings. Singh and Zhang (2012:5) suggest that actors use their retained earnings, savings, and borrowed funds from family and friends to

finance operations, but this argues that self-finance sources should not include borrowed funds from family and friends as it falls under informal finance. With self-finance, a producer may willingly decide to finance certain operations or do so mainly because of a lack of access to other means of finance. Also, self-finance may exist concurrently with other forms of finance including VCF. In such cases, direct VC financing may facilitate the provision of inputs, the producer may self-finance short-term labour at planting and/ or harvesting, and indirect VC financing may see to the provision of capital investment equipment and cover general operational expenses. Even though expropriation of actors, especially producers by intermediaries, and other players is reduced, the limited amount of funds that value chain actors may possess to finance operations constrains the potential for realizing maximum production and value returns (Singh & Zhang, 2012).

2.4.2.2 *Direct/internal value chain finance*

Direct or internal VCF takes place within the chain and is a mechanism whereby participants within a value chain cater for financial needs and shortages of other participants by entering into non-cash transactions and negotiations to better manage and coordinate the effective and competitive operation and functioning of the value chain. It is critical in cases where banks are inactive, not catering or not sufficiently catering for the financial needs of value chains (Karki, DeWald & Shahi, 2004:5). An example is a case where a buyer of the product advances credit to smallholder producers; this practice is called direct value chain financing. In these relational arrangements, there is generally no transfer of money or cash changing hands, but the needs of chain participants are met in-kind through the provision of goods and services. Direct VCF is not difficult to set up in comparison to financing from a third party because such a practice builds on established relationships between the value chain participants (Milder, 2008:302). These relationships facilitate credit screening, monitoring and enforcement (Karki *et al.*, 2004:5), and in turn lead to faster service and fewer obstacles to credit provision.

A more coordinated effort to direct funds from the hands of higher-level chain participants with a stronger financial base to lower-level chain participants¹⁰ with poor access to formal financial services ideally constitutes a more sustainable direct VCF mechanism (Karki *et al.*,

¹⁰ Includes rural poor smallholder farmers and sometimes input suppliers

2004). However, such mechanisms have drawbacks that include: fumbling commercial and financial transactions for producers who may not understand how much they are being paid for products and how much they are paying for financing; pulling agribusiness into financing activities that are beyond their understanding; and tying up working capital that is highly needed by processors and brokers (Milder, 2008:302).

2.4.2.3 *Indirect value chain finance*

Johnston, Meyer and Curtis (2007:1) define indirect/external VCF as the provision of financial services to any value chain participant by a financial institution based on contractual relationships within the value chain. The UNIDO (2011) nomenclature refers to indirect VCF as purpose-based VCF, but the principles remain the same and as such it shall be referred to as indirect VCF in this study. In this mechanism chain actors with easier access to finance may end up providing finance to other actors in the value chain with less access in an effort to safeguard their own production or activities. This mechanism involves triangular relationships that mostly include the bank, the producer(s) and the buyer. In the Swaziland sugar industry, the triangular relationship between the bank, the sugar mill and producers is referred to as the “golden triangle”. Specific arrangements may range from the buyer sending loan repayment installments to the bank on behalf of the producer, to the buyer getting a loan from the bank and approving micro loans to producer suppliers.

The definition of indirect VCF shall only mean finance provision by a financial institution only when there are contractual arrangements for on-lending of bank credit within the value chain. An arrangement where a financial institution lends to a value chain actor (i.e. a producer) without any arrangement with the chain or other value chain actor shall be referred to here as formal finance.

In more developed economies, financial institutions play a focal role in financing actors in value chains and several financial institutions position themselves in strategic points to cater for financial needs of viable and with-potential value chains (Johnston *et al.*, 2007). Karki *et al.* (2004:5) argue that linking a financial institution into a value chain can be an effective way of taking direct VCF a step further and improving the likelihood of establishing viable, long-term financing relationships. Milder (2008:302-3) reveals that this move benefits all sides: agribusinesses get to focus on their core strength without stretching their working

capital in credit advances to suppliers; producers get access to finance at competitive rates without having to meet traditional bank prerequisites for solid collateral; and financial institutions are introduced to fresh markets with reputable value chains offering built-in risk mitigation.

Therefore, because of the involvement of regulated financial institutions, clients stand to gain from access to a greater range of financial services, including savings, insurance, transfers and investment credit. However, the key success factor in this type of mechanism is expediting linkages between savings and credit cooperatives, microfinance institutions, and commercial banks that shall support these institutions cater for the needs of various actors in the value chain (Karki *et al.*, 2004).

2.4.3 The value chain finance framework

The value chain finance framework of analysis is developed from the value chain concept, which departs from the supply chain theory in that it focuses on value addition at each node of product movement. Based on Figure 2.1, a supply chain is the inputs, production, processing, distribution, and end markets continuum. According to Porter (quoted by Wolf, 2003), a value chain is more than product movement, but is a connected series of organisations, resources, and knowledge streams involved in the creation of value for end users.

As depicted by Figure 2.1 and reiterated by Pandey *et al.* (2010:527), modern agricultural value chains are networks that ideally support three major flows namely: physical product flow (green arrows), financial flow (red arrows), and information flow (black dotted arrows). The physical, financial and information flows are responsible for movement of physical products, payments and lending arrangements, and for coordination among physical and financial flows, respectively (Angelucci & Conforti, 2010:566). The emphasis here is on the production stage as highlighted in Figure 2.1. Based on Figure 2.1, direct VCF is denoted by the horizontal financial flows while indirect VCF is denoted by the vertical financial flows.

The product flow indicates who will produce what product, when and of what specifications and the date of delivery. This is usually done in the form of contracts¹¹ (formal or informal),

¹¹ Contracts are an intermediate term between full vertical integration and spot markets

where formal contracts are superior. Specifications in this regard help calculate production costs and the expected value of the product (cash flow) so as to determine the maximum loan amount that can be issued¹².

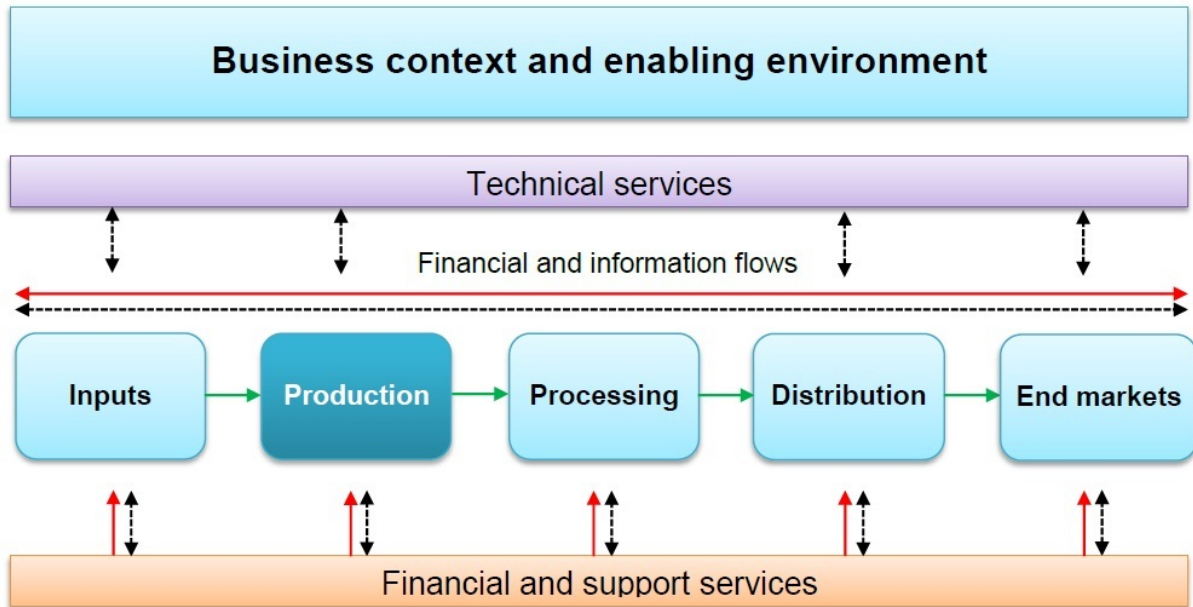


Figure 2.1: Value chain finance framework

Source: Adapted from Miller (2007b).

With regard to information flows, details like interest rates, timing and form of disbursement are concluded. The loan may be released at once upfront to the farmer, or gradually over the production season according to needs. Also, it may be disbursed directly to the farmer by the financier or through the processor in cash, in-kind, or in some combination of the two. Repayment can be done directly by the farmer or deducted by the processor from product proceeds, and the responsibility for loan repayment can lie solely with the farmer or be shared between the farmer and the processor. The farmer and the processor have an undertaking of sharing certain information with the financial institution before the loan is approved¹³ and during the loan period¹⁴, of which monitoring is also done by technical staff from the financial institution. In short, information flows coordinate financial flows. The VCF flows all operate within a business context and enabling environment, which impacts on and is impacted by the frictions in value chains. This business context and enabling environment can be dissected into the Macro, Meso and Micro levels. This work takes a holistic view of all the three value

¹² Usually 70% of the value of expected product

¹³ For due diligence

¹⁴ To help in monitoring

chain flows¹⁵ and concentrates on VCF as an approach to increase the flow of financial services to value chains.

2.4.4 The significance of value chain finance

Value chain finance acts as an additional method to the systems approach of the new rural finance paradigm and microfinance. The role of VCF is to address financial constraints faced by chain participants. VCF is both an approach to financing, as well as a set of financial instruments employed to accelerate and expand financial services to those involved (Miller & Jones, 2010:9). Miller and Jones (2010) argue that VCF provides a comprehensive and holistic view of the models, tools and approaches used by industry leaders. It can be argued that innovations in the systems approach and microfinance enhance VCF. VCF is an approach that provides a platform for a concerted effort by financial service providers to venture into markets that were otherwise hard to supply credit to sustainably (Miller & Jones, 2010).

According to Kumar (2008:317), VCF must make its own contribution towards the overall development of a subsector. Miller (2007b) mentions that VCF is characterised by its:

- Strategic focus on market potential of businesses
- Linkages among suppliers, producers and marketing companies
- Growing significance of standards
- Extensive use of risk mitigating tools
- Growing integration between banks and businesses
- A growing use of information technologies like.

Miller (2007b) adds that VCF can improve the quality and efficiency of agricultural chains by:

- Identifying financing needs required to strengthen the value chain
- Tailor-making financial products to fit the specific needs of value chain actors
- Reducing financial transaction costs through direct discount repayments and delivery of financial services

¹⁵ All the three flows need to be regular, uninterrupted and continuous for the success of the value chain

- Mitigating risks of the value chain and its partners by using value chain linkages and knowledge.

As a prerequisite, the financial services must operate within the environment where rural producers are producing for markets, growing in competitiveness, and can benefit from enhanced access to financial services for groups and partnerships created with value chain actors (Kimathi, Nandazi, Miller, & Kipsang, 2008).

The fact is that without access to finance many agricultural value chain actors get inherently stuck in low investment cycles (Chalmers *et al.* 2005:2) and find it hard to meet market demand (Miller, 2010a:4). Given the continual process-upgrading required to meet global standards and market demand, a vast number of value chain actors are left in a cash shortage during production or trade cycles and appropriate financial service mechanisms become very helpful in these circumstances (Karki *et al.*, 2004:7). Chalmers *et al.* (2005:2) argue that the right kind of finance at the right time can mean greater efficiency, improved product quality and increased incomes, and Miller (2010a:4) adds that this is critical in facilitating inclusion of smallholder farmers into competitive markets. The exchange of goods for payment along the chain creates opportunities for extending credit and other financial services even to the otherwise unbankable poor (Milder, 2008:302).

VCF as a modality of emerging importance has received attention aimed particularly at ensuring stability of value chains and further enhancing the efficiency and increased capacity of various commodity chains (Coon, Campion & Wenner, 2010:3), and Kimathi *et al.* (2008:14) believe it is being integrated into mainstream financial markets intermediation. Since competition is now global¹⁶, a more compact financing structure is more essential than ever (Miller, 2007b:2; 2010b). Buyers provide embedded services, which include finance, in an effort to ensure reliable supply (Fries & Akin, 2004:6), while financing and its application rely on the nature and context of a value chain and its participants (Miller, 2011:4). Miller (2011) suggests that a clear grasp of the VCF concept can enhance the overall effectiveness of agricultural credit providers and of those on the demand side, through the opportunities it avails for extending agricultural finance, improving credit efficiency and repayments, and empowering linkages among value chain actors.

¹⁶ Prices less affected by local conditions and seasonality of production

In value chain finance, both financial institutions and value chain actors provide agricultural finance, and high transaction costs and risk have restricted financial institutions from playing an active role in rural areas (Chalmers *et al.*, 2005:2). Chain actors engage with strategically positioned financial institutions, usually with two side-by-side chain actors collaborating to create a triangle of cooperation. Where the producer is the main focus, this would involve the producer (seller), a processing firm (buyer) and a financial institution. Numerous arguments by practitioners have been made on the postulation that challenges of rural financial services are overcome by value chain finance, whereby commercial actors in the agricultural and rural sectors provide critical financial services to small and medium rural producers (Fries & Akin, 2004:1). A positive correlation is expected between value chain finance growth and the intensity of marketing and production systems integration, and the concept and use of value chain systems should inform financial service providers in their lending decisions and product development for agriculture (Miller, 2007:6; 2010a:4).

With regards to donor funding, Johnston *et al.* (2007:2), suggest that a deeper understanding of existing value chain relationships is crucial in ensuring successful donor interventions in value chain finance. Johnston *et al.* (2007:2) emphasizes that a clear understanding of the features of successful value chain finance will contribute to comprehending what conditions are required to make this kind of finance feasible, how donor interventions may support and advance the provision of this type of finance, and the strengths and weaknesses of financing offered by value chain participants. In the same line of thinking, Schiff and Stallard (2009:5) point out that reducing risk, building trust and crafting sustainable incentives is critical for the success of any value chain finance project. Schiff and Stallard (2009) stress that this must be done in a manner that does not replace private sector dynamics, but rather catalyzes increased competition.

2.5 REVIEW OF CASE STUDY MODELS

This section reviews three specific horticultural VCF models that exhibit unique but complementing characteristics that provide useful information to this study. These case studies illustrate the concepts and characteristics discussed earlier in this chapter, and how value chains innovatively maximize on certain value chain characteristics to craft their specific value chain finance models. We first take a brief review of the prominent DrumNet

model, then highlight the BRAC model, and lastly give a detailed Frigoken Company case study review.

2.5.1 Integrating credit and marketing for horticulture: The DrumNet model in Kenya

This case study is a very brief summary of the same case study taken from Kopicki and Miller (2008); Miller and Jones (2010); Miller (2007:67-71); and The World Bank (2005:27-9). DrumNet is a third party supply chain management company, that is a network of rural area farm business support Centres. DrumNet's rationale is founded on the opinion that financial and market constraints are what inhibit industry growth, especially those industries dominated by rural smallholders. Therefore, DrumNet is positioned as an independent organization that focuses on providing networking services between value chain actors to successfully overcome financial and market constraints as their core business. The DrumNet system facilitates a set of financial, marketing, and information transactions that are tailor-made to directly impact the productivity of smallholder farmers and indirectly impact stakeholders.

There are two main components of DrumNet's program in which farmers, banks, input providers, and exporters are key participants namely: cashless microcredit; and market services provision.

2.5.1.1 Cashless microcredit program that links banks, smallholders, and farm inputs retailers

For farmers to participate in this cashless credit scheme, they must first have a savings account with a local commercial bank, and then make a cash contribution to a fund called the Transaction Insurance Fund (TIF) which serves as collateral for the initial credit line. The contribution to the TIF enables DrumNet members to utilise their DrumNet transaction cards to purchase inputs on credit with participating local suppliers. These members are organised into co-guaranteed solidarity groups. Here, the suppliers receive training on DrumNet record keeping, and submit receipts to DrumNet which are paid in two-week cycles from a DrumNet account. DrumNet, also responsible for marketing the product, deducts principal and interest payments from the farmer's net-returns at harvest time, in addition to tracking credit history. Should need be, DrumNet also enforces group guarantees. The DrumNet model alleviates the

challenges of serving large numbers of small rural producers faced by commercial financial institutions. DrumNet is a transaction broker, whose financial services focus is in the pooling of farmers' savings.

2.5.1.2 Market services provision through an integrated marketing and payment system with farmers, large-scale buyers, transporters, and field agents.

Negotiating export contracts on behalf of member-producers is one role played by DrumNet. Such contracts pay 10-15% higher prices than those offered by local traders, and provide centralised collection points. The exporters get produce at collection points then pay DrumNet who in-turn deducts loan repayment and pre-specified TIF percentage, and then remits the rest to the individual farmer. Mobile phones, SMSes, computers, and smart cards technologies are central to the smooth functioning of the DrumNet model to maintain effective communication among all actors. The contracts between buyers and producers are central to this model, while input suppliers and banks are other active participants.

2.5.1.3 The business model

The DrumNet business model links producers, large agro-buyers, suppliers and commercial banks into an efficient complete production, delivery and payment system. The main objective is to provide a transaction management platform that concurrently addresses credit and market limitations through smallholder integration so as to increase farm productivity and overall value chain efficiency. DrumNet has a master contract that dictates the roles, rights and obligations of all value chain actors, and sub-contracts between participants define specific obligations between actors. The value chain model is centred on contracts involving producers and buyers, and the series of contracts between DrumNet and the four key players namely producers, buyers, input suppliers, and banks forms the basis of this model.

Producers are in the centre of a system that links them with input suppliers, buyers, financial service providers and technical service providers (trainers). For a producer to be an authentic legal entity who can enter into a contract must have an affiliation with an existing registered self-help group. Individual producers are catered for, depending on the crop and value chain actor requirements. Every farmer group must nominate a transaction agent that is to represent them in transactions, provide basic information to member farmers, and operate rural

collection points (receive produce from member farmers, facilitate grading, packing, issuance of receipts by the agent's buyer). Transaction agents are also responsible for all DrumNet communication, production, and banking activities of the group. In return, they are paid a small commission for this responsibility.

Farmers have the choice to get loan finance from a bank, provided they have collateral, whereby repayments are deducted from product proceeds by the bank. Farmers are paid through a single multipurpose DrumNet account, which is used to repay loans, pay DrumNet fees and other contractual obligations and the net-income is remitted to the farmer group's account. DrumNet has a competent partner that is given the sole responsibility of farmer group training and certification so that producers are able to follow agronomic practices as set out by the buyer including good input seed usage and general management practices.

The buyer is taken as the pivotal value chain actor, providing the market opportunities and contracts with farmers for production, harvesting, means of produce transportation and delivery. The key roles of the buyer are:

- Contract in advance of the planting season with farmers for the amount of seed to be planted and quantity of harvest, quality and grading standards, prices and delivery schedules.
- Facilitate produce transportation from specified collection centres
- Extension service provision to farmer groups through DrumNet certified trainers or partners to ensure compliance with crop husbandry specifications.
- To pay 80% of the agreed price to the farmers, and to pay the balance once produce has been received at the buyer's premises after quality control checks, where title of produce changes hands.

DrumNet has certified input suppliers that deliver seeds and inputs to eligible farmer groups, as defined in the DrumNet master contract. These farmers pay for inputs through the bank on the cashless microcredit program. Immediate payment is a big incentive for suppliers for liquidity purposes, and farmer groups in certain cases pay cash for small input supplies. The increased sales, the reduced credit risk of supplying smallholders, and the increase in market share that makes the supplier an important link in the value chain is evidently the value addition for input suppliers.

The primary role for banks under this model is providing loans to farmers for the purchase of inputs and providing transactional banking services. Banks pay input suppliers for inputs, recover loans (principal plus interest) from buyer payments, and transfer the rest to farmer accounts. Other financial services and products are outside the scope of the DrumNet model.

2.5.1.4 *Risk and cost reduction*

The provision of credit to farmers in the period of negotiating contracts for particular crops with buyers allows participating banks to reduce loan defaults caused by poor crop selection or farmer's inability to market produce. Such an integrated system hands the lender first access to profits from the sale of produce to settle any outstanding loan balance before the borrower receives the net-income. DrumNet also provides production-training courses on quality and safety of produce and makes use of component one to ensure that only inputs certified by EUREPGAP¹⁷ are used, to enhance the marketability of the produce. Savings and the accumulation of cash reserves by participating farmers with a reliable institution push the risk further down for banks and create a credit history for the farmer.

2.5.1.5 *Sustainability and replicability*

Empirical evidence presented by Ashraf, Gine and Karlan (2006:24) indicate that the DrumNet model is effective in encouraging the production of export-oriented crops. DrumNet's pillar of strength for profit and long-term sustainability is the quantity of farmers, volume of farm produce, and a successful portfolio of credit products. What has been a challenge is the need to establish close relationships with farmers while minimising costs. According to Ashraf *et al.* (2006:24), clients seemed satisfied with the institution. DrumNet generates revenue by transaction fees and commission, whereby a 10% service charge from the gross proceeds of value chain actors is deducted.

2.5.1.6 *Synthesis*

DrumNet's positioning as a transaction management platform is ancillary to mitigating the major smallholder risks to the financial transaction. DrumNet's role in sourcing and

¹⁷ EUREPGAP started in 1997 as an initiative of retailers belonging to the Euro-Retailer Produce Working Group (EUREP) (www.2globalgap.org/about.html). It is EUREP Good Agricultural Practices (EUREPGAP).

negotiating buyer contracts mitigates against supply, production and sales and market risks. Also, the use of transaction agents and DrumNet certified technical service providers or trainers enhance the management capacity of smallholders. The successful mitigation of risks by DrumNet has resulted in financial institutions (banks) actively participating in financing smallholders. Financing smallholders is attractive under the DrumNet model and existing financing gaps are minimal. This is due to the fact that smallholder producers have access to formal finance, are able to self-finance small transactions, have access to direct VCF through forward contracting where 80% of produce value is paid in advance. As a result, DrumNet stands as one of the renowned value chain finance innovations in Africa that has successfully integrated smallholders into global value chains and proved that smallholders are bankable as well.

2.5.2 An effective way to integrate smallholders into value chains: The experience of BRAC

The value chain management approach holds the potential to integrate smallholder and poor farmers with agricultural enterprises through market linkages for high-value products based on the area's market demand, comparative advantage and farmer preferences. However, agribusiness value chains are scant in Bangladesh and market linkages between farmers and buyers are weak and complicated. This situation created a need to support farmers and other value chain actors to access appropriate markets and improve the inadequate value chain financing mechanisms. BRAC is a small-scale relief and rehabilitation project created by Fazle Hasan Abed in Bangladesh. BRAC¹⁸ through practical and conceptual innovativeness has achieved extensive outreach, knowledge and network through microfinance, and is a case study that shall provide relevant insights in our study of VCF based on their experience. Saleque (2007:51-65) and the BRAC website (www.brac.net) are the main sources used in this review.

¹⁸ Known formerly as the Bangladesh Rehabilitation Assistance Committee and then as the Bangladesh Rural Advancement Committee (currently, BRAC does not represent an acronym), BRAC was initiated in 1972 by Sir Fazle Hasan Abed at Sulla in the district of Sylhet as a small-scale relief and rehabilitation project to help returning war refugees after the Bangladesh Liberation War of 1971.

2.5.2.1 *The model*

BRAC has emerged as an independent, virtually self-financed paradigm of human development that aims at supporting and developing value chains in an effort to meet the twin goals of poverty alleviation and empowerment of the poor. BRAC is committed through grassroots level with the belief that community partnerships and institution building go a long way in sustainable development and the dissemination and transfer of knowledge to future generations. BRAC support enterprise linkages by providing needed goods and services to rural smallholder producers that have growing urban markets. Each of the programmes has three pillars: production of inputs, extension, and processing and distribution/ marketing. The BRAC overall agribusiness pillar has three objectives:

- Promoting small-scale agribusiness activities by channeling credit through three NGOs (including BRAC), and provision of technical and marketing supports to these enterprises throughout rural areas.
- Strengthening participating wholesale banks and NGOs to ensure efficiency, implementation and management of the credit.
- Lastly, strengthening agribusiness associations for policy dialogue on an enabling business environment, agribusiness promotion and information dissemination.

The farmer is at the centre of various support activities namely: selection and group formation; training and development; input supply; financial support; technical support; and marketing and distribution. BRAC believes that integrating smallholders into a dynamic and efficient value chain is a crucial strategy for financing agriculture entrepreneurs.

BRAC provides essential inputs to its group members or programme participants as well as commercial small-scale entrepreneurs. This is part of an effort to strengthen and ensure the best returns so that these enterprises can expand. To achieve this, BRAC has established a number of support enterprises to supply these inputs. This is a result of the discovery that local industries and/or the government are not able to supply sufficient quantity and/ or quality inputs. Timely supply of good quality inputs is a key factor that affects enterprise returns and their contribution to achieving the overall BRAC objective.

BRAC works with groups of landless women, ranging from 25-45 members per group. Only about 10-20 members of these groups are selected for undertaking agricultural activities, with other members engaging in other poverty eradication programmes. The members of each group that are involved in agriculture engage in activities ranging from poultry, livestock and horticulture. These are provided with different types of training relevant to their specialization. Saleque (2007) reports that farming practices have evolved from subsistence farming to commercial farming.

BRAC started several programmes that develop extension workers that can provide extension services at the doorstep of farmers. This was done to supplement the evidently limited and inadequate extension services provided by the agents and government to meet the demand of farmers. Most of the extension workers are smallholder farmers. BRAC uses a deep understanding of contextual realities within which people live and strive to change their lives. Several distinct training programmes are designed for extension officers covering specific agricultural products, who then provide technical services to farmers. In addition to training provision, input and other support, BRAC provides technical assistance to small-scale and marginal entrepreneurs. This includes technical advice in agriculture, conducting refresher courses, collection of feedback and regular monitoring of activities in the field. A well-trained team of professionals is responsible for this.

The marketing of products in this context refers to three distinct functions namely: the exchange function, which is about buying and selling; the physical function, which is about storage, transportation and processing; and the facility function that entails standardization, financing, risk bearing and market intelligence. Since finding appropriate market outlets is the ultimate goal of any production or processing venture, BRAC provides marketing services in two ways. The first one is developing entrepreneurs among farmers to buy the product and sell to the large cities. The second is self-involvement by BRAC, especially in remote areas where infrastructure is lacking. BRAC provide marketing services through buying the produce from contract growers and exporting through programmes such as the Vegetable Export Programme. This helps farmers ensure the sale of their produce. Saleque (2007:53) emphasizes that integration into a dynamic and efficient value chain is a fundamental strategy for financing agricultural entrepreneurs.

2.5.2.2 *BRAC microfinance for agricultural value chains*

To ensure the proper utilization of skills, BRAC provides agricultural finance dedicated to financing input supply, production, distribution, processing, wholesale and marketing expansion. BRAC realised that smallholders do not constitute a homogeneous group and one size of microfinance was not suitable for the smallholder categories. Therefore, BRAC decided to offer different microfinance products to different categories of farmers to match their financial needs. BRAC's repertoire of development programmes is centred on microfinance, which itself is designed into five principal products each targeting a different market segment. High-value crop production through credit disbursements is one of BRAC's remarkable achievements.

2.5.2.3 *Key issues addressed by BRAC and achievements*

- Creating awareness and training to farmers
- Village based technical service provider establishment
- Ensuring sufficient supply of quality inputs through extension workers
- Ensuring farmers' market access
- Provision of appropriate and suitable loan packages
- Developing value chain linkages

2.5.2.4 *Synthesis*

BRAC has really emerged as a virtually self-financed paradigm in human development through value chain interventions. BRAC has two entry points, which are: provision of finance or making finance available; and active involvement in value chain segments that are deemed to contain very high risks to financial transactions or critical to the success of the entire value chain. BRAC ensures that there is availability of formal finance to smallholders in the form of microfinance channeled through the three NGOs plus BRAC and finance in the form of direct VCF. On the other hand, BRAC's active participation in the value chain (i.e. as an input supplier, produce marketer, or even technical service/ extension provider) reduces the risks the value chain faces in terms of supply, production, sales and marketing, and even management. BRAC has an embedded ability to craft suitable norms and practices that

underlie BRAC efforts and operations. That is, BRAC members operate in a Meso-set enabling business environment by BRAC who through practical and conceptual innovativeness has successfully adjusted and mitigated the social and economic conditions that constrain access to finance. BRAC ensures that value chain participants operate efficiently so that financing remains attractive.

2.5.3 Frigoken Limited

This case study review is based on the work of Strohm and Hoeffler (2006:12-19). Frigoken was established in 1989 and is currently the largest producer of premium quality processed vegetables in Kenya. Frigoken has a wide customer base including a broad range of leading European companies and supermarket chains. Frigoken is a processing firm that processes in excess of 10, 000 tonnes of vegetables per annum in the Nairobi plant alone, and produces a range of canned and frozen vegetables including French beans, snow peas and baby corn. The company purchases all of its produce through contractual arrangements primarily with smallholder producers, and other suppliers include schemes¹⁹, big farmers and intermediaries like Meru Greens. The contractual arrangements with the four procurement categories are different, but the produce quality standards used are the same. This model used by Frigoken is called the centralized contract-farming model. For continuous supplies, Frigoken Nairobi prepares a yearly planning programme (adjustable for cases of weather problems) and is broken down to the field officers and supervisors who in turn implement this on the ground. The different categories of produce suppliers are discussed next.

2.5.3.1 Schemes

In a scheme, Frigoken contracts the farmers individually. Farmers are given commercial contracts, spraying/ fertilizer programmes, as well as Memos to improve crop management. Since Frigoken is a beneficiary of the Agha Khan Fund for Economic Development, there is a strong social mandate and focus on smallholder farmers. The company pre-finances inputs like seeds and fertiliser and also meet the labour costs of spraying, while farmers only buy spraying chemicals. Schemes are hard to manage but it is the least-cost way of raw material provision.

¹⁹ Group of farmers that combined their land and farming as a single business

Farmers are attached to one of several buying centres (used to manage all schemes), which operate for the whole year ensuring about 5 planting periods. All farmers within a buying centre are expected to plant within four days so that there could be uniform planting, spraying and final harvesting. Also, a demonstration (demo) plot is set up for every planting in every section in addition to the main one. The demo plots help monitor the performance of the crop, predict picking times and indicate the prevalence of pests. Demo plot records are made easily available. Their location depends on farmer groups' willingness to work on it. Frigoken extension workers inspect and supervise spraying, manage each centre and are also responsible for recruiting new farmers and maintaining existing ones. A normal contract runs from 2-3 months and is crop-based rather than time-based. A farmer is limited to planting 1kg of seeds mainly because of limited land issues, Frigoken's drive to support small-scale farmers while also ensuring that the crop is manageable with family labour, and also to allow crop rotation so that required yields and quality can be achieved.

For ensuring quality, farmers are given quality specification sheets stating clearly which quality is accepted and which is rejected. Graded samples are placed at the buying centres clarifying this. Meetings with farmers are used to demonstrate crop husbandry methods and to talk about any challenges faced by producers. Frigoken extension officers are there to guarantee good management practices. Frigoken uses local field assistants who know the kind of people they are dealing with and who have background information about particular problems.

Farmers grade their produce in the buying centres and Frigoken staff assist them. Any product rejection takes place in the buying centres directly in the field so that the farmer can take home rejected produce. Accepted produce is then weighed and all details written down on the farmer card. The farmer and the sprayer signs the card after information relating to name, ID, date of planting, name of buying centre, amount of seeds planted, dates of spraying, chemicals used, and applied by whom have been filled in. As a means to ensure traceability, a note stating the producer's code, plot number, centre name, picking day and variety is put in every crate. Frigoken trucks pick up produce every day at the grading centres except on Sundays.

A base price that is fixed throughout the year is used and farmers hold the possibility to earn a bonus for superior quality produce. Farmers get money for the entire crop when the crop is finished 2-3 months after planting less the cost of pre-financed inputs. A team of account

supervisors verifies the accuracy of records and ensures that farmer's records correspond with those of the buying centre. On the other hand, loans are provided to farmers by the non-profit Agha Khan Agency for Microfinance, and support farmers in their financial needs, which they may have before they get product proceeds.

In the case of natural disasters, field-staff assess any losses suffered by farmers per farmer and plot. The risk-sharing model acknowledges the effort and labour the farmer has put into the crop but natural disasters rob Frigoken of supply and the farmer loses crop returns. Consequently, Frigoken forfeits settlements for the pre-financed inputs. In the case where farmers fail to break-even mainly because of crop neglect (don't practice good crop husbandry), the farmer has to bear all the costs and Frigoken cannot help. For cases when there are severe epidemics or pests that require more spraying or fertilizer application, Frigoken covers additional costs incurred. This is done because farmers were given rough estimates about input costs and likely harvest thus estimated the likely profits before signing the contract. Frigoken agronomists give feedback to their headquarters in Nairobi regarding the performance of the current crop and future harvest estimates. It has been realised that discussions with farmers regarding side-selling are crucial, as well as the use of local leaders like chiefs to settle certain issues.

2.5.3.2 *Contract groups*

With contract groups, farmer groups as well as cooperatives are contracted on a six-month basis. This is seen as the best way to engage farmers. With farmer-groups, the arrangement is that Frigoken pre-finances seeds and chemicals and the farmer finances fertiliser. As a pre-requisite, farmers must agree to follow Frigoken's crop husbandry specifications. Field staff (acting as auditors) monitor and advise farmers, do on-the-ground planning and communicate data to the Headquarters in Nairobi.

Produce is picked up 3 times a week at grading centres of the groups, transported to Nairobi where it is graded, and some rejected. Farmers may pick rejected produce, but rarely do so due to transport costs. Because of logistical reasons and the involvement of large quantities of farmers, Frigoken is unable to reject sub-standard produce in the field directly or bring back the rejects to the respective farmer groups. The only grade taken by Frigoken is first grade and the rest is disposed as rejects. The selection criteria for contract groups are as follows:

- Past performance (for groups contracted before)
- A good management structure of the group
- Control systems within a group like bylaws, sanctions
- Availability of water and land
- Good logistics (good road going to the grading centre)
- Plans for a grading shed and chemical store
- Employed staff (field controller, centre controller)

The employees must be educated and should at least be Form 4 leavers. Frigoken train these employees on EUREPGAP standards and requirements. The training (quality standards and proper grading) is free of charge. The group committee receives a cheque every two weeks for the entire group, and it is the responsibility of the group leaders and the clerk to determine how they break down the payment to the individual group members. The price offered is negotiated before contract signing and Frigoken deducts at least 20% to cover losses occurring during the processing, which is only mentioned in a verbal agreement.

There are, however, challenges that have been noted to exist in this arrangement that affect farmers. The contracted groups mentioned that Frigoken does not pick up all produce as agreed and the reasons behind might include:

- Factory capacity in Nairobi exhausted and can't process maximum quantity due to water shortages
- Contract does not specify weekly produce supplies to Frigoken because it is based on weekly seed quantities planted. Thus, favourable weather means more than expected will be delivered and company might not be able to process additional produce.

2.5.3.3 *Individual farmers*

Frigoken contracted individual farmers during a time when they needed more produce, where there were high costs involved in expanding existing schemes. Farmers contracted were those with a land holding between 5-30 acres and the contract was on a 1-year basis. This group of farmers deals directly with Frigoken Headquarters and is supervised by them. Most of them transport their own produce and finance all production costs. This is the most economical way

of getting produce by Frigoken. Such farmers do not need as much support as smallholder farmers and represent a model of their own. The individual farmer selection criteria are given below:

- Availability of land and land use history
- Irrigation equipment and required infrastructure
- Working structure in place (for workers)
- Labour availability
- Environmental audits (initially and later internal audits sufficient).

2.5.3.4 *Meru Greens Horticulture*

Frigoken contracts Meru Greens Company as an intermediary to work with smallholders and thus relieve management from dealing with thousands of smallholders. These smallholders then supply Frigoken through Meru Greens.

2.5.3.5 *Frigoken challenges*

- The Kenyan competition is very tight
- The price of inputs is very high and the company attempts to get cheaper sources
- Transportation costs have become so high that it is cheaper to airfreight something to Belgium than to send a truck from Mombasa to Nairobi.
- The company faces international competition from China for processed products as their labour and raw material costs are very low. The main competing attribute that Kenya is known for is superior quality.

2.5.3.6 *Synthesis*

Frigoken is a buyer company that procures its produce through contractual arrangements with four distinct types of suppliers. Frigoken enforces specific product procurement processes to specific suppliers to guarantee supply. To achieve the expected supply, Frigoken makes available direct value chain finance, and indirect value chain finance in the form of microfinance through the Agha Khan foundation. The Agha Khan foundation finances

smallholders also because banks incur high transaction costs when attempting to finance smallholders. Also, the costs of financing by banks could be high and the resultant culture or practice is minimal involvement of banks in financing these poor communities. The Agha Khan foundation is committed to a social mandate of supporting the poor and not just making profits. The principal objective here is to ensure that farmers successfully supply Frigoken with produce that in turn finances their operations or producers self-finance their businesses particularly individual farmers.

2.6 THE ANALYTICAL FRAMEWORK

Having reviewed the VCF anchoring theories and literature in the earlier sections of this chapter, this section adapts the UNIDO (2011) analytical framework into this study to use in the analysis. The Mennonite Economic Development Associates (MEDA) (2011) value chain finance assessment approach was identified, but it is more of a methodology than an analytical framework and is more suitable to projects than academic research. The UNIDO (2011) analytical framework has five sections starting with financial attractiveness, which is a function of the other sections: risks to financial transaction; norms and practices; availability of finance; and financing gaps. Financial attractiveness is an indicator that the value chain is able to successfully move products to the market. Even though markets may not be technically guaranteed, the value chain would be operating in a manner like it were guaranteed. Also, the level of applicability of this analytical framework in terms of all of its component parts and the extent of compliance to the ideal situation dictated by this analytical framework is an indicator of the applicability of VCF to infant industries. The ultimate goal of this analytical framework is to give an ideal situation that shall guide the analysis against the reality, thus mapping the gap that exists with regard to VCF.

2.6.1 Financial attractiveness

There is a need to get an idea about how investors and financial institutions rate the attractiveness of businesses in this value chain, thus their willingness to lend to or invest in them. The financial attractiveness of specific chain nodes in the value chain help informs conclusions on the general attractiveness of the entire value chain. According to UNIDO (2011), financial attractiveness depends on two factors namely: the creditworthiness of the business or actor seeking finance, and the profitability of the investment or loan.

Creditworthiness depends on a borrower's willingness and ability to repay, while profitability is a function of the duration and the expected return generated, or interest and other costs chargeable on the investment. The two commonly used approaches are internal rate of return and net present value in various nodes of the value chain, and qualitative judgments on financial attractiveness of the value chain by main investors (UNIDO, 2011).

2.6.2 Risks to the financial transaction

Every participant, financial institution, firm or entrepreneur that engages in financing a value chain actor takes the risk that the investment will not reap the expected rewards or, even worse, be lost altogether. UNIDO (2011) identifies several risks that are responsible for financial default. These are highlighted below:

2.6.2.1 Supply risk

Since production requires that there be a continuous supply of inputs and raw materials, there is the inherent risk that supplies are not easily and readily available in the market. In such situations, production firms must ensure that they procure such inputs in sufficient quantity and the correct quality. Fixed contractual relationships with buyers, supporting suppliers with advances (in-kind and/ or cash), and engaging in the bulking and transport of supplies are methods used to minimise the risk. However, there is the risk that firms will fail to procure the supplies, or fail to recover the advances provided to suppliers especially because producers may decide to renege on the contract and supply other premium buyers.

2.6.2.2 Production risk

This has to do with the inherent risks in the production process, which is prone to the vagaries of weather conditions and inconsistent availability of inputs. Others include the enforcement of quality grades and safety standards and a lack of technological know-how.

2.6.2.3 Sales and market risks

Markets for products can be very volatile. Product prices can fluctuate up and down according to competition, product availability in the market and their substitutes, and changing demand

by consumers and buyers. These risks are enforced by little market information or weak links with markets, and the greater stability in supplier-buyer relationships reduces them.

2.6.2.4 Management risk

Irrespective of the size of a business enterprise, management must ensure that the business adjusts to changing market conditions, and the political and legal environment. Bad management that fails to make prudent decisions may lead to the inefficient use of materials and processes, and thus suffer financial losses that may make the firm fail to meet its financial obligations.

2.6.2.5 Other risks

The legal and political environment is another source of risk, which may render firms subject to new laws while governments may impose new standards and intervene in markets. Others include quality of infrastructure like roads, water, electricity supply, availability of efficient transport and trading services. UNIDO (2011) points out that financial risks can be mitigated by the use of mechanisms that re-enforce the smooth functioning of the value chain. Examples include forward contracts, insurance products, guarantees and collateral.

2.6.3 Norms and practices

According to UNIDO (2011), the established organizational, social and cultural norms and practices that exist within the country's financial systems, as well as the rules that permeate the value chain context are very important in a financial analysis. In fact, these reinforce or erode the different forms of financial transactions within a value chain. The most important aspects are as follows:

2.6.3.1 Supervisory and regulatory frameworks

Traditional regulatory frameworks by supervisory authorities usually focus on documentation like proof of collateral and audited financial statements. In the situation that any of these is absent, banks must provision a greater proportion of the loan, and this will in turn negatively impact on their profitability. UNIDO (2011) urges that supervision and regulation that is risk-

based favors bank lending to actors incapable of meeting the strict documentation requirements, as banks are regulated on the basis of their ability to manage risk.

2.6.3.2 Legal and judicial infrastructure

Legal and judicial systems and other mechanisms used for accessing information and enforcing contracts are a critical factor in determining how banks will lend money and to whom they will lend. This adversely affects the possibility of using collateral and increases perceived low creditworthiness.

2.6.3.3 Cost of reaching difficult markets

Value chain actors like smallholder producers in rural areas tend to be geographically dispersed and have poor access to transport or Information and Communication Technology (ICT), which makes it very hard for formal financial institutions to reach them. UNIDO (2011) argues that even though banks are beginning to operate in these markets, the high cost of investment requires facilitation by governments and involvement of donors. This also affects the type of products banks can offer.

2.6.3.4 Shallow financial markets

Many financial institutions in developing countries face hardships in accessing long-term funding to operate their businesses. The immediate effect is limited products available to consumers. Evidence is the trend to provide operational loans and the reluctance to offer medium or long-term loans.

2.6.3.5 Bureaucratic inertia of financial institutions

UNIDO (2011) talks of inertia within financial institutions bureaucracies, along with high costs, regarding the way they do business. Cumbersome procedures and lack of institutional incentives to understand and exploit new business opportunities are the key factors identified.

2.6.3.6 *Social and cultural norms*

UNIDO (2011) points out that there are established norms and practices within different societies that influence the flow of finance to and/ or within value chains. These can be based on gender, age, culture, social or religious affiliations to name but a few.

2.6.4 **Availability of finance**

Availability of finance in value chains has to do with the quantity or volume of financing required by value chain actors and what they can actually obtain, and the quality or suitability of financing to their enterprise needs. Both of these rely heavily on the sources of finance. Formal sources of finance like banks may provide larger loans for capital investment, but need collateral or extensive documentation, something that acts as a barrier to small and informal enterprises. These enterprises, however, also need capital investment and this may be a key constraint for particular segments like production. Therefore, different forms of finance that can cater for specific and varying financial needs of value chain actors are necessary, and assessing their availability is key. The forms of finance available to value chains are divided into five forms: self-finance VCF; direct VCF; indirect VCF; formal finance; and informal finance. These are highlighted below.

2.6.4.1 *Self-finance*

Rather than relying on outside sources of finance, many value chain actors especially big companies rely on their own funds to finance activities. Self-finance sources include retained revenues and savings. A diagnostic of the self-finance patterns and specifics on which value chain activities are self-financed is important.

2.6.4.2 *Direct VCF*

The second type is about direct value chain finance. This kind of finance is easy to organise in transparent and trust-based inter-firm relationships. There is a need to obtain a qualitative description pertaining to the prevalence of these VCF mechanisms in the value chain (UNIDO, 2011).

2.6.4.3 *Indirect VCF*

Here, value chain actors with easy access to financial resources provide financing to other actors in the chain so as to ensure the success of their production and thus the entire chain. The inclusion of a financial institution here takes financial access a step further. The establishment of a triangular relationship between suppliers, buyers and financial institutions is an example of such mechanisms. Also, governments have the choice of providing additional risk guarantees that assist banks secure loans to actors and facilitate lending.

2.6.4.4 *Formal finance*

Formal providers of finance (i.e. commercial banks, microfinance institutions, group savings associations) would provide finance to a specific enterprise as part of a bigger strategy to support development in particular sectors or in an effort to diversify their portfolios. Bank loans range from short-term working capital loans to medium and long-term loans for investment capital. Microfinance institutions on the other hand usually provide small short-term loans, just enough to cover working capital and rarely sufficient to expand production. Formal financial institutions base loan appraisals on its financial attractiveness and risks (UNIDO, 2011).

2.6.4.5 *Informal finance*

Informal sources of finance are very crucial in developing countries due to the limited accessibility of formal financial services. Informal sources of finance are those that operate in the informal sector (i.e. moneylenders, family and friends and groups or associations). Many enterprises in developing country economies find this type of finance convenient since cash is immediate, repayment terms are flexible, and there is less paperwork, but for some it is the only source of finance to which they have access.

2.6.5 **Financing gaps**

The examination of financing gaps is focused on the demand side rather than the supply of finance dealt with in previous sections. UNIDO (2011) posit that there is a need to identify where there is a clear demand for finance, which is not sufficiently met in terms of both

quantity (volume) and quality or suitability, in the value chain. Financial needs can best be established by understanding the businesses in the value chain, and gaps may exist in both qualitative and quantitative respects, causing businesses to be underfunded. While financing needs vary across and within chains, effective demand may be constrained by factors including awareness or understanding available options, and the informal nature of many enterprises. These financing gaps form a foundation for financing opportunities. That is, every financing gap presents an opportunity for specific value chain actors, independent businesses, financial institution, government and government agencies, and most importantly NGOs and the donor community.

2.7 SUMMARY

This chapter has employed three theoretical constructs namely transaction cost economics, imperfect information and the agency theory to study value chain finance. It also gave a brief value chain context using the property rights theory, contract and incomplete contract theory and the theory of social capital. The chapter went on to review extant VCF literature, which was presented in different sections: the value chain finance concept; the taxonomy of VCF; the VCF framework; and the significance of VCF. Three horticultural case studies holding separate VCF models (DrumNet, BRAC and Frigoken) were reviewed to inform this study on success stories in similar industries in other countries. The chapter ended by putting forward an analytical framework that will guide the analysis. This analytical framework was adapted from UNIDO (2011) to meet the needs of this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This is a VCF study that takes the path of analyzing the VCF approach rather than specific VCF instruments. According to Miller and Jones (2010), there are about 16 VCF instruments that are grouped into 5 categories. The focus of this study is not to unpack any of these instruments that may be resident in the Swaziland baby vegetable industry, but to study VCF as a holistic and comprehensive approach to financing. The research methodology set out in this chapter is in four sections. The chapter begins with description of inquiry strategy and broad research design. It then describes the sampling procedure, and then highlights the instruments used. It ends by providing the method of data collection and analysis. This study used the analytical framework as set out in the previous chapter.

3.2 DESCRIPTION OF INQUIRY STRATEGY AND BROAD RESEARCH DESIGN

Even though niche markets for high-value horticultural crops are growing globally, the Swaziland baby vegetables industry is declining in performance evidenced by the shrinking of financial services available to its producers. The purpose of this study is to employ the holistic and comprehensive VCF approach to analyze the Swaziland baby vegetable industry. Much emphasis was placed on the National Agricultural Marketing Board (NAMBoard) value chain, but the Sdemane lead firm was also included in this study.

This is an empirical study, which is original in nature. The strategy of inquiry adopted by this research makes use of the VCF framework, and employs both qualitative and quantitative methods of data analysis. This strategy allows the researcher to cover value chain participants in both demand and supply sides. NAMBoard is a government agency that is a key player in the baby vegetable industry through participation in input supply, technical service provision and all post-harvest activities including processing and marketing. Smallholders participate in baby vegetable production through working with NAMBoard that markets produce on their behalf thus the market is unguaranteed as NAMBoard doesn't have secured markets. As a

result, smallholders are part of a value chain this study will refer to as the NAMBoard value chain.

Three methods of study: in-depth interviews; case study reviews; and desktop study, were fused together to form the research design employed. Case studies already reviewed in the previous chapter informed institutional and VCF model recommendations. The desktop study sought to review reports and available studies that touch on baby vegetables in Swaziland. Quantitative data was collected from the NAMBoard pack house, and in-depth interviews were done on all value chain participants, ranging from input suppliers to marketing plus producers. Such a design involves a broad application of institutional perspectives of value chain participants.

3.3 SAMPLING PROCEDURE

The target population for this study was 82 respondents, consisting of all baby vegetables industry participants in the country. The respondents in the study were classified into two main categories namely: demand (producers), and supply (industry stakeholders). The sampling procedure for producers is stratified random sampling.

Table 3.1: The sampling structure

Strata	Population size	Sample size
Current individual producers	15	15
Current farmer groups	2(13)	2(13)
Current farmers associations	1	1
Former individual farmers	30	9
Former farmer groups	1(10)	3
Formers farmers associations	1	1
Financial institutions	3	3
Extension institutions	2	2
Input suppliers	2	2
Processing firm	2	2
Marketing firm	1	1
Government & GVT agency	2	2
Producer total	70	42
Stakeholder total	12	12
Total	82	54

It is stratified because farmers were first categorised into current producers and former producers. Within each of the two strata are three strata; individual producers, farmer groups,

and producer associations. Respondents were selected with the help of a producer list that contained telephone numbers, obtained from NAMBoard. Also, the sampling made sure that former-producer respondents represented the entire time frame²⁰. Table 3.1 shows the sampling structure while Table 3.2 gives the instruments used. Fewer former producers were sampled because most of them have forgotten about the key issues of interest in this study, thus wouldn't have provided quality data. This brings the sample size to 54 respondents.

3.4 THE INSTRUMENTS

The questionnaire instruments used in this study were formulated with the guidance of other instruments used in similar studies by MEDA (2011:Appendix 3), and Coon *et al.* (2010:Annex C). On the supply side, the questionnaires were administered to decision makers relevant to this industry, and to farm owners on the demand side.

Table 3.2: List of interview schedules and applied tools

Name of value chain actor	Interview tool used	No of respondents
Swaziland Agricultural Suppliers	Input suppliers discussion guide	1
NAMBoard input shop	Input suppliers discussion guide	1
FINCORP	Financial institution discussion guide	1
SIDC	Financial institution discussion guide	1
Inhlanyelo Fund	Financial institution discussion guide	1
NAMBoard packhouse	Processing firm discussion guide	1
NAMBoard quality assurance officer	Processing firm discussion guide	1
NAMBoard marketing department	Marketing firm discussion guide	1
SIPA	NGO & government agency discussion guide	1
Ministry of Agriculture	NGO & government agency discussion guide	1
SWADE extension	Extension officer discussion guide	1
NAMBoard extension	Extension officer discussion guide	1

With regard to current producers, a semi-structured²¹ questionnaire was formulated, this contained a structured section and an unstructured section which contained open-ended questions (also referred to as discussion guides). The structured section of the instrument contained sections on farmer profile, production, marketing, inputs, technologies and training, financial services usage and literacy, investment, and cooperation and relationships. The unstructured section consisted mainly of discussion guides on constraints and opportunities. A former producer discussion guide was also formulated and applied. Relevant discussion

²⁰ Respondents who were there when project began up respondents who had just recently quit the industry

²¹ It is semi structured because it had a structured section and a non-structured section that consisted of open-ended questions discussion guides

guides, as reflected in Table 3.2, were developed for other chain participants. One comprehensive questionnaire was formulated for the big producer (Sdemane), which also facilitated the mapping of the Sdemane value chain and a VCF institutional analysis.

3.5 METHOD OF DATA COLLECTION AND ANALYSIS

Interview schedules were used as the main data collection methodology for the different strata of respondents. The researcher personally did the interviews using a notebook laptop to capture answers and information. This facilitated easy data cleaning and sorting of responses after every field day. Farmers were assured of the confidentiality of the information given. Face-to-face interviews were the primary data collection method,²² when this was not possible interviews were conducted by telephone. Follow-up phone-call interviews were done for critical stakeholders like marketing firm, the big farmer (Sdemane), processing firm, and also producers whose data was incomplete or required clarification. The interviews were undertaken from beginning of August 2012 to end of September 2012, with follow up interviews stretching to November 2012. The method of analysis was then synchronized with the study objectives and recast below.

- To analyse the Swaziland baby vegetable industry using the VCF approach: The structured questionnaire instrument was used to collect data on the industry structure. This was used to map the value chain and described clearly the three critical elements: behavioural part, financial part, and product exchange part. Also, descriptive statistics were used to capture the status quo on producers' profile. Quantitative and secondary data data obtained from NAMBoard added to the descriptive results.
- To ascertain the efficacy of the VCF approach in nurturing a guaranteed market for an infant industry: To address this objective, this research undertook a VCF institutional analysis of both the NAMBoard and the Sdemane value chains. An in-depth case study analysis was done on the Sdemane value chain and the NAMBoard value chain using the VCF framework. The main focus here was value chain linkages and the existing value chain finance arrangements, while also depicting the three major aspects: institutional aspect, behavioural aspect; and product exchange. Dissecting the dichotomy of the

²² Based on recall memory of former producers and current perception of current producers and other actors

Swaziland baby vegetables industry was key to answering the question of efficacy in guaranteeing a market.

- To identify specific challenges, financing gaps and opportunities: The unstructured section of the farmers' instrument and the discussion guides developed for the different value chain participants were used to address this objective. On the demand side, responses were categorised into themes reflecting mostly the challenges that producers face. Data also allowed the categorization of risks and this helped identify financing gaps and the resulted opportunities. Such an analysis gives a true reflection of the situation on the ground, while also authenticating producers' claims and provides vital information to elicit the rigour and shortfalls of the business model currently used by NAMBoard.
- To recommend (i) institutional arrangements; (ii) value chain-financing model necessary to facilitate financial deepening; and (iii) the relevant policy implications: The 3 case studies: DrumNet; BRAC; and Frigoken company together with findings of the previous objective were instrumental for this objective. DrumNet is a supply chain management company that uses modern information technology to create commercial networks; BRAC that provides required goods and services (including microfinance) to support enterprise linkages to rural farmers serving increasing urban markets; and Frigoken Company is currently the largest company of premium quality processed vegetables in Kenya with a wide customer base including a broad range of leading European companies and supermarket chains. It contracts with different categories of producers and has succeeded in ensuring smallholder inclusion in global value chains. The resultant insights led to the crafting of a better VCF model that mitigate risks and facilitates increased flow of finance to the value chain, and is founded on robust working practices. The literature reviewed in earlier chapters was pivotal in producing a heuristic and relevant institutional framework that led to the model recommendation.

The data analysis and presentation of results was guided by the VCF analytical framework adapted from UNIDO (2011), and was embedded within the VCF framework presented in Section 2.4.3 in the previous chapter. VCF is a holistic approach that knits the value chain stages with the business and enabling environment, finance and support services, and technical assistance using the three fundamental VCF flows (information flows, physical

product flows and financial flows). As a result, data analysis shall be done in a way that captures these flows. To fulfill the research objectives and the requirements of the analytical framework, the results are divided into three chapters (Chapter 4, 5 and 6). Each of these chapters is part of a whole that answers the research hypotheses.

CHAPTER 4

A FINANCIAL ANALYSIS OF THE PRODUCTION STAGE OF THE NAMBOARD VALUE CHAIN

4.1 INTRODUCTION

The fundamental feature of VCF is that it addresses the needs of those involved in that value chain, regardless of whether it is a need for finance, to secure sales, procure products, reduce risk, or to even increase the efficiency and competitiveness of the value chain (Miller & Jones, 2010). Since this study places more emphasis on the producer, this chapter is about a financial analysis of the production stage. As part of the wider discourse on including smallholders in high-value global markets, efforts to characterize the required financial interventions call for a judicious and critical financial analysis of the key players in the value chain. Here also, it is prudent to profile and assimilate producer financial characteristics to successfully undertake a proficient and coherent value chain finance analysis. This chapter starts by establishing the link between baby vegetables and conventional vegetables; creates a producer profile and land holdings; provides segmentation between individual producers and farmer groups and the resultant typical value chains; gives a status on financial access; discusses some value chain performance indicators; and lastly examines associations.

4.2 BABY VEGETABLES AND THEIR CONNECTION WITH CONVENTIONAL VEGETABLES

This study discovered that all baby vegetable producers are also conventional vegetable producers. NAMBoard is principally a market outlet used by producers for both vegetable enterprises. Figure 4.1 shows that the baby vegetable value chain and the conventional vegetables value chain have the same participants in the Swaziland industry jurisdiction. However, the business models for these enterprises are different. The inputs suppliers are the same, the producers are the same and the post-harvest handler is still NAMBoard. What differs is that the conventional vegetable value chain operates under a guaranteed market model, where NAMBoard is the buyer and in turn a wholesaler of produce. On the other hand, the baby vegetable value chain has no guaranteed markets and NAMBoard does not take the

risk of buying unaccredited produce from farmers but takes the role of an intermediary²³. Produce is mainly sent to external markets in South Africa. Retailers in the local market purchase on the spot market and only take small portions. NAMBoard deducts a 35 percent handling fee from the produce market price.

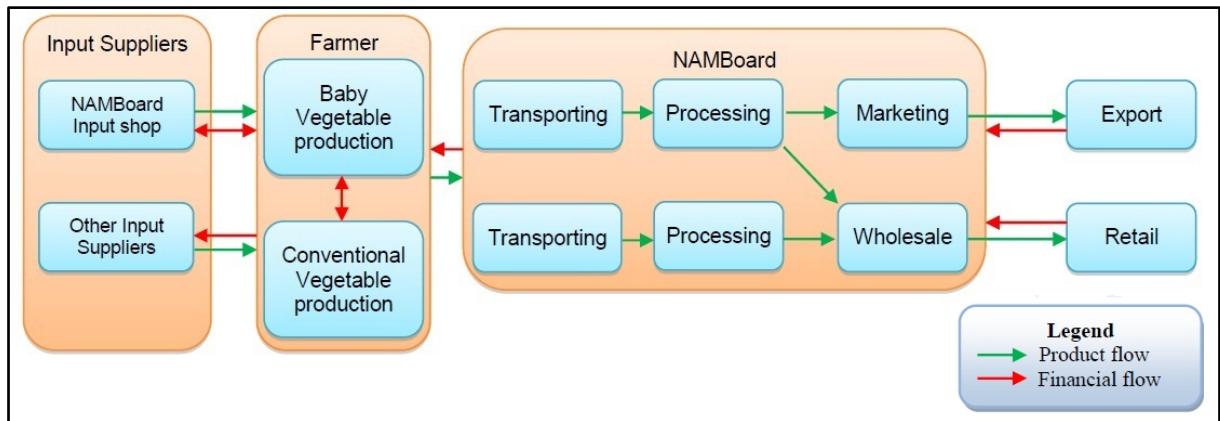


Figure 4.1: The link between the baby and conventional vegetables value chains

The guaranteed market model for conventional vegetables ensures that farmers get paid within two weeks while revenues for baby vegetables takes about two months to reach farmers. For this reason, farmers sometimes use conventional vegetables revenues to finance baby vegetable production and/or vice versa (see two-way flow of finance between baby vegetable production and conventional vegetables in Figure 4.1). In fact, farmers handle both conventional and baby vegetables enterprises as a single business and applications for formal finance are done for this single business. The ratio of baby vegetables to conventional vegetables in every smallholder farm is dependent on previous crop performance, financial well-being of the farmer, NAMBoard programme for conventional vegetables, seasonality and perceived demand, but conventional vegetables are currently the most produced.

Table 4.1: Baby vegetable crops grown in Swaziland

List of baby vegetable crops		
Baby marrows	Baby cauliflower	Mangetout
Yellow petty pans	Red cabbage	Fennel
Green patty pans	Green cabbage	Baby carrots
Baby germ	Savoy cabbage	Chillies
Green beans	Sugar snap peas	Baby corn

Source: NAMBoard, 2009.

²³ The point of involvement as an intermediary is post-harvest handling, from transportation to marketing of the value-added product.

The baby vegetable business itself is in its infancy in Swaziland, born as a project in 1996. It is a small industry that is categorized as emerging. Table 4.1 presents a list of the baby vegetable crops grown in Swaziland. According to NAMBoard (2009), the only crops that are not extensively grown currently are chillies, baby carrots and fennel. The rest enjoy extensive production.

These crops vary in their ease of production, farmers' preference, and compatibility with farmers' capabilities. Hence, farmers tend to produce what they understand best, have cheaper input seeds, while also seasonality and NAMBoard plays a role in determining what is produced and when, while the agro-climatic zones (high-veld, middle-veld, low-veld and Lubombo plateau) in the country also have influence. The low-veld allows all-year-round production, while the high-veld permits production only for six months in a year.

4.3 PRODUCER PROFILE

Profiling current producers is prudent if we are to get an idea of the creditworthiness qualities and relational characteristics of the producer base.

Table 4.2: Current producer profile

N = 29 respondents	Frequency	Percentage
Nature of association		
Individual	15	51.7
Group	13	44.8
Association	1	3.5
Gender		
Individual	M = 8 F = 7	M = 53.3 F = 46.7
Group	M = 6 F = 7	M = 46.15 F = 53.85
Association	M = 13 F = 7	M = 65 F = 35
Land holding		
Individuals	SNL = 14 TDL = 1	SNL = 93.3 TDL = 6.7
Groups	SNL = 13	SNL = 100
Other income sources		
Individuals	Yes = 9 No = 6	Yes = 60 No = 40
Groups	Yes = 3 No = 10	Yes = 23.1 No = 76.9

Several characteristics and attributes of current producers were put together to form the current producers' profile given in Table 4.2. The exhibited profile directly or indirectly determines the availability of formal finance, based on the general practices of financial institutions. The target population of current producers was 29 respondents, who were all interviewed. Only 1 farmers' association is a current producer, 13 respondents from 2 farmer groups and 15 individual producers. The gender distribution among these kinds of producers is pretty balanced. A majority (60 percent) of individual producers have other sources of income in addition to their vegetables businesses, particularly a monthly salary. Only 23.1% of farmer groups have other sources of income, meaning they rely on their farm businesses as their main source of livelihood. The land used for production is Swazi Nation Land (SNL), which is land held and governed by the King on behalf of the Swazi nation and can't be used as collateral for loans.

Coates *et al.* (2011) argue that many promising smallholder farmers are discouraged to invest in their farms mainly because of the customary systems of land tenure. These include SNL. This can be said for our individual farmers who are wary of making substantive investments in the farms. As a prerequisite to being a baby vegetable producer in the NAMBoard value chain, a farmer must have an irrigation system, fencing and a source of irrigation water in addition to land. Land dedicated for baby vegetable production ranges from 0.25 to 5 hectares for individual producers and 0.30 hectares to 0.45 hectares for farmer groups (see Table 4.3). The range is higher for individual producers mainly because some of them were giving estimates of total vegetable production land owned, while farmer groups have cleared divided plots, the size of which is easy to estimate as some used only a single plot for baby vegetable production at the time of data collection.

Table 4.3: Current producer land size holding

Land size (Ha)				
	Min	Mean	Max	Range
Individual	0.25	1.44	5	4.75
Group	0.30	0.69	0.75	0.45

Typical farmers in Sub-Saharan Africa manage very small plots of land ranging from 0.25-3 hectares (Temu & Temu, 2006:3). Since the mean land holding for individual farmers is 1.44 hectares, this is consistent with our expectations based on Temu and Temu (2006:3). The

studied association is the only one producing baby vegetables, and has a land size of 3 hectares, which is also used for conventional vegetable production.

4.4 VALUE CHAIN PERFORMANCE INDICATORS

This section makes use of income contribution, income trends and producer experience as indicators to diagnose the performance of the baby vegetable value chain. The income contribution of the baby vegetable enterprise to 9 individual producers is less than 25% while the remaining 6 individual producers believe baby vegetables contribute between 25% and 50% (Figure 4.2a). The situation is worse with farmer groups where more than three quarters of producers have baby vegetables contributing less than 25% to their incomes (see Figure 4.2b). This is disappointing considering the fact that farmer groups predominantly rely on the vegetable business for their livelihoods. There is a minority of smallholders among farmer groups that have baby vegetables contributing between 50% and 70% to their income.

Figure 4.2a

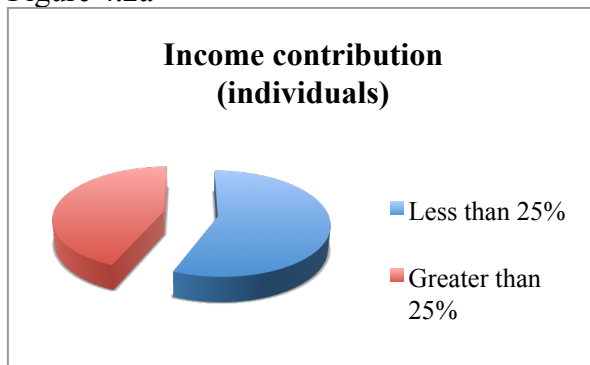
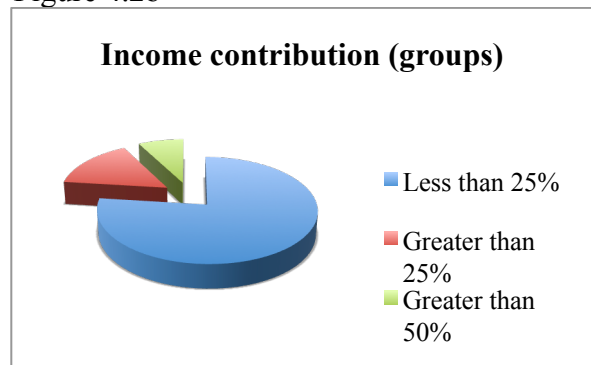


Figure 4.2b



Figures 4.2: Baby vegetables income contribution

Figure 4.3a

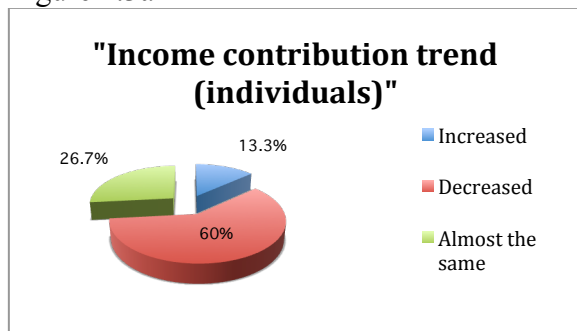
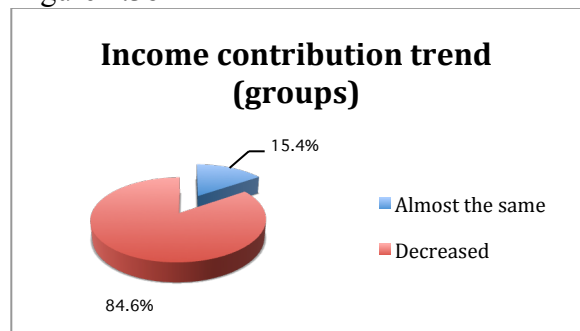


Figure 4.3b



Figures 4.3: Baby vegetables income trends

Income trends given by Figures 4.3 gives a diagnostics of whether this value chain is increasing or declining in performance. Figure 4.2b shows that incomes are mostly less than 25% within farmer groups mainly because the income injection from baby vegetables has been declining over the past years, whereby only 15.4% of producers had income contribution remaining almost the same.

This is echoed by Figure 4.3a, where a fair majority of individual producers had income contribution decreasing, but baby vegetables income contribution increased for 13.3% of individual farmers. However, Temu and Marwa (2007) reveal that the inclusion and rent obtained by smallholder farmers from globalised value chains has moved from better to worse. The survey results indicate that farmers who experienced an increase in income are individual smallholders that also deliver their product to supermarkets in addition to NAMBoard, and also have other sources of income.

This overall decline in income harvested from baby vegetables does not reflect the expected positive correlation with experience. It was discovered that both farmer groups have been involved in baby vegetable production for more than 5 years. With individual producers, the majority have experience between 3 and 5 years, followed by those with more than 5 years experience and only a few have less than 3 years of experience. While there are stronger factors contributing to this, perhaps the quality of this experience is another factor to be considered.

4.5 SEGMENTING THE BABY VEGETABLE VALUE CHAIN

Having appreciated that individual farmers and farmer groups compose most of the producer base in the NAMBoard value chain, this section gives the specific value chain finance flows separating these categories and anything beyond this scope shall be covered in later sections or chapters. Initially, individual smallholders and those in farmer groups were considered a single stratum, but it was learnt that the attributes of individual farmers and farmer groups are dissimilar. Therefore, from this section henceforth, analysis shall focus on results based on individual farmers and farmer groups. The approach here is to give a typical value chain for each of the two strata and also give specific case studies. These case studies are for one production cycle in 2012; one is of an individual producer selling produce only through NAMBoard and the other is an individual producer who also sells produce direct to the local

market (i.e. supermarkets) in addition to NAMBoard; and lastly, there is a case study of a producer is a member of a farmer group. The idea is to give a real case of cost and revenues. Two crops are used for each farmer, with baby green beans being the mutual crop in all three farmers.

4.5.1 Variables and method of calculation

According to the UNIDO (2011) analytical framework, financial attractiveness depends on two factors namely: the creditworthiness of the business or actor seeking finance, and the profitability of the investment or loan. Creditworthiness depends on a borrower's willingness and ability to repay, while profitability is a function of the duration and the expected return generated, or interest and other costs chargeable on the investment. In this section, an attempt is made to observe financial attractiveness based on the cash flow or profitability of the baby vegetable enterprise for three different kinds of producers. These are: individual producer giving produce only to NAMBoard; individual producer also selling direct to the local market; and a member of a farmer group. These characteristics are modeled as follows:

Profit (P) = Product Value (PV) – Total Costs (TC)

Or

$$P = PV - TC \quad 4.1$$

Where:

$$PV = Q_L P_L + Q_E P_E \quad 4.2$$

And

Q_L = Quantity sold in local market

P_L = Local market price

Q_E = Quantity sold in export market

P_E = Export price

Also,

$$TC = \sum X_i + \sum Y_i + \sum Z_i \quad 4.3$$

And

$X_i = \text{Cost of inputs}$

Where:

$X_1 = \text{Cost of seeds}$

$X_2 = \text{Cost of Chemicals}$

$X_3 = \text{Cost of fertilisers (NPK + LAN)}$

And

$Y_i = \text{Cost of production activities}$

Where:

$Y_1 = \text{Cost of ploughing}$

$Y_2 = \text{Cost of labour (planting, weeding, irrigation and harvesting)}$

$Y_3 = \text{Cost of irrigation power}$

And

$Z_i = \text{Cost of post-harvest activities}$

Where:

$Z_1 = \text{Transportation costs}$

$Z_2 = \text{Cost of processing (cold storage, cleaning, cutting and packing)}$

$Z_3 = \text{Marketing costs}$

Since NAMBoard charges 35% of the product market value (PV) as cost of post-harvest handling. Therefore:

$$\sum Z_i = 0.35PV$$

4.4

It is not possible to get exact figures of Q_L and Q_E for all consignments. Since the survey results point that the local market take small proportions of the marketed product, it is then assumed that the local market will take at most 25% of total packed product. The survey results also mention that NAMBoard export produce to the JFPM, with a few exceptions. We then assume that the balance of the produce is exported to the JFPM.

So

$$Q_L = 0.25Q_P \quad 4.5$$

$$Q_E = 0.75Q_P \quad 4.6$$

Where:

Q_p = NAMBoard-packed quantity

Then,

$$PV = 0.75(Q_P P_E) + 0.25(Q_P P_L) \quad 4.7$$

And

$$TC = \sum X_i + \sum Y_i + \sum 0.35PV \quad 4.8$$

Then

$$P = [0.75(Q_P P_E) + 0.25(Q_P P_L)] - (\sum X_i + \sum Y_i + \sum 0.35PV) \quad 4.9$$

4.5.2 Individual farmer value chain

The individual farmer value chain is one where the farmer is isolated from other producers in terms of proximity, co-operation or relationships. There are no sales cooperatives or even a producers' association in the NAMBoard value chain and the industry at large. No form of finance exists between producers in this category (see Figure 4.4). Technical services are

provided at the farmer level, especially now that workshops have ceased taking place. Figure 4.4 then gives a typical value chain for individual farmers and shows the specific attributes.

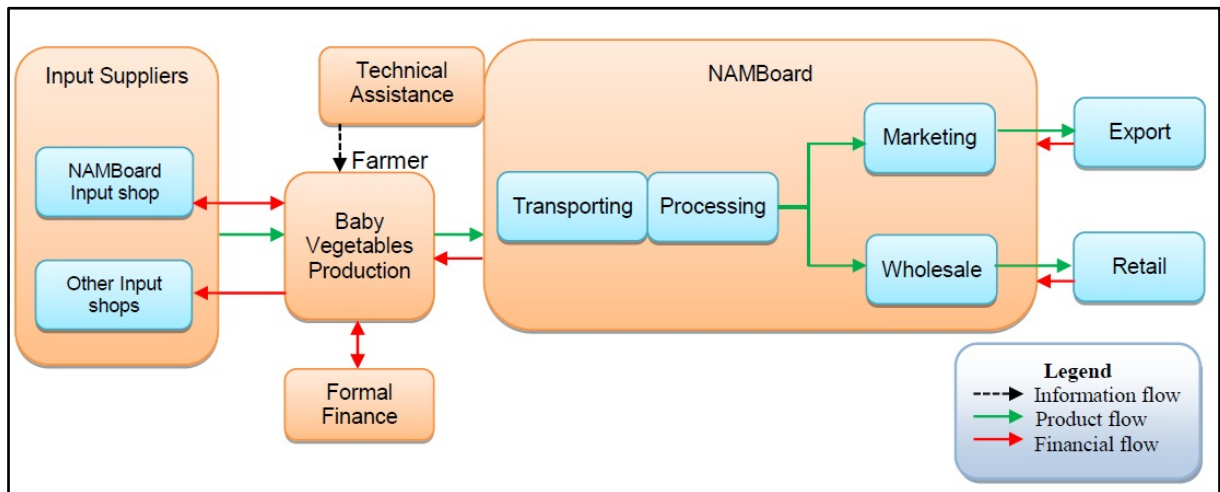


Figure 4.4: Typical individual farmer baby vegetables value chain

4.5.3 Individual farmer cash flow

Case 1 in Table 4.4 represents the physical product, cost and product market value of two crops (baby marrow and baby green beans) of an individual farmer selling produce only through NAMBoard. In financing these costs, it is known that NAMBoard deducts the cost of post-harvest activities from product proceeds.

Table 4.4: Cash flow of two crops in one production cycle for producer 1 (Case 1)

Physical product								
Product	Received quantity (kg)	Grade 1 (Qty)		Grade 2		Wastage (Kg)	Reject (kg)	Rejection rate (%)
		No. of punnets	Weight (kg)	No. of punnets	Weight (kg)			
Baby marrow	775.2	1322	669.1	0	0	16.1	90	11.85
Baby green beans	466.5	837	254	116	43.4	2.6	156.3	34.45
Product value								
	No. of punnets	Local quantity	Local price	Value (E)	JFPM quantity	JFPM Price	Value (E)	Total market value (E)
Baby marrow	1322	330	6.50	2145.00	992	4.30	4265.60	6410.60
Baby green beans	837	209	6.50	1358.50	628	4.50	2826.00	4184.50
Cost								
Baby marrows	Inputs		Cost (E)	Production activities		Cost (E)	Post-harvest activities	
	Seeds		1300	Ploughing		250	Transportation	2243.71
Chemicals		250	Labour	Planting	300	Processing		
Fertiliser	Manure	0		Weeding		Marketing		
	NPK	210		Irrigation				
				Harvesting				
			Irrigation power		100			
Total			1760			650		2243.71
Baby green beans	Inputs		Cost (E)	Production activities		Cost (E)	Post-harvest activities	
	Seeds		1850	Ploughing		250	Transportation	1464.58
Chemicals		250	Labour	Planting	250	Processing		
Fertiliser	Manure	0		Weeding		Marketing		
	NPK	210		Irrigation				
				Harvesting				
			Irrigation power		100			
Total			2310			600		1464.58

That is, there is direct VCF between NAMBoard and producers, and farmers don't need financing as a result. When it comes to financing inputs, the farmer had an option of purchasing inputs particularly seeds on credit from the NAMBoard input shop. However, the producer in this case had loan financing from Inhlanyelo Fund of E6, 000.00 and E8, 500.00 from Standard Bank. The farmer makes loan repayment installments to Inhlanyelo Fund, while Standard Bank debits loan repayment installments from the farmer's savings account with the Bank. In short, loan financing financed inputs and production activities.

4.5.4 Farmer-group value chain

Members of the farmer groups produce own individual produce and other actors deal with them at the individual level. This linkage provides group-members with several benefits (see Figure 4.5) in addition to those of individual farmers. First, farmers share water pumping electricity costs. Second, they are able to minimise transaction costs of buying inputs in terms of transport as one of them can buy inputs for everyone or those who need them. Third, farmers recognised that being in a group that produces the same products induces competition among themselves inasmuch as it provides a platform for sharing ideas. Cooperating in most issues affecting their business and information sharing put these farmers a step ahead of their individual farmer colleagues. This is depicted by information flows between farmers in Figure 4.5. Fourth, group members are sources of small informal finance, especially for running some business errands. Hansel (2007:109) submits that financial relationships do exist between value chain actors and producers in this case (see financial flows between farmers in Figure 4.5). Fifth, the bulking of produce merits pickups by NAMBoard and justifies transportation costs incurred by fetching tangible produce. However, disagreements among members have been identified as a threat as it slows progress on operations and can frustrate production activities. From Figure 4.5, it is noted that NAMBoard extension officers provide technical assistance services to farmers groups at the group level and at the individual levels. In a nutshell, this social capital endowment of farmer groups acts as a conduit for value addition through scaling up information sharing and technical assistance, and at the same time lowers transaction costs. This arrangement also induces members to live up to their financial obligations, thus becoming attractive to financing, formal finance in particular.

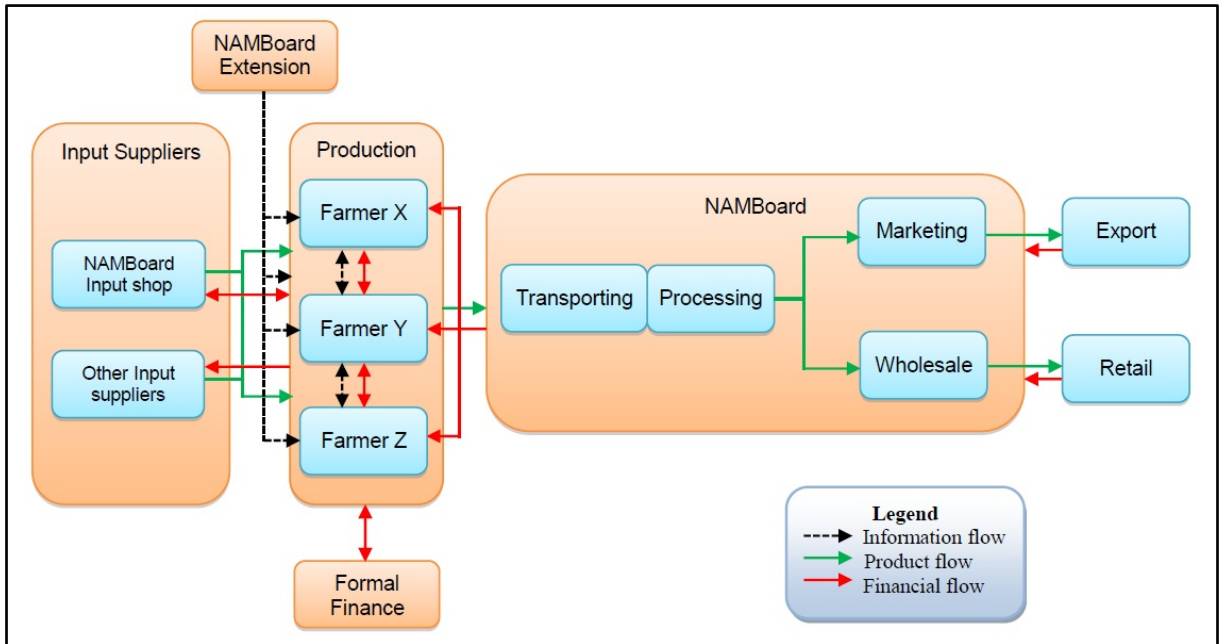


Figure 4.5: Typical farmer-group baby vegetables value chain

4.5.5 Member of farmer-group cash flow

Case 2 is a farmer who is a member of a farmer-group. This producer had a loan of E10,000.00 with Inhlanyelo Fund and was struggling making repayments. Input seeds were taken on credit from the NAMBoard input shop. Other inputs and production activities were financed from the vegetable business proceeds, while group members also help with financing other activities.

Table 4.5: Cash flow of two crops in one production cycle for producer 2 (Case 2)

Product	Received quantity (kg)	Grade 1 (Qty)		Grade 2		Wastage (Kg)	Reject (kg)	Rejection rate	
		No. of punnets	Weight (kg)	No. of punnets	Weight (kg)				
Baby green beans	365	912	275.9	40	14.1	0	67.5	18.88	
baby corn	124	137	27.7	0	0	90.4	5.9	16.66	
Product value									
	No. of punnets	Local quantity	Local price	Local market Value (E)	JFPM quantity	JFPM Price	JFPM Value (E)	Total market value (E)	
Baby corn	137	34	6.50	221	103	3.90	401.70	622.30	
Baby green beans	912	228	6.50	1482.00	684	4.50	3078.00	4560.00	
Cost									
Baby corn	Inputs		Cost (E)	Production activities		Cost (E)	Post-harvest Activities		Cost (E)
	Seeds		175	Ploughing		250	Transportation		217.80
Chemicals		200	Labour	Planting	350	Processing			
Fertiliser	LAN	135		Weeding		Marketing			
	NPK	250		Irrigation					
				Harvesting					
			Irrigation power		150				
Total			760			750		217.80	
Baby green beans	Inputs		Cost (E)	Production activities		Cost (E)	Post-harvest Activities		Cost (E)
	Seeds		1850	Ploughing		250	Transportation		1596.00
Chemicals		200	Labour	Planting	400	Processing			
Fertiliser	LAN	135		Weeding		Marketing			
	NPK	250		Irrigation					
				Harvesting					
			Irrigation power		150				
Total			2435			800		1596.00	

4.5.6 Summary of cases

The summary of the cases is given in Table 4.7, which shows the profitability of the enterprises and thus the financial attractiveness of the producers. It also shows the number of consignments and the rejection rates that have an impact on profits.

$$\text{Rejection rate} = \frac{\text{Quantity of rejected produce}}{\text{Quantity of processed produce}} \times 100\% \quad 4.10$$

Table 4.6: Summary of cases

Case No.	Loan (E)	Crop	No of consignments	Rejection rate (%)	Product Value (E)	Total Costs (E)	Profit (E)
1	14,500.00	Baby marrow	22	11.85	6410.60	4653.71	1756.89
		Baby green beans	16	34.45	4184.50	4374.58	-190.08
2	10,000.00	Baby corn	6	16.66	622.30	1727.00	-1104.70
		Baby green beans	14	18.88	4560.00	4831.00	-271.00

The results in Table 4.7 show that case 1 made a significant profit on baby marrows, but made a loss on baby green beans. The product rejection rate is high at 34.45% for baby green beans, possibly the main cause of the loss. Overall, this producer made a profit. This finding is consistent with the producer's claim that she is able to make the loan repayment installments. Case 2, on the other hand, made a loss on both baby corn and baby green beans. Even though the product rejection rates are both less than 20%, this producer still made a loss. This producer mentioned that he is struggling to repay the loan he currently has, and Table 4.7 supports this.

4.6 ACCESS TO FORMAL FINANCIAL SERVICES

An overarching characteristic of this industry is the implicit nature of the borrowings for baby vegetable production with the conventional vegetables enterprise. Farmers don't only borrow for baby vegetables but for conventional vegetables as well. This section profiles farmers' access to financial services, which is given by Figures 4.6 and 4.7. Again, the distinction between individual farmers and farmer groups is made. There are three categories in these figures: credit status; loan needs; and savings, with subcategories indicated by frequency distributions. From Figure 4.6, we learn that most producers in this category never had loans.

Only 3 farmers currently have loans, financed by Standard Bank, FINCORP and Inhlanyelo Fund, one farmer per financial institution. Those that once had loans and those that currently have loans ideally had short-term loans ranging from 1-2 years. Also, 9 farmers don't want loans and they point to the riskiness of this business and ability to self-finance activities as the main reasons, and the rest would like to have loans. Figure 4.6 also shows that this category of farmers has savings. According to Table 4.2, 60% of individual producers have other sources of income where they have formal jobs while only 23.1% of farmer groups have other sources of income and these are not formal jobs but handicraft. This then provides explanations why farmer groups use more formal financial services than farmer groups. As a result, farmer groups require financial services more than individual producers.

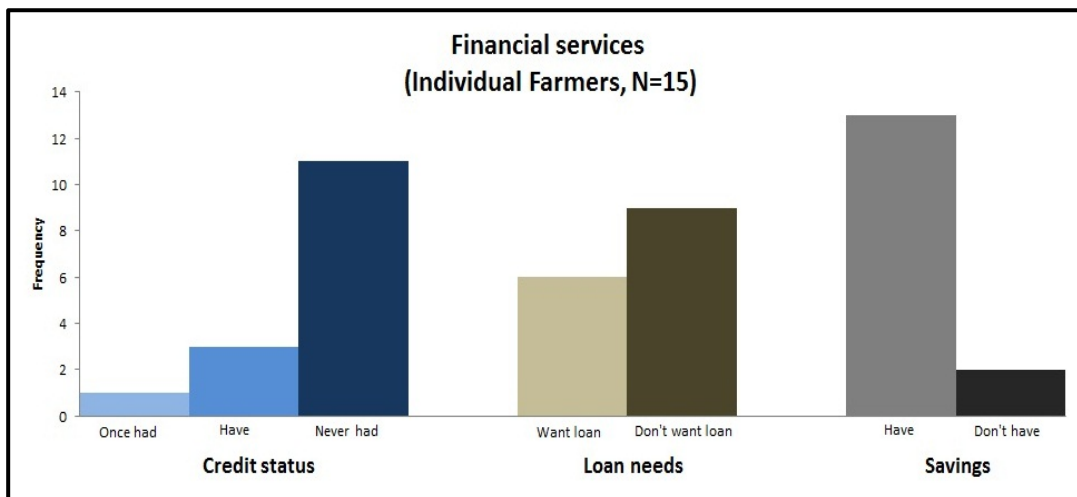


Figure 4.6: Individual farmers' access to financial services

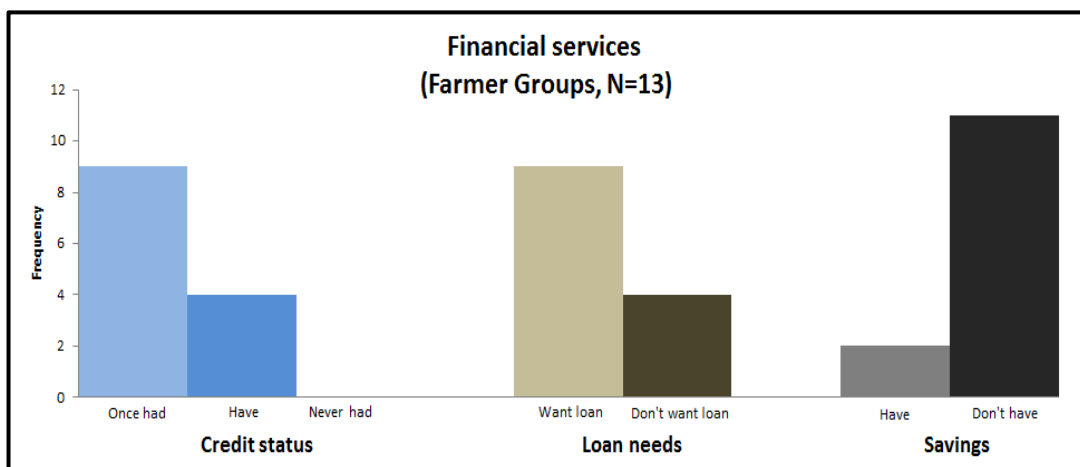


Figure 4.7: Farmer groups' access to financial services

Data collected in the field points to the fact that smallholders seek capital investment loans to upgrade irrigation systems, improve fencing, farm mechanization and some even point to a need for cold storage. Coates *et al.* (2011) do appreciate that agricultural value chains are keen to access long-term investment loans, but argue that this will continue to be a hurdle over the short-medium term without robust profitability and solid capitalisation. Things are completely opposite with farmer groups²⁴ evidenced by the almost mirror image between Figure 4.6 and Figure 4.7. All members of the farmer groups have access to formal financial services, validating the claim in the previous section that group members have incentives to meet their financial obligations and are attractive to financing. Most of them (9) currently want loans, and only 2 have savings. Anecdotal data collected in the field suggest that all producers in this category used to save money when this business was still lucrative to them.

4.7 FARMERS' ASSOCIATIONS

Two associations formed part of this study. One is a current producer (Manzimnyama) and the other former producer (Ekuvinjelweni Sugarcane Farmers' Association). The current producer association (Manzimnyama) specialises in vegetable production, while the former producer (Ekuvinjelweni) produced baby vegetables to diversify their portfolio.

4.7.1 Ekuvinjelweni Sugar cane Farmers' Association (Former producer)

This farmers' association was formed for the production of sugar cane. It then embarked on vegetable production, hence the baby vegetables were an offspring of the main sugar cane business. The sugar cane business financed baby vegetable production operations and capital infrastructure already existed in the sugar cane farms. The association had markets, which were divided into two: NAMBoard as the main outlet; and supermarkets like Shoprite, but these took small quantities. NAMBoard would collect produce and the scheme had to transport to supermarket buyers. The association had NAMBoard and Rural Development Areas (RDA) extension officers providing technical assistance. Also, sales persons from the supermarkets were working with the association on scheduling production to synchronise

²⁴ There are two farmer groups, of which one has all its 9 members (Emancubeni) considering themselves as current producers while the other (Emavulandlela) only had 4 members who were current producers by the time of data collection.

operations with the buyer programme. The chairperson pointed out that the project required that personnel be trained in order to meet quality requirements and reduce rejection rates.

Problems started when the trained personnel left the farm. Quality dropped and the business started tumbling. Record keeping was wretched, and there was a lack of accountability on sent consignments and follow-ups on payments from NAMBoard. Management was meager, and hired more employees on a permanent basis than was required by land area. Another threat was animals that would force their way into the farm and prey on produce. Eventually, management decided to terminate the project in 2010 until challenges were resolved. In short, this association quit the industry because of two principal issues: poor technical expertise and assistance; and payment problems from NAMBoard. Even though financing was not a problem, the project still failed to sustain itself.

4.7.2 Manzimnyama farmers' association (Current producer)

Manzimnyama is a farmers' association producing vegetables (baby and conventional) as their sole business. It has NAMBoard as the main buyer and occasionally supplies Sdemane, where an agreement is made prior to production regarding what to produce and quantity. They also work with Swaziland Water and Agricultural Development Enterprise (SWADE) who provide training, which usually lasts for a week. Manzimnyama has a loan with Swaziland Industrial Development Company (SIDC) amounting to 600, 000.00 Emalangeneni. The difficulty is that SWADE handles most of the transactions, and Manzimnyama management claim they do not even know the loan arrangements. There was no collateral and they have to pay an installment to the sum of 100, 000.00 Emalangeneni annually, and they currently can't afford to repay. Manzimnyama got grant funding from government at the inception of the project but SWADE was managing the fund. The arrangement with SWADE is that the association must obtain price quotations first, whenever a purchase has to be made or services hired, and submit these to SWADE where the best quotation is selected. Management is complaining that this system has high transaction costs financially, in terms of effort and time. They claim to spend a lot of time and money getting quotations. Also, getting the money from the bank for operations is very difficult and most of the time the relevant members of staff are not available.

Currently, the association has employees working in the farm and the owners are getting no net income from the project. Another challenge is the fact that the bank is far away, posing a challenge when employees have to be paid. The overarching challenge mentioned by the association is the lack of meetings between the financier, SWADE, NAMBoard and the association. Such meetings, they feel, would facilitate a common understanding on working terms and resolve complaints. Although this association points to operational hardships imposed by the system, it is a fact that the difficulty lies with insufficient revenues generated from this business. SIDC revealed that the arrangement that NAMBoard remits money to the bank didn't work, as consignments would not make enough revenues to make significant loan repayment installments and cover operational costs for the farmer.

4.8 DISCUSSION

The two cases presented in this chapter show that there are challenges for profitability and thus for the financial attractiveness of the baby vegetable enterprise. If producers were only undertaking baby vegetable production, these financial losses would have been more explicit to them. Although we may not assume that they make losses all the time, it is clear that there should be a mechanism that buffers these losses and the financial shocks. The results show that incomes from this enterprise are plummeting but farmers continue to persist with their production in anticipation of better revenues in the next consignment. What facilitated this tenacity is the connection between baby vegetable and the conventional vegetable enterprises at the farm level.

The fundamental finding of this chapter is that there is a link between the baby and conventional vegetable value chains. The fact is that the baby vegetable business is not independent of the conventional vegetable value chain and thus the financing currently occurring in the production stage is a phenomenon that has not been explored in academic literature. That is, the commercialization of agricultural crops in rural economies has always occurred specifically for individual crops and efforts to upscale financing for these subsectors had to be explicitly for those crops. However, the research findings presented in this chapter suggest that that can't be said for the Swaziland baby vegetables industry.

Farmers treat the baby and conventional vegetable business more or less as one business. The fundamental feature of this is the inter-financing occurring between these businesses from

product sales revenues. The question now is whether this kind of financing can be called self-finance VCF. First, we must recall that borrowings from formal financial institutions are done based on the overall vegetable business. Second, product sales revenues for both product lines come from NAMBoard and are sometimes made in a single payment through a cheque. On the other hand, NAMBoard buys conventional vegetables from farmers as a wholesaler and pays farmers within two weeks. The conventional vegetable business has a secured market. For baby vegetables, NAMBoard markets product on behalf of the farmer and if successfully marketed, the payment lead times are long and sometimes more than two months. There is high a risk that produce won't sell which results in very high variability in received revenues for farmers. Sometimes farmers get good revenues and sometimes they get far lower than expected. That is, the baby vegetable business has high risks and a high potential for high revenues.

Since the two value chains exhibit different risk profiles, the link between baby and conventional vegetables can be said to be another way of absorbing high risk and that farmers stand to gain from high revenues if their baby vegetables are marketed successfully. Also, it is a way to ensure financing for each value chain in times of cash-crunches. So, this seems to be a very interesting way to finance value chains. Moreover, it seems to be a modality that is more suitable for infant or emerging subsectors that need to be shielded from risk and still lacking appropriate financial products from financial institutions. As a result, the link between the baby and conventional vegetable value chains is a typical case that sheds some light on the potential for 'inter value chain financing'. We are well acquainted with intercropping but the idea of 'inter value chain financing' is a fresh one.

4.9 CONCLUSION

This chapter described and analysed the baby vegetable industry in Swaziland using the VCF approach, paying particular attention to the production stage. It has been established that baby vegetable producers are also conventional vegetable producers, and the finances of these two businesses interlock. There are three types of producers (individual, farmer groups, and farmers associations) most of which farm on Swazi Nation Land. Financial relationships exist between farmer groups' members. That is, group members are sources of informal finance for other members to carry out production activities. When comparing the overall financial profile of farmer groups and individual producers, it was discovered that farmer groups use

credit more than individual producers but they do not save money. Individual producers, on the other hand, generally save money but only a few of them have had access to formal finance. Most of them don't want credit. Actually, the income contribution of baby vegetables is predominantly less than 25% and trends indicate that it has been declining over the past 5 years, with few exceptions. In an effort to ascertain financial attractiveness in the production stage, results of two cases indicate that farmers sometimes make losses on their crops. These losses seem to be more severe for farmer groups who don't have other sources of income to finance production activities. It is concluded in this chapter that the link between the baby vegetable and conventional vegetable enterprises in the farm level ensures that baby vegetable production activities are financed, since farmers treat these enterprises as one business. Therefore, the financing of inputs and post-harvest activities by NAMBoard and the link between conventional and baby vegetable enterprises provides the key financing mechanism for producers. Farmers associations appear to face difficulties in this business, with one having quit the industry and the remaining one is struggling. The detailed institutional analysis provided in the next chapter will provide explanations on how the existing mechanisms function.

CHAPTER 5

A VCF INSTITUTIONAL ANALYSIS OF THE BABY VEGETABLE INDUSTRY IN SWAZILAND

5.1 INTRODUCTION

The significance of the rural economy for overall economic growth, poverty reduction, and employment in most developing and transition countries has always been a great concern to governments, NGOs and the donor community, and has inspired efforts to expand rural and agricultural finance. The policies and instruments used to enhance rural finance have considerably evolved over the years, reflecting significant changes in the underlying paradigms (IFC, 2011:19). Nagarajan and Meyer (2005) echo that developing nations have used several paradigms to address the difficult and dire challenge of providing financial services in rural areas. This paradigm shift in thinking about rural development and thus rural finance over the past years, also fueled by global market changes, has spurred practitioners to search for innovative ways and guiding principles in their quest to facilitate the inclusion of smallholder farmers in global markets. These innovative ways, though some based on orthodox principles, are founded on the New Institutional Economics (NIE) school of thought that have seen many similar industries in other African countries achieve financial deepening.

This chapter shall map and unpack the institutional arrangements resident in the NAMBoard value chain, and in the process denote and explain the functioning of the three major VCF flows²⁵. In addition to that, it shall cover the behavioral aspect of this chain. Another value chain (Sdemane) that was identified in the field shall also be mapped and taken through the same process.

²⁵ Information flows, financial flows and product flows

5.2 INCEPTION AND EARLY STAGES OF THE BABY VEGETABLE PROJECT

A special interview was conducted with one of the pioneers of the baby vegetables project, Mr. Mabandla Dlamini²⁶. He shed some light on the inception of this project and how it progressed in its early stages. The period covered is 1996-2004, project start-up to when he himself quit the industry.

The core reasons for the establishment of the baby vegetable project in 1996 were diversification of the agriculture sector and poverty alleviation through increased incomes. The project started at Ngwempisi²⁷ area, by a group of 4 farmers, who began to produce baby vegetable crops for export. The group²⁸ then approached NAMBoard mainly because of the pack house that NAMBoard owned. NAMBoard also established the extension and marketing departments, as these were seen to be necessary for a smooth operation. The objective was to create a model that would engage farmers into this business and grow this industry to be as big as the sugar industry. NAMBoard became a key player in this industry by playing the supervisory and value chain governance roles. NAMBoard is funded by government and is responsible for implementing policy and ensuring that farmers successfully produce and get markets for their vegetable produce.

The group grew until it reached a membership of 15, which was then used by NAMBoard as a standard number of contracted producers. Baby vegetable crops were categorised according to their suitability to the four agro-climatic zones in the country and their ease of production. Easy to produce crops were allocated to newer farmers. The group then hired their own marketing manager and had plans to build pack houses in the four regions of the country. This business had a turnover in excess of 30,000.00 Emalangeni per hectare per season, and farmers were at first able to sustain their businesses. Prime export markets were England, France, Germany, while others included Madagascar, and African Caribbean and Pacific (ACP) markets. The premium value of produce due to high consumer preference for “hands handled” than “machinery handled” produce necessitated an increase in quantity. Therefore,

²⁶ The former Prime Minister of the Kingdom of Swaziland, the chairperson of the farmers group of the time, a former chairman of the board of directors (NAMBoard), and also a former member of the same board

²⁷ Ngwempisi is an area near the Ngwenya border post

²⁸ It is the team of farmers that came together to pioneer the baby vegetables industry and broke into the export market (South Africa and Europe)

more emphasis was placed on technical assistance, whereby some farmers would be taken to a training course so that they can also assist other farmers. After the involvement of NAMBoard, farmers requested that all NAMBoard extension officers be trained. Workshops were held at least twice a year to decide yields, and educate on diseases, costs and other relevant aspects.

The main financier of smallholder farmers was FINCORP. Financial services were used through the golden triangle (indirect VCF): the farmer, the financial institution (FINCORP) and the processor (NAMBoard). Loan repayments were deducted from product proceeds by NAMBoard and remitted to FINCORP. NAMBoard would give certain inputs on credit (direct VCF) to farmers to ensure quality and timeliness, but other inputs would still have to be procured from other input suppliers. Long delaying loan-processing periods were spotted as a key challenge as farmers would sometimes miss the planting time schedule.

However, farmers, with time, began to face challenges: the management of crops by NAMBoard declined, the production programme became distorted, product rejection rates increased. Farmers then received lower revenues, experienced long payment lead-times and sometimes were not paid at all. Farmers couldn't repay loans with FINCORP as expected, and FINCORP started to withdraw, as it was no longer attractive to finance farmers. Interest rates skyrocketed from 15% to 33%, as there was now more risk involved. NAMBoard increased the handling fee to 35% of product value that it charged farmers for services rendered. Income made from this business shrank. As a result, farmers began to feel neglected. This discouraged many farmers, crippled good relationships with NAMBoard, and trust was shattered. The group asked Tibiyo TakaNgwane²⁹ to be the lead-firm (main producer) and the group intended to become outgrowers, which unfortunately never happened.

5.3 THE BUSINESS CONTEXT AND ENABLING ENVIRONMENT FOR THE BABY VEGETABLE INDUSTRY

A conducive business context or robust enabling environment is a prerequisite for investments in new high-risk value chains like for the baby vegetable. This is so because business models in value chains develop according to the business conditions, and the characteristics of the

²⁹ Tibiyo TakaNgwane is a royal company that is also involved in agriculture, also owning several farms and part of the Royal Swaziland Sugar Corporation (RSSC)

value chain actors involved, and are ultimately dependent on the enabling environments. For clear analysis, this section looks at the business and enabling environment in three levels. These are the Macro level, Meso level and the Micro level.

5.3.1 Macro level

After Swaziland gained independence in 1968, the government of the Kingdom of Swaziland through the enabling Act No.13 of 1985 saw the establishment of the state-owned National Agricultural Marketing Board (NAMBoard). The NAMBoard mandate is to link smallholder producers to markets. NAMBoard presently facilitates production; provides transportation of produce; undertakes processing, storage, marketing and distribution of both conventional and baby vegetables. Markets for high-value agricultural products like baby vegetables have become quality based and adherence to quality grades and safety standards is a pre-requisite for participation. However, the country lacks critical infrastructure like sanitary and phytosanitary laboratories. Moreover, Swaziland lacks any form of public standards set by government or any kind of policy directive aimed at radically supporting this industry and ensuring that smallholders successfully participate in these discerning markets. For instance, the government of Swaziland has a memorandum of understanding with financial institutions and the sugar industry with regard to providing finance to smallholder farmers that seek to engage in sugar cane production, but there is no such memorandum for the baby vegetables industry. Swaziland has a well-established, stable and varied financial system. The central bank of Swaziland is a regulator and supervisor of all licensed financial institutions to achieve a sound and efficient financial system.

5.3.2 Meso level

The financial institutions can be categorised into commercial banks, Development Finance Institutions (DFIs) and Microfinance Institutions (MFIs). DFIs and MFIs are actively involved in financing agriculture in the country and commercial banks are starting to get involved as well. Since agribusiness is not the main line of business for commercial banks, they face high transaction costs when financing baby vegetable farmers. Also, the loan processing procedures are too cumbersome and long for smallholder producers who are concerned about meeting a planting schedule. Even though financial institutions are not so reliant on collateral lending to sugar cane producers, the need for some form of collateral

when borrowing in the baby vegetable industry has been clearly articulated by commercial and DFI lenders. This allows financial institutions to better make use of the legal system, which is deemed to be functional at least for the financial market, to make sure that borrowers live up to their financial obligations and loaned funds can be repaid. However, the contract culture is not well cultivated among producers and contract enforcement is a challenge. This makes relying on formal contracts especially for produce between value chain actors not possible. The only available mechanism to ensure compliance is building trust with producers and providing proper incentives for them to supply produce according to their contractual obligation.

Even though commercial banks like Standard Bank have established agribusiness departments, the loan products are not specific to agribusiness and the staff lacks the technical understanding of the baby vegetable industry. The DFIs are the main financiers of agribusiness smallholders particularly in the sugar industry. Baby vegetables, however, do not have the same reputation as the sugar industry. DFIs like FINCORP are no longer willing to finance baby vegetable farmers mainly because the risk element is too high for them and they consider financing unattractive. They can only loan funds to producers that have proven to thrive; otherwise lendings are based on collateral. The fact that farmers give their produce to NAMBoard is no longer enough for lenders as they want to have an idea of the cash flow. This is also because smallholders usually do not possess all the documents and information required for loan appraisal and processing. The Inhlanyelo Fund microfinance institution is actively involved in financing smallholder producers and they require no collateral.

The coffers of these financial institutions are limited. Inhlanyelo Fund relies mostly on the Nati Kirsh foundation funding, which indirectly determines how much will be disbursed in loans in a year. DFIs are also not an exception as the rate at which they lend to the private sector depends on investor available funds, and when funds are scarce, lending to risky industries like the baby vegetable industry is the first to sink. All loans made by the financial institutions are short to medium term (1-3 years long). The loan products offered are generic since it is too costly to craft loan products specifically for this small industry. Also, giving loans to geographically dispersed smallholders who trade on a very small scale proves very costly especially for loan monitoring.

Identifying and understanding the social and economic conditions that constrain access to finance is key. According to Miller (2011:4), value chain financing and its application relies on the nature and context of a value chain and its participants. Here as well, there is the issue of quality grades and safety standards set out by private organisations. Such standards include Global Good Agricultural Practices (GLOBALGAP), Euro-Retailer Produce Working Group (EUREPGAP) accreditation and Hazard Analysis Critical Control Point (HACCP) certification. Compliance with these private standards is another way to guarantee access of produce to markets. As a result, finance and investment from banks and other financial institutions to producers or agribusinesses face a huge risk if attention is not given to market standards. Advance payment can be withheld and/or payment delayed, reduced or even refused (Miller & Jones, 2010:19-20).

The enabling environment should be healthy in order to facilitate donor investments at the production and other stages of the value chain. Donors can also be a source of technical assistance or research effort. Government or government agencies and the private sector can also be positioned to provide these services. Technical assistance to financial institutions, organisations, producers and other value chain actors can assist participants manage their risk well and select tools and instruments that appropriately match their own risk. It can also help government craft more relevant and effective policies.

5.3.3 Micro level

This level considers the participants in different stages of the value chain. It looks at their organization, positioning in both horizontal and vertical dimensions, and focuses on the nature and strength of their linkages. According to Galarza and Jones (2009), value chains should be well-established, profitable, and/ or growing, and include significant quantities of organized producers. The level to which a value chain complies with this condition determines its lucrativeness for value chain finance. Miller and Jones (2010:5) posit that small agribusiness firms or infant value chains have the most to gain or lose in today's rapidly changing agricultural environment. KIT and IIRR (2010:237) argue that producers' organizations are very important as they are in a better position to negotiate, get information, achieve greater efficiency through higher volumes and lower transaction costs, and obtain credit. Also, Galarza and Jones (2009) state that end buyers should want to actively participate in the value

chain, and changes in global markets show that buyers want to be involved in the production stage by dictating how production should be done.

5.4 VCF ANALYSIS OF THE NAMBOARD VALUE CHAIN

This section traces the value chain from the input stage to where this industry’s jurisdiction ends, summed by a value chain map. Special emphasis is placed on the production node (farmer) and the linkages that connect the value chain up to end-markets. This section unpacks the institutional arrangements, the VCF modalities resident in these arrangements, and the behavior exhibited by actors in these business interactions. As a basis for our analysis, the Swaziland baby vegetable value chain was mapped and is denoted by Figure 5.1. It is in 3 distinct parts: the technical service part, the product exchange part, and the financial services and support part. These parts are knitted together by one or more of the three VCF flows; information flows, financial flows, and physical product flows. This section employs three theoretical constructs, to explain these three VCF flows namely: transaction cost economics, imperfect information, and agency theory. It uses transaction cost economics to explain financial flows, imperfect information to explain information flows, and agency theory to explain physical product flows.

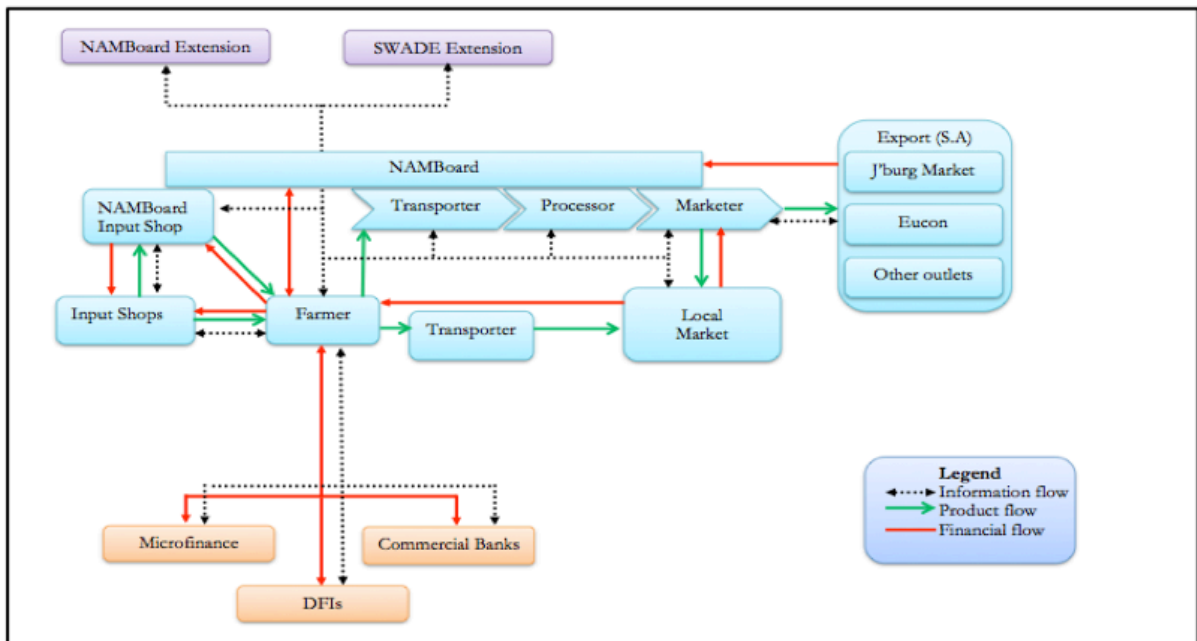


Figure 5.1: The NAMBoard value chain map

5.4.1 Inputs stage

There are adequate suppliers of inputs in the country (i.e. FarmChem and Vickery) including the NAMBoard input shop. Baby vegetable seeds are only sold by the NAMBoard input shop, which imports them from South Africa through the Swaziland Agricultural Suppliers (SAS) input shop. SAS is an input shop that also acts as an agent for Hygro-Tech³⁰ Durban in South Africa. NAMBoard buys seeds from SAS at the import price and adds a mark-up of 35% to all imported products. NAMBoard sources other inputs from local input shops at a discounted rate (15%) that is used as a mark-up so that inputs are sold at the same retail price. There's a presiding arrangement that farmers can request NAMBoard to plant seeds on their behalf and collect the seedlings, for which a service charge of E200.00 is paid.

5.4.2 Production stage

The NAMBoard value chain is mainly composed of smallholder producers which are categorised into individual producers, producers in farmer groups and farmers' associations. Individual producers are self-selected entrepreneurs, but farmer groups and farmers associations were mobilised by government, who also financed capital equipment. The NAMBoard programme, the farmer's choice and the different seasons and agro-climatic regions determine what crops farmers will produce in a given production season. Production activities of baby vegetables overlap with those of conventional vegetables.

5.4.3 Input-production stages linkage

NAMBoard pays cash for input stock or make use of SAS's credit-account facility with NAMBoard whereby inputs are paid for within 30 days. Farmers pay cash for inputs at the input shops, SAS is preferred by most farmers due to lower input prices.

NAMBoard farmers may finance inputs in one or more of three ways when purchasing from the NAMBoard input shop. The first option is self-finance which they use to pay cash for inputs. The second option is direct VCF where they obtain inputs especially seeds on credit from NAMBoard and repay with deductions from product proceeds. The third option is

³⁰ Hygro-Tech is a company located in Durban South Africa and exports baby vegetable seeds to Swaziland. It works hand in hand with Swaziland Agricultural Services (SAS) shop as their agent to sell seeds in the country

formal finance by a financial institution, which they also use to purchase inputs cash. Because of payment challenges for delivered produce and the immediate need to plant the next crop when harvesting is complete, farmers prefer taking seeds on credit. Also, the financial liquidity of the farmer determines if inputs will be acquired on credit or cash, as this is an option always available to the farmer. However, NAMBoard is now reluctant to provide input seeds on credit because some farmers renege on their contractual obligations and just disappear, causing problems for seed-credit recovery. All producers have a contractual arrangement with NAMBoard to produce and give to NAMBoard.

5.4.4 The farmer-technical assistance linkage

NAMBoard is a state-funded government agency that is the main technical service provider to baby vegetable producers. Empirical evidence is inconclusive whether this service is provided free or the cost is included in the 35% handling fee that farmers pay NAMBoard for services. NAMBoard has a team of extension officers responsible for assisting and equipping farmers with the necessary capacity to produce good quality and quantity of produce. SWADE extension officers deal mainly with sugar cane, but are now also selling the idea of baby vegetables to sugar cane farmers associations in line with the sugar diversification strategy. Farmers make arrangements with extension officers whenever they need technical assistance. Phone calls and direct visits to NAMBoard offices are the mainly used communication methods. Extension officers are also responsible for the recruitment of new baby vegetable farmers and enforcing the NAMBoard production programme.

Ideally, the NAMBoard production programme must guide farmers, but farmers say they produce what they themselves think will give them high returns at the time. Also, NAMBoard has obtained GLOBALGAP accreditation for the demonstration plot and HACCP certification for the pack house. Farmers are expected to comply with GLOBALGAP standards under the NAMBoard umbrella body, but it has been noticed that taking this initiative to farmers is a challenge (NAMBoard, 2009).

5.4.5 The farmer-formal finance linkage

Finance, in the form of indirect VCF, is absent in this value chain. What is common is formal finance, which is based on the business and not the value chain. Inhlanyelo Fund, as the

prominent financier of vegetable farmers, has no arrangement with NAMBoard to remit loan repayments on behalf of its borrowers. Also, commercial banks such as Standard Bank have since shown interest in financing smallholder farmers, but lending is based primarily on farmers' savings history with the bank and not the crop. The savings some smallholders have makes them attractive potential clients for conventional financiers including Standard Bank who are interested in credit history.

5.4.6 NAMBoard post-harvest handling stages

Farmers do not own cold rooms, but have NAMBoard to perform post-harvest activities soon after harvest. Post-harvest handling is the central role played by NAMBoard in the baby vegetable business, illustrated by Figure 5.1. NAMBoard performs three distinct post-harvest functions namely: transportation; processing (including weighing, cold storage, cleaning, grading, packing); and marketing, for which a handling fee of 35% to the final product value is charged. There is direct VCF between the farmer and NAMBoard for post-harvest handling services, since NAMBoard performs these services and only receive payments only after farmers' produce is sold. Figure 5.1 gives a clear picture of the product flows. NAMBoard (the agent) undertakes these functions on behalf of the farmer (the principal) who owns the product until it is sold in either local or external markets.

5.4.7 The farmer-local market linkage

A few smallholders also have contracts with local supermarkets, in addition to NAMBoard, to which they sell directly. Here, these few farmers do their own post-harvest handling. They pack for themselves and transport the product to the destination supermarkets. However, the existing challenge is that these supermarkets buy small amounts of the produce and farmers lack cold-room facilities. Hence, even with these, NAMBoard still remains the main outlet. The exception is one farmer that produces on a 5ha land, which has bigger contracts with supermarkets and is finding it hard to satisfy the market. The main challenges faced are caused by catastrophic weather that destroy the crops. An agreement is reached with a local buyer and the farmer sends produce at harvest time and is paid according to agreements, mostly within two weeks.

5.4.8 The NAMBoard-export linkage

Most of the baby vegetable output is exported to South Africa. Markets supplied in South Africa (SA) currently are the Johannesburg Fresh Produce Market³¹ (JFPM) and Eucon³². Once the produce reaches South Africa (i.e. JFPM), it gets into the hands of agents who then take responsibility of marketing the produce on behalf of NAMBoard, a service for which they charge a certain percentage. NAMBoard argue that food safety and quality standards are very high in South Africa and this together with stiff competition posed by similar industries in Kenya and Mozambique make it difficult to compete. Produce can be bought in the market or not (transaction failure), and NAMBoard forfeits recovering handling costs for unsold consignments (the only risk sharing method), but the farmer must still pay for inputs taken on credit. Issues of payment lead-times are not specified and the arrangement is that a farmer gets paid once the produce has been sold. Local and South African markets pay NAMBoard for produce. It is NAMBoard that splits the money according to consignments and distributes to the respective farmers through written cheques (after deducting input costs taken on credit). Quality grades and safety standards, the fluctuations in throughput, and small produce quantities pose a huge threat that smallholder produce won't have access to markets that demand scale.

5.4.9 The NAMBoard-local market linkage

Supermarkets, hotels and restaurants (local market) have contracts with a few farmers that supply direct to them, but the increasing practice is that these buy through NAMBoard. This local market, however, takes a small proportion of the total output. NAMBoard is also a wholesaler of processed baby vegetables to the local market. Local supermarkets (Spar, Shoprite and Pick n' Pay) make purchases from NAMBoard at an agreed price. Payment lead-times are shorter, about 2 weeks. Since transactions are of a spot market nature, there is no form of VCF being practiced.

³¹ Purchases here are handled on a spot market basis, where agents are the ones that purchase product, depending on supply and demand. Hence, product maybe bought if there's demand and not if there is enough supply.

³² Eucon is a company that occasionally makes orders for produce with NAMBoard in advance.

5.5 VCF ANALYSIS OF THE SDEMANE VALUE CHAIN

Prior knowledge of this value chain at the inception of this study did not exist, and its current inclusion is hinged on the reality that is separate from the NAMBoard. It is a lead-firm governed value chain, whereby Sdemane is the principal player. This section, therefore, maps the Sdemane value chain, analyses its institutional components, and establishes the existing VCF practices. An attempt is made to cover all constituent issues of this value chain that are relevant to the study objectives using the analytical framework.

Sdemane is a private enterprise whose core business is growing baby vegetables, packing them and exporting them to external markets, and considers the local market too thin to supply. Sdemane farms are GLOBALGAP certified and are working on HACCP certification for the pack house. The value chain was mapped (see Figure 5.2), and it is in 3 distinct parts just like the NAMBoard value chain map. These are: the technical service part; the product exchange part; and the financial services and support part. These parts are knitted together with one or more of the three VCF flows: information flows, financial flows, and physical product flows. These are depicted in Figure 5.2.

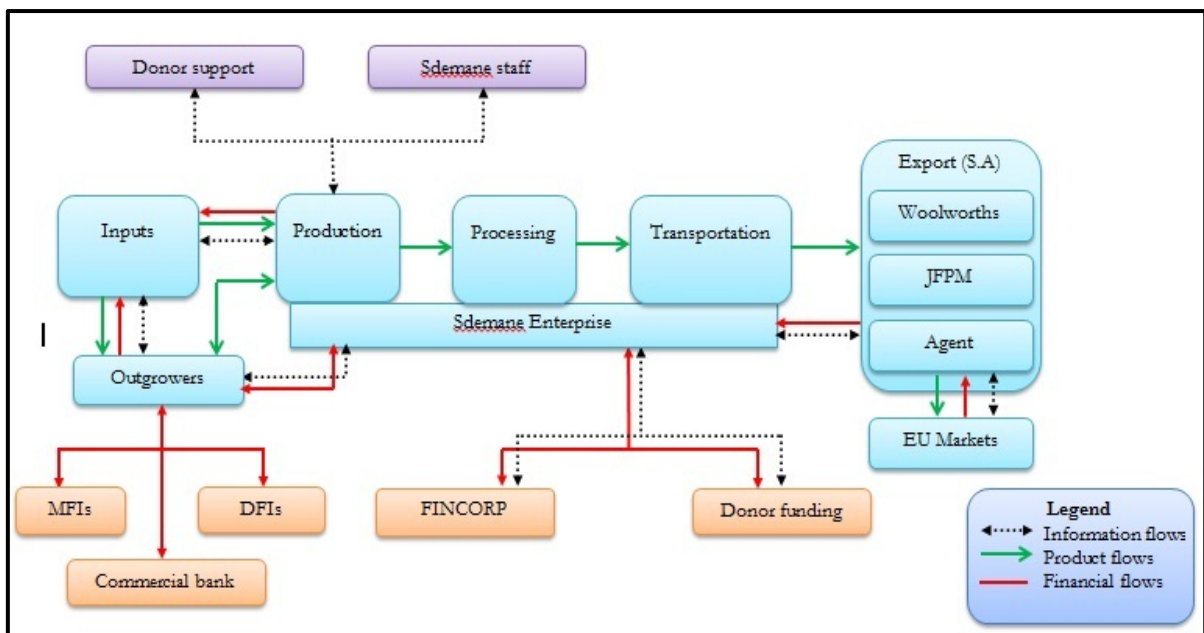


Figure 5.2: Sdemane Value Chain map

5.5.1 Input stage

Sdemane farms³³ and the outgrowers³⁴ use local input shops as a source of inputs, except for seeds that are procured through an arrangement with SAS. Unlike NAMBoard, Sdemane does not run an input shop, but gives outgrowers seeds on credit with no mark-up added to the SAS purchase price. Sdemane incurs seed transportation costs and ensures that farmers are able to plant at the expected time. Credit for seeds is deducted from product proceeds. Sdemane sprays for new farmers and does not charge for spraying (labour and chemicals) to ensure GLOBALGAP compliance, as a mentoring exercise. Outgrowers are told to procure Sdemane-recommended chemicals and spray whenever necessary and keep the necessary records. Fertiliser is the responsibility of the farmer. Sdemane believes farmers should show some commitment and invest in their crop, thus planting and fertilisation offer that opportunity. Sdemane only intervenes if a farmer faces serious challenges with regard to procuring fertiliser. Even though this arrangement is costly, Sdemane appreciates the overall benefits as the farmers are growing the product for the company.

5.5.2 Production stage

The Sdemane farms are the main suppliers of produce for Sdemane enterprises, with outgrowers supplementing throughput. Sdemane outgrowers are contracted producers that supply Sdemane with produce. Sdemane is actively involved in the production of the crop and the arrangement is that Sdemane owns the produce while still in the farm. Involving outgrowers is another way of increasing company throughput and assist in satisfying the increasing market demand. Outgrowers are treated as an extension of Sdemane farm, therefore, they have been able to expand operations hitherto, and this growth has also been facilitated by substantial investments in land acquisitions. These land acquisitions were inspired by the need to diversify operations into the different agro-climatic zones of the country and increasing throughput. By August 30, 2012: Sdemane owned 15 hectares of land in the High-veld; 20 hectares in the Middle-veld; and 14 hectares in the Low-veld, summing

³³ Sdemane Farm is a farm that was previously called Forbes Farm, and was bought by the current owner Themba Dlamini in 2006 who worked in the same farm after the owner (Forbes) decided to leave the country. Themba Dlamini is a motor mechanic by profession, with no agricultural education background but experience of working in the same farm, growing baby vegetables (Nkambule, 2012). The headquarters of Sdemane enterprises are in Hawane in the Hhohho (Highveld) region.

³⁴ Outgrowers are contracted producers supplying a big processing firm like Sdemane, but the contractual agreement with Sdemane in this case is only verbal.

to 49 hectares in a TDL holding. This way, production is done throughout the year to ensure continued supply to the market, and the TDL holding allows for land to be used as collateral as it is private land. This continuous supply gives Sdemane a competitive edge over other competitors in other countries like South Africa.

For a farmer to be an outgrower to Sdemane, they must be in the same corridor that Sdemane operates in. This makes it easier to access the farmer and perform all transportation logistics and they are within easy provision of technical assistance and monitoring. If outside this corridor, a farmer must produce enough produce to warrant pickups or self-delivery. The fundamental understanding is that Sdemane outgrowers produce for Sdemane who owns the produce while still in the field. Farmers are educated on the crop husbandry practices expected of them and the risk involved in terms of non-compliance with GLOBALGAP specifications. It is for that reason that farmers have to record and report every crop husbandry operation they perform on their farms to Sdemane for record keeping, since it is Sdemane that is GLOBALGAP certified and audited, and not outgrowers.

5.5.3 Technical Assistance

According to the Sdemane owner, baby vegetables are a new genre of crops, about which no much research and readily available information exists. The entrepreneur relies on his experience in the field and that which he acquired while working on the same farm as an employee and believes experience has enabled him to make his business thrive. Sdemane officers mentor outgrowers in the field. The model used starts by giving entrant outgrowers crops that are easier to produce like baby corn. They are taken through a process of graduating from one stage to another, step by step until they are able to produce the difficult and sensitive crops. However, this takes time. Sdemane has been working with donor organisations like TechnoServe³⁵ in knowledge sharing and support, while the World Bank has shown some interest. However, TechnoServe has redirected their attention away from baby vegetables and Sdemane remain without readily available external technical assistance.

³⁵ TechnoServe is an international development agency, funded by USAID, also operating in Swaziland.

5.5.4 Post-harvest handling

After the crop is harvested, Sdemane transports outgrower produce to the pack house. After delivery, produce is weighed and all accompanying records done and then introduced into the cold chain ready for packing. Outgrowers are paid per punnet or kilogram immediately with no waiting period, after deduction of seed credit. Sdemane takes first grade and second grade, and other is rejected. The farmer is informed of the rejects and decides what is done with it. This is done because a farmer can decide to take the rejects and go sell it in the street-vending market and get returns. Sdemane have contracts to supply Woolworths in South Africa, and exports directly to some European countries like France. Only first grade produce is sent to these markets, and second grade produce is sent to the JFPM. Sdemane's market access is 30 tons per month and currently achieves a throughput of 17 tons per month. Sdemane's contracts offer flat prices throughout the year, and Sdemane is currently a price taker. Sdemane is very optimistic on influencing the price, after achieving some expansion. When an agent is involved (i.e. for export to EU markets), negotiations are done and price determined based on operational costs incurred. The lead-time taken for Sdemane's payments is 40-45 days on average. That is, outgrowers are paid from cash reserves as a form of advance payment.

5.5.5 Financial services

Sdemane was financed by FINCORP with a loan of over 1,7 million Emalangeni in 2006 for initial capital (Nkambule, 2012). The catastrophic hailstorm that hit the farm in its first year of production created a repayment challenge with FINCORP. The liquidity crisis affected many operations and Sdemane failed to obtain extra financing from commercial financial institutions. Sdemane got financial assistance from Sustainable Development Capital³⁶ (SDC) donors that decided to defray two credit facilities and provided fresh capital for financing the resumption of operations, after identifying this business to hold potential³⁷. According to TechnoServe (2010), SDC purchased the FINCORP debt and worked closely with Sdemane to refinance the rest of the debt. SDC also invested 250,000 US Dollars as a grant in the business to improve the farm's infrastructure, pay salaries, and purchase inputs (seeds, fertilizer and other supplies). One US Dollar was on average equal to 6,7668 Emalangeni in

³⁶ SDC is a United States-based investment company focused on supporting TechnoServe clients

³⁷ <http://www.sdcinvestments.com/sdemane-farming.html>

2006 (BusinessTech, 2013). 250, 000 US Dollars with an exchange rate of 6,7668 Rands per Dollar is 1,691,700 Emalangeni. Sdemane also received 250,000 US Dollars grant (1,691,700 Emalangeni) from the United States Agency for International Development (USAID) through a program facilitated by TechnoServe. To note, each of the above two intervention funds is more than the Sdemane initial capital loan from FINCORP. That gives a highlight of how pervasive the risks are and how immense are their financial consequences. Figure 5.2 shows the sources of Sdemane's financial services.

On another note, Sdemane's arrangement with outgrowers reduces their external finance needs and farmers are able to operate smoothly. Hence, the disposition of Figure 5.2, showing financial flows to outgrowers. These flows only indicate the kinds of financial services available to outgrowers, but no information was gathered from Sdemane outgrowers as whether any of them do have loan finance with a financial institution.

5.5.6 Risks to the financial transaction

Catastrophic weather is the most damning risk that Sdemane has suffered so far. Sdemane encountered a natural disaster right in the first year in business (2006/7), where a hailstorm destroyed the entire crop. This brought insurmountable devastation and Sdemane could not even service the FINCORP loan and was nearly driven out of business. In 2009, another hailstorm hit the crop but thanks to lessons learnt, as Sdemane already had crop insurance. However, the insurance proved to be too expensive to maintain, and Sdemane quit the cover and turned to production area diversification (producing in the different agro-climatic zones in the country) as an insurance instrument. Sdemane diversified operations and is producing in the different agro-climatic regions of the country to guarantee throughput. Even though Sdemane outgrowers do not have insurance coverage, there is risk sharing between Sdemane and outgrowers. If an outgrower suffers a natural disaster, Sdemane assesses the damage. If the crop was entirely destroyed, Sdemane forfeits all costs incurred and owed to them by the farmer (i.e. seed credit). A farmer must repay if a crop failed due to bad crop husbandry practices. The current rule of thumb for Sdemane is that written contracts do not work, but building good relationships and trust with outgrowers is what is key. Sdemane makes sure that new outgrowers have the entire infrastructure necessary for baby vegetable production and these include good irrigation systems, sufficient supply of water, enough land and the

farmer should possess convincing technical know-how on producing vegetables. This is done to minimise the risk that outgrowers fail to produce crops of good quality and quantity.

Currently, Sdemane has a quota to supply 30 tons/month to the market and only achieves 17 tons. A decline in throughput puts Sdemane at risk with buyers and that is why Sdemane has diversified production into the different agro-climatic regions of the country so as to guarantee throughput for the market and avoid the associated market risks. That is also why Sdemane prioritizes that products comply fully with all market requirements especially quality grades and safety standards.

5.5.7 Financing gaps and opportunities

There are a few challenges spotted in this value chain that slow its growth prospects. First, the financial services system is ill suited to the baby vegetable industry. The loan products don't consider the seasonality of production, but charge interest for idle times that can stretch to six months for certain places, causing the interest to be technically higher in a year. Also, the loan officers within the financial institutions do not have the expertise in the baby vegetables industry and some of them are just accountants who have no idea about farming. Lastly, is the issue of the unsuitable insurance products available in the market. This lack of appropriate and affordable insurance products is a big concern since the risk involved in baby vegetable farming is very catastrophic for both the farmer and the financier.

There are a few factors that make Sdemane enterprise thrive and appear to be a success story in the baby vegetable industry in Swaziland. First, taking advantage of the varied agro-climatic conditions in the country affords Sdemane an upper hand over counterparts in the same industry who are only seasonal producers. The ability to produce all-year-round makes Sdemane an attractive supplier. Secondly, the fact that the Sdemane produce is handled by human hands from production to processing gives more value and a competitive advantage than machinery produced products, as consumers are getting increasingly concerned about production processes of the food they consume. Thirdly, the Swaziland minimum wage is only half that of South Africa and even far lower now since the increment by 150% of the minimum wage on agricultural workers early 2013 in South Africa, and this means low production costs for Sdemane as compared to South African producers. Fourth, logistics are cheaper when exporting from Swaziland as compared to other countries like Kenya that also

export to South Africa. Lastly, a wide range of baby vegetable crops can be produced in Swaziland, something that is not possible in other countries. This richness in baby vegetable products makes Sdemane an attractive supplier as buyers will be getting a range of baby vegetable products from the same buyer and thus cutting their search costs.

5.6 CONCLUSION

This chapter covered three distinct parts: the inception and early stages of the baby vegetable project; the business context and enabling environment; and then dissected the dichotomy of the baby vegetable industry through VCF analysis. From the first section, we can conclude it was that VCF was once robust and the three VCF categories³⁸ were present and operational in this industry. Also, the three major VCF flows were functioning well and the value chain was able to deliver the product to end markets. However, VCF started shrinking to the point where indirect VCF ceased. There is direct VCF between the NAMBoard input shop and producers, where farmers are given inputs on credit and repayment deducted from product proceeds but this is also weakening. Also, direct VCF was discovered between SAS and the NAMBoard input shop where baby vegetable seeds would be given on credit to the NAMBoard input shop and paid for within 30 days. There is also direct VCF between NAMBoard and producers for post-harvest handling services, where NAMBoard receives payment for these services after farmers' consignments are sold in the market. Farmers also have access to formal finance, especially from Inhlanyelo Fund microfinance institution. NAMBoard performs three distinct post-harvest services: transportation; processing and marketing in addition to extension services provision, services for which a handling fee of 35% to the product value is charged. The Sdemane value chain has Sdemane enterprises³⁹ as a lead-firm and the main player. In this value chain, the lead firm is able to provide enough incentives for producers to comply with market requirement. The Sdemane model significantly reduces risk for outgrowers and financing is as a result attractive. This study found that outgrowers to this value chain currently do not utilize indirect VCF mainly because self-finance and direct VC financing cover most of the production costs.

³⁸ Self-finance VCF, direct VCF and indirect VCF

³⁹ Sdemane enterprises is a privately owned baby vegetables business in Swaziland, owning several farms and a pack house

CHAPTER 6

SPECIFIC CHALLENGES, FINANCING GAPS AND OPPORTUNITIES FOR FINANCIAL DEEPENING IN THE NAMBOARD VALUE CHAIN

6.1 INTRODUCTION

Smallholders are faced with egregious challenges that impede their ability to reach the production threshold required for them to successfully connect with end markets. Exploring available linkages for financing gaps and identifying opportunities in a value chain is one big step towards financial deepening. However, transforming mediocre farmers into champion producers would be ambitious, but an accurate diagnostic of the situation on the ground would take us closer to formulating appropriate interventions and level the ground for demand driven initiatives. At the core of this is finance, indirect value chain finance and donor finance in particular.

This chapter starts by outlining the challenges listed by farmers in the field, then conducts a detailed analysis of these challenges existing in this value chain as risks to the financial transaction. It then identifies existing financing gaps and the opportunities for increased flow of finance. Lastly, it expedites a way forward by recommending a way that increases entry points for external finance. This model holds the potential to harness donor finance, which has been seen to be very critical in catalyzing smallholder value chains in the developing world.

6.2 PREVIOUS FINDINGS

Several NAMBoard annual reports highlight a number of challenges that impede farmers' productivity and restrain the flow of finance to value chain actors. In 2003, the NAMBoard annual report pointed out that farmers face constraints that include access to credit facilities, availability of arable land, and consistency of input supply. In 2004, NAMBoard reported that farmers encountered constraints ranging from poor farm management, lack of financial resources, limited markets, unsustainable production, and lack of farmer commitment. Also, the volume of baby vegetables exported direct to European markets was reported to be gradually declining due to strict market requirements, standards and specifications (i.e.

EUREPGAP accreditation and HACCP certification). NAMBoard (2009) reported that farmers were quitting the industry due to delayed farmer payments and the unsatisfactory prices. In 2010, NAMBoard quoted high seed costs and less favourable market prices as factors that caused producers to suspend production. A study by Vilakati (2007) on perceived challenges and opportunities in baby vegetable production in Swaziland revealed that famers face major challenges that include delayed payments, low prices offered, poor NAMBoard management, market instability, and lack of support to farmers. Opportunities perceived by farmers included increasing demand for baby vegetables, very good margins from a small piece of land, the Swazi climate giving the produce a competitive advantage in markets, and availability of land.

6.3 PRODUCER-PERCEIVED CHALLENGES

This section highlights the challenges that producers believe weigh heavily on them and the industry at large. An analysis of responses to an open-ended question on challenges provided a thematic summary of the main producers’ perceived challenges. These were tallied and given in Figure 6.1. Again, farmer groups and individual producers were tallied separately, and former producer perspectives were added to these strata.

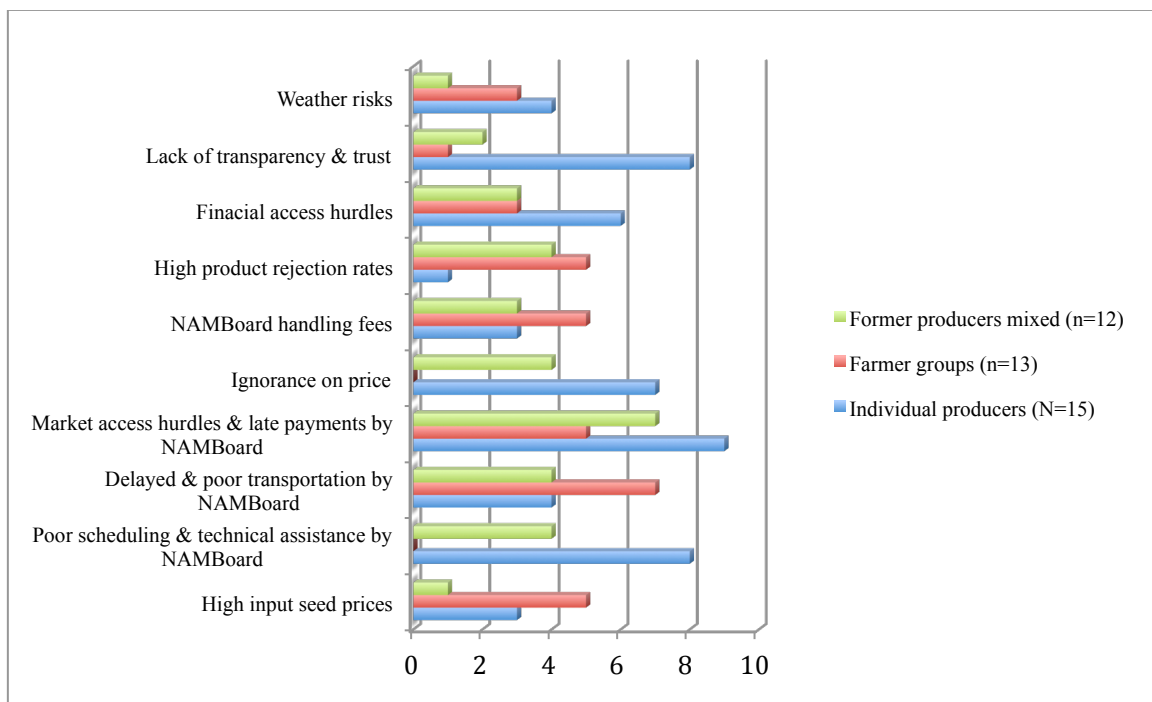


Figure 6.1: Producer-perceived challenges

The first observation from Figure 6.1 is the clear distinction between the felt intensity of these challenges between individual producers and farmer-groups, while former producers' perspectives confirm that these challenges are not new in this value chain. Some challenges are felt more by farmer groups (i.e. delayed and poor transportation by NAMBoard), while others are felt more by individual farmers (i.e. poor scheduling and technical assistance). At the production level, high input seed prices and poor scheduling and technical assistance are the mostly mentioned challenges. A majority of individual producers see poor scheduling & technical assistance as a big challenge, while farmer groups consider the high input seed prices as more of a challenge. It was expected from farmer groups that technical assistance and scheduling would not be a problem for them as NAMBoard extension officers have easy access to farmer groups at the group level and individual level than is the case with individual producers. Members of farmer groups also share information and knowledge with each other. It is surprising, however, that weather risks are not among the mostly mentioned challenges considering their potentially catastrophic effect on production activities.

At the post-harvest and marketing levels, delayed and poor transportation by NAMBoard, market access hurdles and late payments by NAMBoard, ignorance on price, and the NAMBoard handling fees are the most mentioned challenges. Market access hurdles and late payments and ignorance on price are the leading perceived challenges here. Farmers acknowledge that NAMBoard got GLOBALGAP accreditation for the demonstration plot and HACCP certification for the pack house, but their produce is not accredited and this hinders access to markets for their produce. Also, there is no proper mechanism in place to facilitate compliance with market standards. A substantial number of farmer group producers also see this as a challenge. Late payments have a negative effect on farmers' cash flow and the immediate impact is on the decision to plant the next crop and payment of labourers. Delayed and poor transportation by NAMBoard is, however, a big challenge for farmer groups. This is in contrast to general expectations as farmer groups warrant produce pick-ups by NAMBoard as it minimises transaction costs and one would expect that transportation would always be in time. The only explanation to this is that it is the poor transportation that is a problem than timing. Actually, producers in the field complained of their produce being stuffed together and even transported with conventional vegetables, something that sometimes leads to overloading in the vehicle NAMBoard uses.

It is surprising also that none of farmer groups consider ignorance on price as a challenge to their business operations. The NAMBoard handling fee is seen by a significant number of individual producers as a challenge, while it is more pronounced in farmer groups. Individual producers generally do not consider high product rejection rates a challenge. This is unexpected considering the impact rejection rates have on revenues and thus the need and even the eligibility to financing. The next level is financial access hurdles and lack of transparency and trust. The lack of transparency and trust issue is more prominent with individual farmers. Issues involved here are the question of whose produce is sold in high paying markets and whose in low paying markets. Another issue is information asymmetries, where producers think they don't get the correct information and on the right time. This has been propelled by far lower payment than expected being received for sent consignments.

The ultimate consequence of all these challenges is a negative influence on available finance. That is, the different financing modalities begin to drawback from financing this value chain. Evidence is the fact that for bankers it is no longer enough that farmers sell their produce through NAMBoard but loans are now purely based on collateral holdings except for the Inhlanyelo Fund Microfinance institution. NAMBoard can no longer take the risk of providing direct VCF for inputs to farmers who may not make enough revenue to recover costs or just fail to produce and disappear. Lastly, producers find it risky to self-finance business and opt to suspend operations, evidenced by the great turnover of producers and a lot many resorting to conventional vegetables in recent years. This greatly detracts from the performance and efficiency of this value chain and this makes value chain finance unable to increase financing.

So far, we have covered the challenges that farmers mention but have not yet really looked at the potential impact of these risks to financing this value chain. The next step would be to give a quantitative indication of this impact so as to inform better risk management and value chain financing strategies. According to Cafiero (2008), to have even a rough idea of the extent of potential negative impact or loss can be extremely important in defining an optimal strategy or exploring available opportunities for financial deepening.

6.4 PRODUCT REJECTION RATES

The product rejection rate is one obvious indicator of the performance of a value chain and thus the potential for VCF application. Also, a rejection rate measures efficiency, competitiveness and ultimately performance, and can be used as an indicator for capability to compete in global value chains. High product rejection rates are one resultant challenge smallholder producers face, as it makes it hard for them to compete in global value chains and markets (Hallam, Liu, Lavers, Pilkauskas, Rapsomanikis & Claro, 2004:59). From Figure 6.1, 6.7% of individual farmers consider high product rejection rates a challenge to their business, while 38.5% of farmer-groups members see high product rejection rates as a big problem. The Frigoken Limited case study in chapter 2 informs that Frigoken uses a rejection rate of 20% for smallholder farmers. Table 6.1 below presents a summary of the product rejection rates exhibited by 12 producers in the baby vegetable industry, and full details are contained in Appendix 1.

Table 6.1: Product rejection rates

Rejection rates (%)					
Minimum	Mean	Demo plot	Maximum	Range	Standard deviation
10,9	21,1	15,3	54,7	43,8	11,4

Of course, farmers look at rejection rates with the view of reduced revenues, but the impact is severe in the entire chain. The mean rejection rate is acceptable when comparing with the Frigoken rate, but the range is too big. The highest recorded rejection rate is 54.73%. The NAMBoard pack house disclosed that about 50% of farmers' produce is rejected. The possibility here is that the sample used above represented mostly producers with low produce rejection rates or the NAMBoard assertion is unfounded on data but presumption. Both rates are too high and baby vegetables as high-value crops have high production costs. This means that farmers lose about half of their revenues due to product rejections and the implications on business viability and VCF application are deleterious. The interesting part is that a number of producers have rejection rates less than 20%. This indicates a potential in this value chain that producers, with appropriate support and governance, can minimise the overall rejection rate. A high rejection rate points to a huge challenge in product flows and implies a huge risk in financing these farmers, where a smooth product flow is key to VCF. High rejection rates also

mean the value chain is underperforming and thus will be unable to attract proper and sufficient financing.

6.5 OVERVIEW OF RISKS TO THE FINANCIAL TRANSACTION IN THE BABY VEGETABLE VALUE CHAIN

Financing a value chain has its own risks that affect even VCF. VCF trades on existing linkages with the assumption that these linkages are strong enough to ensure that the product flows smoothly through the various stages of the value chain until it reaches end markets. This successful flow of the physical product through robust value chain linkages that also facilitate easy flow of information makes financing the value chain attractive. There are, however, risks that the chain would fail to do this as a result of certain factors that weakens these value chain linkages. Weakened value chain linkages make the value chain prone to several risk factors that make financial transactions in the value chain very risky and financing unattractive. Risk analysis or rating specifies the factors that weaken competitiveness and the performance of the value chain.

According to Jaffee, Siegel and Andrews (2008), value chain success is measured with performance, which is the ability to deliver a product to the end market. Risk impacts the reliability, cost and efficiency of value chain stages like production (Jaffee *et al.*, 2008). Thus, these factors cause risk when financing a value chain, and these risks may result in failure of the financial transaction, either preventing it from taking place or causing default on repayments. According to Coon *et al.* (2010), value chains have limitations and weaknesses that must be overcome to allow an expansion and thus a better flow of finance and these include poor contract enforcement, a proliferation of grades and standards, the scarcity of independent quality assurance laboratories, the abuse of market power, limited loan capital, non-transparency in pricing credit and technical assistance packages, and the lack of willing and capacitated agents to assume the role of organising and training smallholder farmers to participate in well-structured value chains.

This section rates risks to the financial transaction so as to identify the ‘choke points’ that could completely harm the baby vegetable business. The different risks were assigned a rating of low, medium or high. These ratings reflect the qualitative interpretation of available information that was obtained in the field. This method of rating risks has been used by Jaffee

et al. (2008) and UNIDO (2011), and stands as the best method for VCF analysis. That is, rather than modeling risk factors, which is possible at the production stage, risk rating takes a holistic view of the entire chain in tandem with the VCF framework. Table 6.2 gives the risks that the baby vegetable value chain faces and that may result to failure in financial transactions. While some of the sources of risks can be easily identified, others are varied and therefore one can't currently be definitive of them. The risks are categorised into supply risks, production risks, sales or market risks, management risk and other risks. Risks are considered from a Micro perspective, but this does not imply the conviction that the Meso and Macro levels don't influence the risk profile of this value chain. One overarching characteristic of infant or emerging industries is the small size of production. Such value chains must prove to buyers that they hold a potential to grow and that the quantity and quality of produce will only increase and not decline.

Table 6.2: Rating the risks to the financial transaction in the baby vegetable value chain

Risk category	Nature of risk	Source(s) of risk	Risk level
Supply risks	Insufficient production		High
	Catastrophic weather	Frost, hailstorm & erratic rainfall	Medium
	Loss of quality	Poor &/ delayed transportation	Medium
	Poor quality produce	Overgrowth and pests & diseases	High
Production risks	Failure to meet food quality and safety standards	No followed standards and lack of sanitary & phytosanitary labs	High
	Lack of technical know-how	Lack of necessary education	Medium
	Inefficiency	Poor access to proper infrastructure	Low
Sales/ market risks	Lack of a guaranteed market		High
	Ignorance on prices		High
	Lack of market demand		Low
Management risk	Business not managed profitably		Medium
Other risks	Unreliable water sources & electricity		Low

Producers face the challenge that produced volumes must be sufficient that the resultant cash flow will be able to service the loan without any problems, with built-in contingencies. If producers produce insufficient produce to fit the financial conditions of the loan, then there is a high possibility that financing won't be granted. The risk posed by insufficient production to a financial transaction is high in the baby vegetable industry. Producers are not properly governed and they produce what they want, posing a high risk that expected crop harvest quantities won't be received or produced at all.

Catastrophic weather is a threat that is beyond human control but has a significant impact on farm businesses like baby vegetables. Even though it does not have an impact *ex ante* to the

financial transaction, its occurrence either in the form of frost, hailstorm or even too much rainfall has deadly ramifications on the financial viability of the business. Producers in the field have shared stories, including the big lead firm Sdemane. One producer who is having big contracts with supermarkets shared the frustration that bad weather destroyed the entire crop and now has the difficult task of facing the contracting buyer and still retain credibility. However, the risk here is on repayment rather than access to finance and since weather events are unpredictable and do not occur very often in the Swaziland climate except in the Highveld. Therefore, this risk is considered to be medium to the financial transaction.

The last two supply risks are loss of quality often due to poor and/or delayed transportation and poor quality produce due to overgrowth (late harvesting) and pests and diseases. These are responsible for the high product rejection rates. Loss of quality, though undesirable is a risk that negatively affects repayment capability. Poor quality produce, on the other hand, is a high risk factor that cannot be overlooked. Farmer yields' files in the pack house contained a lot of comments about large proportions of produce being second grade and too overgrown to be first grade. Since NAMBoard accepts only first grade produce, second grade produce had to be discarded as rejects. Also, a number of farmers' consignments records at NAMBoard had comments that produce was exposed to pests and/ or diseases. Financial institutions can only lend to people they believe are capable of successfully producing the quality required by the market. Failure to produce quality produce not only paints the producer as an unsuitable borrower but as a repayment risk as well.

When it comes to production risks, the failure by NAMBoard producers to follow food quality and safety standards that are expected by the market has proved to have devastating consequences not only in terms of financing but also participation in lucrative end markets. End buyers of high-value horticultural crops like baby vegetables like to be involved in the production process, and the NAMBoard value chain does not provide any mechanisms to ensure this. Smallholder produce has no accreditation of any kind and traceability is impossible, and this inhibits access to markets. The lack of sanitary and phytosanitary laboratories frustrates any efforts to build a reputation for exported produce. The lack of technical know-how is a medium risk that can be addressed by providing high quality extension services.

Risks in agriculture reinforce each other and build along the chain until they frustrate market linkages. Infant industries lack a market reputation and have to go an extra mile to build a market share. Unfortunately, the resident challenges in the NAMBoard value chain have resulted from it lacking any sort of secure or guaranteed market outlet for produce. This means there are no forward contracts for produce deliveries, but produce has to be sold on spot market transactions where prices can't be known before hand and sometimes consignments fail to sell at all (transaction failure). This poses a very high risk to financiers and producers are not considered suitable clients. Cash flow projections can't be made under these circumstances and there is the possibility that invested funds and effort will be lost if goods fail to sell.

The above risks present an undesirable situation for any value chain. The high and some medium risks are serious 'choke points' that weakens the chain's ability to penetrate and deliver produce to end markets, and thus prove itself worthy and suitable to different financing mechanisms. This value chain can be said to be disconnected or weakly connected to end markets, this makes financing very difficult. It does not provide fertile ground for VCF application, and thus efforts to increase financing to this chain through VCF cannot be successful or sustainable. Efforts to ameliorate the situation must be aimed at ensuring a market linkage in this chain and address all financing gaps that impedes capacity to meet consumer expectations. A lack of understanding on how to manage risks can lead to little connectivity with end markets and failure to adjust to the rapidly changing business environment (Gooch, Felfel & LaPlain, 2009).

6.6 FINANCING GAPS AND OPPORTUNITIES

The value chain framework leans on market potential without which the resulting financial services would fail (Galarza & Jones, 2009). According to Gooch *et al.* (2009), risks are always perceived as negatives, but those who are well prepared can turn them into positives. VCF increases the quality and efficiency of value chains in four ways. These are: risk mitigation; tailor-making specific financial products; reducing transaction costs; and identifying financing needs or gaps (Miller, 2007b). Of these four, only risk mitigation and identifying financing needs or gaps seems feasible in an infant industry setting like that of baby vegetables, since it is not possible to tailor-make financial products and reducing

transaction costs by formal financial institutions for a small number of producers producing small quantities of output.

As a first step to identify financing gaps, the production stage cost structure is used. A sample of 10 current producers who were able to give data on the production costs section during the interview schedules was instrumental in achieving this. Table 6.3 shows a summary of the cost structure and distribution at the production stage and full details are given in Appendix 2. The cost of seeds varies with the crop grown, but our sample gives a quite reliable estimate of the production costs distribution.

Table 6.3: Production cost structure

	Land size	Activity					TAC	
		Planting activities	Seeds/seedlings	Fertiliser	Top dressing	Spraying		Power (electricity)
Average	0.40Ha	399	2 120	522	172	293	275	3781
	1Ha	997.5	5 300	1305	430	732.5	687.5	9452.5
Percentage		10.6	56.1	13.8	4.5	7.7	7.3	100

The Total Average Cost (TAC) of production is E3, 781.00 per 0.4 hectares, and these are translated into per hectare as given in Table 6.3. We can also see that seeds or seedlings contribute 56.1% to this total average cost. So, the provision of seeds on credit to farmers covers the major cost of production. However, there is still 43.9% of production costs that need to be financed. Since baby vegetables have short production cycles (about 35 days), there is an opportunity here for external financing to ensure that farmers don't miss a planting cycle while waiting for sales revenues that have been reported to take as long as 2-3 months. Financially enabling farmers to produce more crop cycles in a season not only increases revenues for the farmer but also creates business for financiers.

Chapter 4 discovered that there is a small number of farmers that have contracts with supermarkets, which experienced increases in income while the rest of producers had incomes declining. This small group wants investment loans to invest in cold storage. This is an opportunity for financiers and is a way in which this industry can grow. A cold-room can enable producers to increase their scale of production. This can also give an opportunity to surrounding smallholder producers to be out growers to these strategic producers.

Input suppliers are big competitive businesses that do not have financing problems. Most of them self-finance themselves and the interviewed decision makers said they do not have a need for external finance. At the post-harvest level, there is a need for government to invest in phytosanitary laboratories. This would help ensure that produce meets the requirements to penetrate into strict markets. There are, however, limited opportunities for funding in this NAMBoard value chain especially because NAMBoard is government-funded and financial resources can only flow to the production stage. The idea we get from the VCF analysis of this value chain is that this value chain is underfunded, since it allows finance to only flow to the risky production stage. Even this flow is very limited and declining. This is because of the evident high risks to any financial transaction.

The risk rating from the previous section lays a foundation for identifying opportunities for financing. This is done to improve the position of certain stakeholders in the value chain (i.e. smallholders, donors and financial institutions). Infant industries have to compete with established industries or value chains to attain a market share, and this is possible only if they are sufficiently supported. Development organisations and governments have a critical role to play here. Donor funding has played a pivotal role in providing necessary financing and technical support to many industries in Africa including Swaziland. The bottom line is that the opportunities for financing available in this value chain are very limited. The best chance to open up financing gaps is to change the way business is done between producers and the post-harvest handler (NAMBoard).

6.7 THE WAY FORWARD

This study has identified a few impediments to the growth of the NAMBoard value chain. First, the structural arrangement exposes smallholders and thus the entire value chain to severe risks that make financing unattractive and growth difficult to achieve. Second, the marketing arrangement makes it hard if not impossible to project a cash flow and actually keep track of all transactions and the associated expected returns. Lastly, an infant industry has limitations when it comes to specific financial products that underpin indirect VCF. As a result, there is a need for a new ameliorative NAMBoard business model that will supplant the woeful perception of chain participants of this industry and successfully expand VCF. Such a model has to harness the potential and opportunities that the country is endowed with and bolster confidence in producers to increase production quality and quantity. This would

create the three VCF flows so that smallholders thrive under the adverse and changing global market conditions. The fragility of this value chain necessitates a plausible and tractable model that can recalibrate easily to changing internal and external circumstances, but robust enough to disconnect deleterious institutional arrangements through a metamorphic transition. At this juncture, the two types of value chains will be proposed; segmented value chains and vertically integrated value chains, determine the adaptability to changing market requirements and the ability to connect to end markets. It is believed here that vertically integrated value chains are better suited to allow better VCF application. This is because the lead-firms are in a better position to sustainably provide direct VCF and can enhance and facilitate indirect VCF by financial institutions.

In the current NAMBoard model, NAMBoard reduces the risk that produce may not sell in the market by acting as a marketing agent for producers and charges a percentage for services rendered. However, this exposes the farmer to enormous risk that proves too much for potential value chain financiers including the NAMBoard input-shop. The proposition here is that, since the market is very strict and directly linked to production, NAMBoard as the body that has the power to enforce market expectations on contracted farmers should be a lead-firm that buys produce from farmers and sells to acquired markets rather than just market for farmers. This approach would shift all of the marketing risk from farmers to NAMBoard, but would not do away with the need for a guaranteed market for baby vegetables that meet quality requirements. NAMBoard will have to engineer such a market with a large buyer(s) or risk making losses itself that would probably eventually force it out of such a relationship with farmers. Once again there is a need for scale to make such an arrangement worthwhile for NAMBoard and any guaranteed buyer, and also to make meeting all of the attendant quality assurance requirements viable.

The prowess of the nucleus estate model in including smallholder farmers and growing the baby vegetable industry in Swaziland by the Sdemane value chain has prompted the proposition of a model based on similar principles for the NAMBoard value chain. That would reverse the agency relationship (instead of NAMBoard being the farmers' agent now the farmers will be NAMBoard's agents) an arrangement that could offer incentives for both parties to work hard to achieve profitability and competitiveness if correctly structured. An alternative would be to give advance payments to farmers for received consignments, a commitment that offer incentives for both parties in the transaction to meet market

expectations and minimise the risk of transaction failure. This greatly reduces the payment lead-times (usually 45-60 days), which are too much for smallholder farmers to bear.

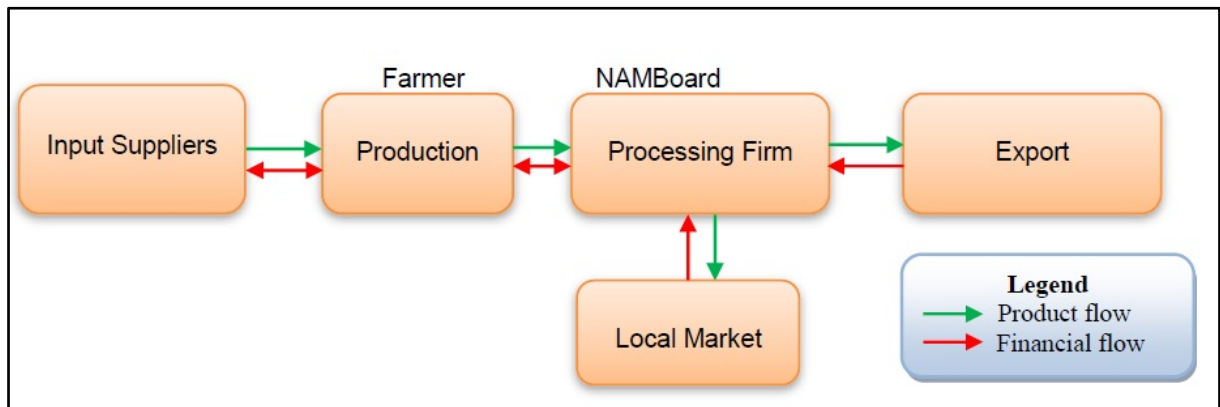


Figure 6.2: Recommended NAMBoard value chain model

The Figure 6.2 general principle is that rearranging the institutional arrangements can strengthen the input, production and processing stages of the value chain. Stronger linkages here can make sure that this value chain is able to be competitive both in local and export markets. Such linkages can make it easier to practice all three VCF modalities. The next question is whether NAMBoard has enough funds to make advance payments to farmers or buy produce from farmers. In addition to that, is the issue of making sure that farmers adhere to crop husbandry specifications like GLOBALGAP or EUREPGAP and making the necessary investments to ensure compliance. Such investments involve organising farmers and putting in place all relevant support services. The bottom line is that NAMBoard should have a vested interest and a financial commitment is key to reducing risk for the farmer.

6.8 CONCLUSION

This chapter found that the NAMBoard value chain farmers are faced with a myriad of challenges traceable from 2003, reported in NAMBoard’s annual reports. These findings on producer challenges are consistent with those reported by NAMBoard (2003; 2004; 2009; 2010), and Vilakati (2007). One of the damning challenges crippling this value chain is the high product rejection rate at the pack house, which can go beyond 50%, and the pack house estimate that an average of 50% of farmers’ produce is rejected. This postulation, however, departs from our findings and this may be due to improper sampling or the statement is not absolutely true. It was discovered in this chapter that key risk factors rating between medium

and high render this value chain's participants a high risk to finance. Risks that pose a high risk to the financial transaction are insufficient production, poor quality produce, failure to meet food quality and safety standards, lack of a guaranteed market and ignorance on prices. Catastrophic weather, loss of quality, lack of technical know-how and failure to manage business profitably pose a medium risk. Factors considered low risk include inefficiency, lack of market demand and unreliable water sources and electricity. An attempt to identify financing gaps discovered that seeds/seedlings contribute about 56.1% to total average production costs, which has been financed by NAMBoard through direct VCF. Other forms of finance have the opportunity to finance the remaining 43.9%. Other opportunities include investment finance for cold room storage for those producers who have contracts with other buyers like supermarkets. Restructuring NAMBoard could present opportunities for donor finance at the critical marketing level.

CHAPTER 7

SUMMARY, CONCLUSIONS, RECOMMENDATIONS FOR FURTHER RESEARCH AND POLICY IMPLICATIONS

7.1 SUMMARY

At the heart of this research was a quest to employ the holistic and comprehensive VCF approach to analyse the Swaziland baby vegetable industry and seek ways for improvement. The Swaziland baby vegetable industry is dyadic, composed of the NAMBoard and Sdemane value chains. This research studied mainly the NAMBoard value chain, and the Sdemane value chain that was discovered in the field was unpacked from the lead-firm's perspective. This study adapted the UNIDO (2011) VCF analytical framework and used it as a guideline during analysis and presentation of results. This analytical framework has five sections: financial attractiveness, which is a function of the other four; risks to the financial transaction, norms and practices, availability of finance, and financing gaps. This VCF analytical framework was embedded within the general VCF framework presented in Section 2.4.3. Therefore, this section summarises the findings using the analytical framework in reverse, starting with financing gaps until financial attractiveness.

7.1.1 VCF in the NAMBoard value chain

7.1.1.1 *Financing gaps*

The findings of this study suggest that financing gaps predominantly exist in the production stage, especially because the post-harvest handler (NAMBoard) is a state-funded government agency. First, the cost-distribution on production activities suggest that input seeds contribute more than half to the total production costs. This makes the financing of input seeds very important for successful production. This gap is becoming even bigger now that NAMBoard is reluctant to give producers input seeds on credit. Also, the other production activities still need financing and these include planting activities, fertilizer application, top dressing, spraying and electricity (water pumping power). Also, there is currently an unmet demand regarding the financing of capital equipment like cold-rooms and other farm capital

equipment necessary for farm expansion. It was discovered that there's a small number of producers that is selling direct to supermarkets. This group of farmers experienced increases in their incomes in the past five years, when all others supplying only NAMBoard experienced declines in income. These few producers lack cold-rooms, and they voiced a lack of finance to undertake the necessary capital investment. On the other hand, input suppliers are big competitive businesses that are able to self-finance operations. At the post-harvest handling stages, the current structure has very limited financing gaps.

7.1.1.2 Availability of finance

Regarding the availability of finance, our VCF analytical framework has five distinct financing modalities. These are self-finance VCF, direct VCF, indirect VCF, formal finance, and informal finance. As highlighted above, financing gaps exist in the production stage and thus these financing modalities are linked to the production stage. This study discovered that there's a link between the baby and conventional vegetable value chains. All baby vegetable producers also produce conventional vegetables and the two enterprises are treated as one business. As a result, there is inter-financing between these enterprises from product proceeds. This is very interesting as it is a phenomenon that has not been dealt with much in agricultural finance. This value chains' inter-financing mechanism is associated with self-finance VCF, but definitely different and outside the five forms of finance covered by the analytical framework. This increases the forms of finance and shows that all businesses directly or indirectly linked to a value chain are a source of finance in the agriculture sector. Coming to formal finance, farmers borrow for the combined vegetable business and not just for baby vegetables. This makes it hard to conclude that the financial access profile presented in Chapter 4 adequately represents baby vegetable production. That is, conventional vegetables could be enhancing the creditworthiness of producers or diminishing it. Though the picture on the ground suggests that the conventional vegetable business boosts access to formal finance by producers, evidence supporting this is not contained in this study.

There are three types of baby vegetable producers namely: individual producers, farmer groups, and farmers associations. This study found that there is informal financing occurring between farmer group members. Members of the same group lend money to each other especially small amounts to perform operational value chain activities. This informal finance is not very extensive and depends on the financial liquidity of other group members. At the

same time, farmer groups have used more formal finance than individual farmers even though most of them don't have savings. Actually, this is explained by the fact that a majority of farmer group members do not have non-agricultural sources of income while most of individual producers have formal jobs. The Inhlanyelo Fund microfinance institution is the prominent supplier of formal operational finance to producers, particularly farmer groups. However, it is no longer enough for financial institutions like DFIs that producers market their produce through NAMBoard, since the price is unknown and a cash flow can't be projected. Also, the poor financial performance by producers increases the risk aversion of financial institutions towards this industry.

An analysis of the NAMBoard value chain found that there is direct VCF between producers and the NAMBoard input shop, where farmers are given inputs especially seeds on credit and repayment deducted from product proceeds by NAMBoard. Also, direct VCF exists between the SAS input shop and the NAMBoard input shop. SAS sometimes give the NAMBoard input shop stocks of inputs on credit to resell especially baby vegetable seeds, which should be paid for within 30 days. NAMBoard as an entity perform three distinct post-harvest services in addition to extension services: transportation, processing and marketing. For these services, NAMBoard charges 35% of the value of sold consignments as a handling fee. There is direct VCF for these services as they are paid for after consignments have been sold. If consignments fail to sell, NAMBoard also incurs a loss. There is currently no indirect VCF in this value chain.

7.1.1.3 Norms and practices

The norms and practices component of the analytical framework is explained by the industry's business context and enabling environment. Swaziland has a well-established and varied financial system, where the central bank is a regulator and supervisor of all licensed financial institutions. There are three types of financial institutions in the country namely: commercial banks, DFIs, and MFIs. In the general context, DFIs are the main financiers financing agricultural activities in the country and these include FINCORP, Swazi bank, and SIDC. The Inhlanyelo Fund microfinance institution is mainly involved in financing small and micro enterprises, particularly operational credit in the vegetable subsector. However, commercial banks like Standard Bank and NedBank are now entering into these smallholder markets.

The baby vegetable industry is small with a very small number of participants borrowing funds from financial institutions. This makes crafting specific financial products that are suitable to this industry's producers very expensive and unprofitable, hence the lack of financial products specifically for baby vegetable producers. In addition to that, the fact that this value chain has no guaranteed markets makes the risk of lending to producers very high and thus loans tend to have high interest rates. On the other hand, the loan processing procedures of these financial institutions are cumbersome and take too long to finalise, causing delay problems for producers who are concerned about meeting planting schedules. As has been established earlier, farmer groups use more formal finance than individual producers. The reality that farmer group members predominantly have no other sources of income presents a challenge when taking the perspective of using the legal system to facilitate loan repayments. It is interesting to note, however, that financial institutions (DFIs and the Inhlanyelo Fund microfinance institution) had been able to lend funds to these producers without the need for collateral. The attributes of being a member of a farmer group or being a farmers' association made lending by financial institutions attractive. Overall, the environment is not conducive for the baby vegetables industry, and it is not about shallow financial markets or the bureaucratic inertia of financial institutions but the risk element in this value chain is too big and commercial banks and DFIs resort to collateral based lending.

7.1.1.4 Risks to the financial transaction

The risks to the financial transaction in the NAMBoard value chain were categorised into supply risks, production risks, sales or market risks, management risks, and other risks. These risks have an impact on both financial access and loan repayment. The main supply risks are: insufficient production, which poses high risk; catastrophic weather, which poses medium risk; loss of produce quality, posing medium risk as well; and poor quality produce, believed to pose a high risk. The major sources of these risks are: frost, hailstorms and erratic rainfall; poor/or delayed transportation; produce overgrowth and pests and diseases, respectively. The presiding threat to the financial transaction is that farmers' produce will fail to be of good quality or sufficient quantity, due to the named risks, to guarantee easy uptake by the market and create a cash flow that will be good enough to make meaningful loan repayments. If the supply of produce is not good enough, then financing the producers becomes very risky and in most cases finance is not granted or credit becomes very expensive. Banks charge lower

interest rates for secure loans and higher rates for risky loans. As it stands the risk in the NAMBoard value chain due to supply is between medium and high.

Production risks are primarily about how production is carried out in relation to market requirements and competitiveness. This study identified three kinds of production risks namely: failure to meet food safety and quality standards, rated high; lack of technical know-how, rated medium; and inefficiency in production, seen as a low risk. The major challenge here is that farmer produce is not accredited and this poses a threat that produce won't get access to good markets. This lack of diligence in production is responsible for the fumbling production behaviour exhibited by producers, where they produce what they want or what they think will earn them a profit. This leads to inefficiency, since there is a lack of technical know-how, exacerbating the disconnection with end-markets and as a result the value chain becomes more disorganized. Supply risks together with production risks are responsible for the sales/ or market risks in the value chain.

Smallholder participation in markets is the main goal of every value chain having smallholders, and value chain financing is principally premised on the strength of the link between the value chain and end-markets. The lack of a guaranteed market and the ignorance on prices make the two high market risks in this value chain, while lack of market demand is a low risk suggesting that overall demand is not a challenge. A value chain is as strong as its weakest link, and in this case the weakest link is found between post-harvest handling and end-markets. This is a situation that poses a high risk for all five forms of finance.

7.1.1.5 Financial attractiveness

An effort to ascertain financial attractiveness direct from the cash flows through cases studies revealed that one of the studied farmers had an unattractive cash flow that had a loss on the two crops. The other farmer made a loss on one crop and a profit on the other crop, presenting mixed results. The picture of the financial strength of producers, however, seemed very frail as some claimed that incomes are declining something that caused some of their colleagues to quit the industry. The inconclusiveness of the case study results bring the focus on studying this value chain's financial attractiveness as a function of all the components discussed above: risks to the financial transaction, norms and practices; availability of finance; and financing gaps.

The above analysis shows that it is not attractive to finance this value chain. The implication is that financing from formal institutions has high interest rates and/ or producers fail to meet their repayment obligations to financiers. Facts that support this on the ground include the reality that indirect VCF is absent in this value chain, direct VCF by the NAMBoard input shop is shrinking, and few producers have formal loans. Surprisingly, even the inter-financing that occurs between farmers' baby vegetables and conventional vegetables businesses fail to overcome the downside risk and farmers cut down land dedicated to baby vegetables until some actually decide to quit baby vegetables altogether. This explained by the high turn-over of baby vegetable producers. For financial institutions, it is no longer enough that producers market their produce through NAMBoard, and loans are now based on collateral or savings that can be debited for loan repayment installments. All forms of finance are deteriorating, and production is intermittent. According to a NAMBoard extension officer, they have to organise and start the baby vegetables project afresh. The question then is, how?

7.1.2 VCF in the Sdemane value chain

The lead firm Sdemane, under the nucleus estate model, governs smallholder outgrowers in this value chain. Our analysis here shall be two-pronged, focusing on Sdemane enterprises and then the outgrowers.

7.1.2.1 Financing gaps

There are three main financing gaps existing in this value chain. First, financial institutions lack appropriate financial products to cater for producers as this industry has specific production factors. This results in high interest payments. Second, producers receive no support services from financial institutions, since staff lacks expertise in baby vegetables. Last but not least, Sdemane considers the insurance for agriculture, especially baby vegetables, very expensive and unsuitable. Payouts take a very long time to be processed (took about six months for Sdemane to receive a claim). Concerning outgrowers, the financial and support structure between Sdemane and outgrowers minimises financial shortages for production/ operational activities. The key financial gap identifiable here is the issue of capital finance for all relevant infrastructure required in baby vegetable production. Although there is no empirical evidence obtained by this study pertaining to how outgrowers finance their initial capital investment, financial institutions did confirm that they no longer provide capital

finance for baby vegetable farmers. This points to a huge financing gap, if efforts to grow this value chain and industry at large were to be successful.

7.1.2.2 Availability of finance

The availability of finance is tackled using the five forms of finance. There is direct VCF between Sdemane and out growers. Sdemane purchases seeds on behalf of outgrowers and give them on credit without a mark-up to the purchase price, and repayment is deducted from product proceeds. Additional costs like cost of transportation are not charged to farmers but it is Sdemane that pays for them. Should farmers face financial challenges that they can't afford to purchase spraying chemicals or fertiliser, Sdemane intervenes and procure these for the concerned outgrower(s). Sdemane is currently self-financing most of operational activities, including the capital investments in land they have been undertaking in recent years. Sdemane got formal finance for initial capital investment from a DFI (FINCORP). Even so, it is donor finance that rescued Sdemane from a bankruptcy crisis.

7.1.2.3 Norms and practices

Sdemane appreciates that enforcing supply contracts on outgrowers through the legal system is not a viable option, but cultivating trust is key. This trust between Sdemane and outgrowers facilitates direct VCF, which is very important in the face of a somehow unenthusiastic financial sector towards this industry. Financial institutions had made it clear that they can't finance baby vegetable farmers except the few that have proved they thrive in this industry. This puts the burden of financing outgrowers upon Sdemane. Interestingly, Sdemane's financial services and support to outgrowers minimises the need for operational finance from financial institutions.

7.1.2.4 Risks to the financial transaction

Catastrophic weather, complete compliance with quality grades and safety standards by out growers, side-selling by out growers and lack of insurance are the risks that affect financial transactions in the Sdemane value chain. These risks can affect financial access or create credit repayment problems. Adverse weather has proved to have severe impacts on the viability of this business, where Sdemane testified that it was impossible to recover without

assistance. Hailstorm hit Sdemane farms and created a repayment challenge with FINCORP. Efforts to get extra financing from formal financial institutions were futile.

Outgrowers are expected to comply fully with GLOBALGAP standards, and any non-compliance by even one outgrower poses a serious threat to the entire chain. For instance, if phytosanitary checks in South Africa discovers that Sdemane value chain consignments to be unsafe, all the credibility of the entire chain would be jeopardized and markets lost. The ramifications are excessive and beyond just finance. It is also prudent that Sdemane cultivates trust with outgrowers so as to ensure that they meet their contractual obligations on delivering quality produce and that seed credit can be recovered. Trust also minimises side-selling by producers.

Sdemane enterprises and the outgrowers do not have insurance cover. Instead, there is a very good risk distribution and sharing. Sdemane has distributed the risk especially of catastrophic weather by producing in different agro-climatic zones, which are impacted differently by adverse weather. This guarantees Sdemane that even if one area is struck, for instance by hailstorm usually in the high veld, crops in other regions like low veld would survive. Also, this is to ensure continuous throughput where it is difficult to produce in other regions in certain seasons. For outgrowers that suffer crop damage due to weather, Sdemane shares the losses with them by forgoing seed credit. That is, farmers don't need to pay for credit given in-kind under such circumstances. This arrangement minimises the risk to a formal financial transaction and makes financing attractive.

7.1.2.5 Financial attractiveness

Sdemane was able to access initial capital finance from a DFI to undertake capital investments. Even though this business suffered severe crop damage by hailstorm, its positioning and organization made it to be a lucrative business that had potential. Hence, donor intervened and put millions in this business just because of the potential it held. Currently, financial institutions are willing to finance Sdemane enterprises, however, Sdemane sees the financial products unsuitable. When it comes to outgrowers, Sdemane realizes that the support given to outgrowers is expensive when looking from individual transactions perspective but appreciates the fact that overall benefits outweigh the costs. To explain, Sdemane is interested in increasing market share and any outgrower that has been

viably included in this value chain contributes to that objective. That is why there is a strong direct VCF and support services existing between Sdemane and outgrowers.

7.1.3 Comparative analysis

The NAMBoard and Sdemane value chains share the same business context and enabling environment. The availability of finance to both value chains is somewhat related. Both value chains lack indirect VCF. Also, capital investment loans are unavailable to smallholders in both value chains. Even though the lead firm was able to obtain initial capital loan finance, it was the last loan obtained in 2006. The supply and demand sides of financial access are both responsible for this. The Sdemane value chain has a strong direct VCF, while the NAMBoard value chain has deteriorating direct VCF between NAMBoard and smallholders. It is conjectured here that Sdemane outgrowers are able to self-finance the rest of value chain activities and their production must be intensifying, while NAMBoard producers are unable to sustain self-finance but most are quitting the industry. Even the inter-finance between the conventional vegetables and the baby vegetables enterprises is not sustainable. A typical Sdemane outgrower pays 35% less for input seeds as compared to producers contracted to NAMBoard who are charged a 35% mark-up on seeds. Moreover, Sdemane provides financial support to outgrowers that can't afford production activities like spraying while NAMBoard producers finance production activities and credit crunches might mean a huge loss in quality of produce. In addition to that, the fact that Sdemane pays producers immediately after product delivery means that producers can self-finance the next crop and the overlap between crops (as several crops are grown at a time) allows for revenues to finance production. That is why only new producers require financial assistance. On the other hand, NAMBoard producers wait about two months to receive revenues, which are sometimes less than anticipated.

Risks in the NAMBoard value chain are rife and producers are highly exposed to these unbearable risks, causing production activities, more often than not, to be unprofitable. The Sdemane model shields outgrowers from resident risks and strives to reduce market uncertainty through buying produce from farmers and paying them immediately. The full compliance with market requirements in terms of quality grades and safety standards in the form of GLOBALGAP accreditation and HACCP certification links this value chain to lucrative markets. The most distinguishing principle in these value chains is that Sdemane

only contracts smallholders that are within the corridor that they operate in, making all services rendered to farmers viable. Unfortunately, NAMBoard producers do not follow any GAP standards and isolated producers are included in this value chain without a financial analysis of certain activities like transportation whether it would be cost-effective to perform. The exposure of smallholders to risk and lack of organization in the NAMBoard value chain is responsible to the very weak connection with end markets, and resultant risks increase in number and intensity.

The Sdemane value chain is demand driven while the NAMBoard one is supply driven. That is to say, government governs the NAMBoard value chain and this crowds out potential investors like the donor community, as it leaves no entry point for intervention. Government funds NAMBoard but this funding is not enough to catalyse infant industries and facilitate growth. It has long been established in rural finance literature that supply driven initiatives have proved to be a failure or had modest results at best. The way forward here would be to restructure and organise the NAMBoard value chain. The first step would be to operate the NAMBoard department responsible for baby vegetable production competitively and as a business, not an intervention to poor households. This involves buying produce from farmers and making sure that smallholders are included in this value chain in viable ways, otherwise not included at all if it is not profitable to do so. Clustering smallholders have proved to be effective in the Sdemane value chain and Frigoken in Kenya.

7.2 CONCLUSIONS

This study has two specific hypotheses. The first hypothesis states that VCF can emulate a guaranteed market condition for value chains. Miller (2007b) presented four pillars that VCF use to increase quality and efficiency in a value chain namely: identifying financing gaps; tailor-making suitable financial products; reducing transaction costs; and mitigating financing risks. Results of this study indicate that only risk mitigation and the identification of financing gaps are applicable in an infant industry setting, as transaction costs remain high and crafting specific financial products for a small of number producers is expensive. This already shows that VCF has limitations when applied to infant industries. Information on the inception and early stages of the baby vegetable project in Swaziland suggests that VCF was fully applicable (self-finance, direct VCF, and indirect VCF) but changing market conditions and resultant challenges made it shrink until the important indirect VCF mechanism collapsed and

donor finance ceased. Indirect VCF requires that specific loan products be crafted and loan repayment procedures are embedded on the production cycle. For this reason, this mechanism is absent from both the Sdemane and NAMBoard value chains. Since VCF is not robust enough to mitigate these challenges by itself, this leads us to conclude that VCF is necessary but not sufficient to increase quality and efficiency in value chains. This then agrees with conclusions by Galarza and Jones (2009) that VCF requires that value chains be well established profitable, and/ or growing and must include significant quantities of organised producers. This makes sense, considering the fact that all VCF models presented in the literature review are on well-established industries that have thousands of smallholder producers.

The second hypothesis states that VCF could simulate a guaranteed market condition for value chains. VCF finance is based on the potential of the value chain and proper financing allows the value chain to successfully deliver products into the market or having a share of the market. An analysis of the Sdemane value chain showed the same results that proper value chain financing is able to make an industry grow and have guaranteed market outlets. This is echoed by case study models, which show that even though circumstances vary from country to country, actors are able to maximize on certain value chain properties to craft business models that promote efficiency through availing required finance in properly packaged products or forms. For the NAMBoard value chain's current situation, it is possible to resuscitate it by mitigating the discovered risks and making use of the financing opportunities availed by the financing gaps. Since the business environment is not inhibiting financing to the baby vegetable industry but risk, reduced risk means there is more financing available to the value chain stimulated by its financial attractiveness. A financial bailout salvaged Sdemane enterprises from catastrophic events and the risk mitigation strategies employed thereafter facilitated the rise of the Sdemane value chain as a success story in Swaziland. Risk mitigation increases performance and the ability to meet the strict market specifications in order to gain entry. Successfully marketing all produce means the value chain operates as if the markets were guaranteed, just by being competitive and successfully delivering products to end markets. The conclusion here is that VCF can indeed emulate guaranteed market conditions, just by ensuring that actors are properly organised to get needed finance to successfully move produce to end-markets.

It is clear that the enabling business environment created also by the underlying NAMBoard business model is ill suited to handle this industry's needs. Rethinking this business model and learning from success stories including the local Sdemane enterprise is one way to avoid the imminent collapse in exports from this value chain. The model recommended in this dissertation seeks to provide enough incentives for producers, and can be pilot-tested to see if it does mitigate risks and help revitalize production.

7.3 RECOMMENDATIONS FOR FURTHER RESEARCH

- The attachment of baby vegetables to conventional vegetables leaves a lot of unanswered questions. We are currently not sure if this duality has a negative effect on the baby vegetable industry, but currently can only speculate. Research work that would bring clarity in this regard will be very helpful in guiding policy direction.
- There is a pressing need for a quantitative financial analysis of the value chain costs at each node of the chain. As a start, it would be helpful to bring clarity as to what the 35% handling fees currently charged farmers by NAMBoard are composed of. This is imperative especially because nobody in management or otherwise within NAMBoard knows how this 35% is calculated. Its relevance to today's circumstances and resultant implications on viability are not known. This will also help in the provision of incentives to farmers who transport their produce to the pack house, should NAMBoard decide to keep the current business model.
- Further research that would inform agricultural policy in the country on whether the move by SWADE to entice the sugar cane farmers associations to diversify part of their farms into baby vegetable production is a correct one. This is in consideration of the fact that farmer associations in the country are struggling for success with sugar cane, and leaves one to wonder if they can survive in a so much demanding, delicate, and volatile baby vegetables industry. I hypothesize that sugar farmers' associations are ill suited to the baby vegetable industry, at least under the current NAMBoard business model.
- This study focused on the NAMBoard value chain without prior knowledge that there was another value chain (Sdemane). Despite this, key attributes of this chain were captured,

but Sdemane's outgrowers were not included. For this reason, a VCF study that captures Sdemane outgrowers would be very informative and insightful.

7.4 POLICY IMPLICATIONS

Structuring this industry in a manner that producers can produce for contracts is the foundation for any value chain development effort, and can ensure riddance of the inefficiencies spotted in post-harvest processes by NAMBoard. VCF is not an end in itself, but relies and builds on other value chain pragmatisms like value chain governance and coordination. Contracts are not in themselves the solution, but they provide the opportunity for contract buyers to inject required support into production to make VCF work. As a result, government has a big role to play in creating an environment that shall allow lead firms to ensure that baby vegetable value chains are managed and organized to a level that can attract indirect value chain finance from financial institutions and the donor community. Key among these is good quality technical assistance services that will see producers achieve basic quality and safety product expectations. NAMBoard should help farmers attain the required skills for business and provide proper coordination that ensures strict adherence to production schedules by farmers.

This industry value chain suffers from many ailments but catastrophic weather risks have proved to be a deadly threat to the entire industry and needs immediate attention. The private sector lacks appropriate insurance instruments that can be affordable to farmers, and this creates a role for government to play in insulating producers from weather risks. Minimised weather risk effects can permit farmers to increase production scale and eliminate their risk aversion characteristic that will make them use loan financing more than they do now, individual producers in particular.

A strategic policy direction to the effect of refocusing and restructuring the NAMBoard approach is obligatory. That is, a more strategic and business inspired approach is required of NAMBoard. The current NAMBoard intervention approach has failed dismally and the global history of such supply-led interventions concur that they are not a success story. Public-private sector partnerships are a better way to approach a transition from the supply-led intervention to a demand driven industry that can thrive in competitive markets and the adverse global market environment. Government has a role to play in promoting private

enterprises to engage in the baby vegetable business. Part of this includes supporting and championing promising producers to become big producers.

The baby vegetable industry is potentially a future competitive high-value crop for a country like Swaziland, and penetrating and adapting now to the global market changes will increase the competitiveness and sustainability of the Swaziland agriculture sector at large. In line with the Comprehensive Africa Agriculture Development Programme (CAADP) call to allocate 10% of national budgets to the agriculture sector, investing in this industry in terms of infrastructure to enhance post-harvest handling is necessary. The issue of quality grades and safety standards cannot be over emphasized. Government has a role to play in building phytosanitary laboratories. Also, public quality standards bodies should be established and policy should support private enterprises seeking to make investments in complying with private standards imposed by buyers.

Lastly, cultivating relationships with development agencies and leveling the ground for donor agencies to be interested in financing this industry is paramount. It is a fact that nurturing infant industries in a globalized market is difficult without financial support. Grants or donor support have proven to catalyse many industries and shield them from the negative impact of competing with giant industries. We have seen this in the Swaziland sugar industry after the reduction of EU preferential sugar prices; we have seen it in United Nations Development Programme (UNDP) catalytic grants, we have seen it in our case studies where Foundations are involved. It is postulated here that for infant industries to compete in the global economy, donor funding or grant finance by government is required to jump-start them by providing necessary facilities and technical support.

REFERENCES

- Al-Hassan, R.M., Sarpong, D.B. & Mensah-Bonsu, A. 2006. Linking smallholders to markets. Background paper no. GSSP 0001. Accra: Department of Agricultural Economics and Agribusiness, University of Ghana.
- Anderson, J.R. 2001. Risk management in rural development. A review: rural development strategy background paper #7. Washington DC: The World Bank.
- Angelucci, F. & Conforti, P. 2010. Risk management and finance along value chains of small Island developing States: evidence from the Caribbean and the Pacific. *Food Policy* 35:565-575.
- Anuchitworawong, C. 2010. The value of principles-based governance practices and the attenuation of information asymmetry. *Asia-Pacific Finan Markets*, 17:171-207.
- Asfaw, S. 2007. Does EurepGAP standard marginalize poor farmers?: evidence from Kenya. Young authors on the world development report 2008. Agriculture and rural development. Hannover.
- Ashraf, N., Gine, X. & Karlan, D. 2006. Growing export-oriented crops in Kenya: an evaluation of DrumNet services.
- Besley, T. 1994. How do market failures justify interventions in rural credit markets? *The World Bank Research Observer*, 9(1):27-47.
- Birthal, P.S., Jha, A.K. & Singh, H. 2007. Linking farmers to markets for high-value agricultural commodities. *Agricultural Economics Research Review*, 20(conf. issue):425-439.
- BusinessTech. 2013. A history of South Africa's currency. [Online] Available from: <http://businesstech.co.za/news/general/21665/a-history-of-south-africas-currency/> (accessed 2013-11-26).

Cafiero, C. 2008. Agricultural producer risk management in a value chain context: implications for developing countries' agriculture. AAACP paper series No. 4, University of Naples Federico II. FAO.

Chadha, M.L., Mkhathshwa, P.D., Gama, D.M. & Nono-Womdim, R. 1999. Vegetable research and development in Swaziland. *Proceedings of the first national review and planning workshop held at Malkerns research station, Malkerns, 8-9 March.*

Chalmers, G., Lennon, B., Villeda, L., Heron, L., Pelican, E., Charitonenko, S., Fries, B., Gonzalez-Vega C., Johnston, C., Meyer, R. & Miller, M. 2005. Value chain finance: RAFI (rural and Agricultural Finance Initiative) notes. USAID.

Coase, R. 1937. The nature of the firm. *Economica, New Series*, 4(16):386-405.

Coates, M., Kitchen, R. & Kebbell, G. 2011. Financing agricultural value chains in Africa: A synthesis for four country case studies. Bonn and Eschborn : International Zusammenarbeit (GIZ) GmbH.

Coetzee, G. (2002). Rural finance. Working paper: 2002-04. Pretoria: Department of Agricultural Economics, Extension and Rural Development, University of Pretoria.

Coon, J., Campion, A. & Wenner, M. 2010. Financing Agriculture Value Chains in Central America. Institutional capacity and finance sector. Technical notes no. IDB-TN-146. Washington DC: Inter-American Development Bank.

Davis, J. 2006. How can the poor benefit from the growing markets for high-value agricultural products. Munich Personal RePEc Archive (MPRA) Paper no. 26048.

Delgado, C.L. 1999. Sources of growth in smallholder agriculture in Sub-Saharan Africa: the role of vertical integration of smallholders with processors and marketers of high-value added items. *Agrekon*, 38(special issue):165-189.

Dellien, H. and Lynch, E. 2007. Rural finance for small farmers: an integrated approach. Focus note. New York: Women's World Bank.

Demsetz, H. 1967. Toward a theory of property rights. Papers and Proceedings of the Seventy-ninth Annual Meeting of the American Economic Association (May, 1967). *The American Economic Review*, 57(2):347-359.

Dever, J. 2007. Small-farm access to high-value horticultural markets in Kenya. Case study No. 6-5 of the program: “food policy for developing countries: the role of government in the global food system”. New York: Cornell University.

Dyer, J.H. & Chu, W. 2003. The role of trustworthiness in reducing transaction costs and improving performance: empirical evidence from the United States, Japan, and Korea. *Organization Science*, 14(1):57-68.

Eisenhardt, K.M. 1988. Agency-and Institutional-theory explanations: the case of retail sales compensation. *The Academy of Management Journal*, 31(3):488-511.

Fries, R. & Akin, B. 2004. Value chains and their significance for addressing the rural finance challenge. Accelerated Microenterprise Advancement Project (AMAP) Microreport No. 20. Washington DC: USAID.

Galarza, L.J. & Jones, B. 2009. WOCCU value chain finance implementation manual. Increasing profitability of small producers. Washington DC: The SEEP network and WOCCU.

Ghani, T. & Williamson, O. 2012. Transaction costs economics and its uses in marketing. *Journal of the Academy of Marketing Science*, 40:74-85.

Gioè, M. 2006. Can horticultural production help African smallholders to escape dependence on export of tropical agricultural commodities? *Crossroads*, 6(2):16-65.

Gonzalez-Vega, C. 2006. Modern value chains: towards the creation and strengthening of creditworthiness. In: Quiros, R. (ed.) Agricultural value chain finance. *Summary of conference*, Costa Rica, 16-18 May:45-65.

Gooch, M., Felfel, A. & LaPlain, D. 2009. Proposing a risk management framework for value chain initiatives. Oakville: Value Chain Management Centre.

Hallam, D., Liu, P., Lavers, G., Pilkauskas, P., Rapsomanikis, G. & Claro, J. 2004. The market for non-traditional agricultural exports. Commodities and trade technical paper 3. Raw materials, tropical and horticultural products service commodities and trade division. Rome: FAO.

Hansel, J.E. 2007. Risk-sharing models increase market access and financial and non-financial services to farmers. *Enterprise Development and Microfinance*, 18(2&3):109-125.

Henson, S., Jaffee, S., Cranfield, J., Blandon, J. & Siegel, P. 2008. Linking African smallholders to high-value markets: practitioner perspectives on benefits, constraints, and interventions. Policy research working paper 4573. Washington DC: The World Bank.

Hofmann, E. 2005. Supply chain finance: some conceptual insights. In: Lasch, R. & Janker, C.G. (Hrsg.): *Logistik Management - Innovative Logistikkonzepte*:203-214. Wiesbaden.

IFAD 2005. *Egypt: Smallholder contract farming for high-value and organic agricultural exports*. Programme management department, near East and North Africa division.

IFAD. 2011. Proceedings of the conference. *Conference on new directions for smallholder agriculture*, Rome, 24-25 January.

International Finance Corporation (IFC). 2011. *Scaling up access to finance for agricultural SMEs: Policy review and recommendations*. Washington DC: The World Bank.

ITUC. 2010. *Swaziland: International solidarity actions*. [Online] Available from: http://www.ituc-csi.org/IMG/pdf/Swaziland_action_day.pdf (accessed 2012-02-20).

Jacobides, M.G. & Croson, D.C. 2001. Information policy: shaping the value of agency relationships. *Academy of Management Review*, 26(2):202-223.

Jaffee, S., Siegel, P. & Andrews, C. 2008. Rapid agricultural supply chain risk assessment: a conceptual framework and guidelines for application. Washington DC: The World Bank.

Jensen, M.C. & Meckling, W.H. 1976. Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4):305-360.

Johnson, G.I, Weinberger, K. & Wu, M. 2008. The vegetable industry in Tropical Asia. An overview of production and trade, with a focus on Thailand, Indonesia, the Philippines, Vietnam and India. Shanhua: The World Vegetable Center.

Johnston, C., Meyer, R.L. & Curtis, A. 2007. Value chain governance and access to finance: maize, sugar cane and sunflower oil in Uganda. Microreport No. 88. Washington DC: USAID.

Karki, S., DeWald, J. & Shahi, M. 2004. Value chain finance and Nepal: Perspectives and insights. Nepal: MercyCorps.

Kim, J. & Mahoney, J.T. 2005. Property rights theory, transaction costs theory, and agency theory: An organisational economics approach to strategic management. *Manage. Decis. Econ*, 26:223-242.

Kimathi, M., Nandazi, M.M., Miller, C. & Kipsang, D.N.K. 2008. Africa agricultural value chain financing synthesis report. 3rd *AFRACA Agribanks forum*. African Rural and Agricultural Credit Association (AFRACA) and Food and Agricultural Organization (FAO).

Kirsten, J.F., Dorward, A.R., Poulton, C. & Vink, N. 2009. Institutional economics perspectives on African agricultural development. Washington DC: International Food Policy Research Institute (IFPRI).

KIT & IIRR. 2010. *Value chain finance: Beyond microfinance for rural entrepreneurs*. Nairobi: Royal Tropical Institute and International Institute of Rural Reconstruction.

Kopicki, R. & Miller, C. 2008. DrumNet: an enterprising third party transaction manager. EASYPol module 148, FAO policy learning programme. FAO.

- Kumar, A. 2008. Value chain finance to develop the honey sub-sector in India. *Enterprise Development and Microfinance*, 19(4):317-330.
- Li, J. & Wang, J. 2011. Value chain risk analysis, measurement and management strategy: based on fuzzy set. Taiyuan: Department of management, Shanxi University.
- Lofgren, K., Persson, T. & Weibull, J.W. 2002. Markets with Asymmetric Information: The Contributions of George Akerlof, Michael Spence and Joseph Stiglitz*. *The Scandinavian Journal of Economics*, 104(2):195-211.
- Masarirambi, M.T., Mavuso, V., Shongwe, V.D., Nkambule, T.P. & Mhazo, N. Indegenous post-harvest handling and processing of traditional vegetables in Swaziland. *African Journal of Agricultural Research*, 5(24):3333-3341.
- Mennonite Economic Development Associates (MEDA) 2011. Value chain assessment the cashew nuts sector in the province of Nampula, Mozambique. Final report. African cashew initiative (ACi) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
- Milder, B. 2008. Closing the gap: reaching the missing middle and rural poor through value chain finance. *Enterprise Development and Microfinance*, 19(4):301-316.
- Miller, C. 2007a. Setting the stage: value chain financing in Africa. FAO.
- Miller, C. 2007b. Value chain financing models: building collateral and improving credit worthiness. In: Digal, L.N. (ed.) *SouthEast Asia regional conference on agricultural value chain financing, Conference proceedings*, Kuala Lumpur, 12-14 December:17-27.
- Miller, C. & Da Silver, C. 2007. Value chain financing in agriculture. *Enterprise Development and Microfinance*, 18(2&3):95-108.
- Miller, C. 2010a. Introduction. In: Quiros, R. (ed.) *Proceedings of the conference "Agricultural value chain finance"*, Costa Rica, 22-24 February:31-39.

Miller, C. 2010b. Using the value chain in financing agriculture. *3rd world congress on rural and agricultural finance conference*, Marrakech, 28-30 October.

Miller, C. & Jones, L. 2010. *Agricultural value chain finance: tools and lessons*. Bourton: Food and Agriculture Organization of the United Nations and Practical Action Publishing.

Miller, C. 2011. Agricultural value chain finance strategy and design: Technical note. FAO.

Mishra, D.P., Heide, J.B. & Cort, S.G. 1998. Information asymmetry and levels of agency relationships. *Journal of Marketing Research*, 35(3):277-295.

Msibi, D. 2009. Financial intermediation for growth and wealth creation in Swaziland. *AFRACA Southern Africa Sub regional (SACRAT) workshop*, Harare, 4-6 November.

Nagarajan, G. & Meyer, R.L. 2005. Rural finance: recent advances and emerging lessons, debates, and opportunities. Columbus: Department of Agricultural, Environmental, and Development Economics, Ohio State University.

Nilsson, J., Svendsen, G.L.H & Svendsen, G.T. 2012. Are large complex agricultural cooperatives losing their social capital? *Agribusiness*, 28(2):187-204.

Nkambule, N. 2012. Local baby vegetables grower exports to Woolworths, Europe. *The Swazi Observer*, 15 February. [Online] Available from: <http://www.observer.org.sz/index.php?news=35511> (accessed on 2012-04-14).

Onumah, G.E. Davis, J.R., Kleih, U. & Proctor, F.J. 2007. Empowering smallholder farmers in markets: changing agricultural marketing systems and innovative responses by producer organisations. ESFIM working paper 2. Natural Resources Institute, University of Greenwich.

Pandey, T., Nagahari, K., Venetia, V., Antonio, M. & Raghavendra, M. 2010. Innovative payment solutions in agricultural value chain as a means for greater financial inclusion. *Agricultural Economics Research Review*, 23:527-534.

Patulny, R. 2005. Social rights and social capital: welfare and co-operation in complex global society. *Australian Review of Public Affairs*, 6(1):59-75.

Pearce, D., Goodland, A. & Mulder, A. 2004. *Information note on microfinance and rural finance: microfinance institutions moving into financing for agriculture*. Agriculture investment sourcebook:314-318. The World Bank.

Prajogo, D. & Olhager, J. 2012. Supply chain integration and performance: the long-term relationships, information technology and sharing, and logistics integration. *International Journal of Production Economics*, 135(1):514-522.

Sahin, F. & Robinson, E.P. 2002. Flow coordination and information sharing in supply chains: review, implications, and directions for future research. *Decision Sciences*, 33(4):505-536.

Saleque, M. A. 2007. An effective way to integrate small-scale farmers in the value chain: the experience of BRAC. In: Digal, L.N. (ed.) *SouthEast Asia regional conference on agricultural value chain financing, Conference proceedings*, Kuala Lumpur, 12-14 December 51:65.

Schiff, H. & Stallard, J. 2009. Purchase order finance in Bolivia: innovations in financing value chains. Microreport No.151. USAID.

Singh, A. & Zhang, J. 2012. Sources of funding and support system for value chain finance: lessons from Asia. Background paper 6: *Workshop on enhancing exports' competitiveness through value chain finance*, South Africa, 15-16 November.

Stephen, A 2010. Growing baby vegetables. Harvest to table. [Online] Available from: http://www.harvesttotable.com/2010/03/growing_baby_vegetables_1/ (accessed 2013-09-25).

Strohm, K. & Hoeffler, H. 2006. *Contract farming in Kenya: Theory, evidence from selected value chains, and implications for development cooperation*. Promotion of private sector development in agriculture. Ministry of Agriculture and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Nairobi.

Sturgeon, T. J. 2008. From commodity chains to value chains: interdisciplinary theory building in an age of globalization. Industry studies working paper 2008-02. Stanford University Press.

Swaziland. National Agricultural Marketing Board. 2003. *Annual report and financial statements*. Manzini.

Swaziland. National Agricultural Marketing Board. 2004. *Annual report and financial statements*. Manzini.

Swaziland. National Agricultural Marketing Board. 2009. *Annual report and financial statements*. Manzini.

Swaziland. National Agricultural Marketing Board. 2010. *Annual report and financial statements*. Manzini.

Swaziland economy profile 2013. Index mundi. [Online] Available from: http://www.indexmundi.com/swaziland/economy_profile.html (accessed 2013-08-07).

Swaziland Investment Brief. 2008. Water for agriculture and energy in Africa: the challenges of climate change. *High-level conference*, Sirte, 15-17 December.

Swedel, K. 2006. Value chain financing strategy for an orderly, competitive integrated market. In Quiros, R. (ed.) *Summary of the conference "Agricultural value chain finance"*, Costa Rica, 16-18 May:11-27.

Swedel, K. 2010. Agricultural value chain finance: four years on. In: Quiros, R. (ed.) *Proceedings of the conference "Agricultural value chain finance"*, Costa Rica, 22-24 February:9-26.

Swinnen, J.F.M. & Maertens, M. 2007. Globalisation, privatisation, and vertical coordination in food value chains in developing and transition countries. *Agricultural Economics*, 37(1):89-102.

Swinnen, J., Maertens, M. & Vandeplas, A. 2010. Governance and smallholder farmer competitiveness in high value food chains. *World Bank-SPIA-UC Berkeley conference "Agriculture for Development-Revisited"*, UC Berkeley, 1-2 October.

TechnoServe. 2010. *Breakthrough for a baby vegetables farmer: success stories*. [Online] Available from: <http://www.sdcinvestments.com/sdemane-farming.html> (accessed 2012-10-21).

Temu A. and Marwa N. 2007. Changes in the governance of global value chains of fresh fruits and vegetables: opportunities and challenges for producers in Sub-Saharan Africa. Research Papers, South Centre.

Temu A. and Temu E. 2006. High value agricultural products for smallholder markets in Sub-Saharan Africa: Trends, opportunities and research priorities. *Prepared for an international workshop on: how can the poor benefit from the growing markets for high value agricultural products*, Colombia, 3-5 October.

The Swaziland agricultural diversification strategy 2009. A draft strategy, volume 2. Mbabane: Swaziland Water and Agricultural Development Enterprise (SWADE).

The World Bank. 2005. *Rural finance innovations: topics and case studies*. Agriculture and rural development department, report no. 32726-GLB. Washington DC: The World Bank.

Thompson, C.F. 2012. The Swaziland business yearbook. [Online] Available from: <http://www.swazibusiness.com/sbyb2007/agric.html> (accessed 2012-04-18).

UNIDO. 2011. *Diagnostics for industrial value chain development: an integrated tool*. United Nations Industrial Development Organisation (UNIDO). Vienna, Austria.

USPG Ireland. 2011. The farm business plan. [Online] Available from http://www.limerick.anglican.org/resources/swaziland/business_plan.pdf (accessed 2012-06-26).

Vannoni, D. 1999. Empirical studies of vertical integration: the transaction cost orthodoxy. Working paper. University of Turin, Ceris-CNR.

Vilakati, B.N. 2007. *Farmers perceptions regarding opportunities and challenges in baby vegetables production in Swaziland*. Unpublished research project. University of Swaziland. www.brac.net. (accessed 2013-08-14).

Wolf, C. 2003. Value chains and business processes. Business process trends. Technical brief. [Online] Available from: <http://www.bptrends.com/publicationfiles/11-03%20TB%20Value%20Chains%20and%20BPs%20-%20Wolf.pdf> (accessed 2011-04-24).

Wolter, C. & Veloso, F.M. 2008. The effects of innovation on vertical structure: perspectives on transaction costs and competences. *Academy of Management Review*, 33(3):586-605.

Yang, Z.B., Aydin, G. Babich, V. & Beil, D.R. 2009. Supply disruptions, asymmetric information, and a backup production option. *Management Science*, 55(2):192-209.

APPENDICES

Appendix 1

Farmer	Received (kg)	Wastage (Kg)	Reject (kg)	Rejection rate %
Demo Plot	34550,7	8268,18	5287,77	15,30
1	9326,36	2047,8	2891,75	31,01
2	4836	207,3	684,2	14,15
3	2956,7	177,04	759,1	25,67
4	4299,7	2169,8	635,6	14,78
5	3474,7	1624,6	427,8	12,31
6	1173,8	380,2	229,6	19,56
7	11248,24	5656,22	2670,3	23,74
8	263,85	0	28,8	10,92
9	717,5	18,1	392,7	54,73
10	763	176,9	115,3	15,11
11	3331,7	1621,3	672,3	20,18
12	6357,8	228,58	1077,16	16,94
Average				21,11

Appendix 2

Activity	Farmer	Land size (Ha)	Cost (Emalangen)					
			Land preparation & planting	Seeds/seedlings	Fertiliser	Top dressing	Spraying	Power
	1	0.4	360	1750	500	135	200	450
	2	0.45	350	1700	400	130	170	450
	3	0.54	400	1750	450	135	210	450
	4	0.39	320	1650	500	135	250	450
	5	0.5	620	1700	200	130	500	0
	6	0.3	150	1300	300	0	160	0
	7	0.25	750	1900	420	0	500	100
	8	0.3	500	5000	800	520	400	400
	9	0.5	180	2800	1200	400	340	0
	10	0.4	360	1650	450	130	200	450
Average		0.40	399	2120	522	172	293	275