

Analysis of out-growers business model for canning French beans

The case of Meru Greens Horticulture, Kenya



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By

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Dedication

This thesis project is dedicated to God, the Most Merciful, for His divine protection throughout my studies and to the memory of my late Mum, Ruth Kaungu for instilling in me the virtues of discipline, hard work and enduring passion for education. I love and miss you so much Mum.

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Equivalents

1 EUR = Ksh. 130

Abbreviations

AKFED	Aga Khan Fund for Economic Development
CBI	Centre for the Promotion of Imports from Developing Countries
CDF	Community Development Funds
CF	Contract Farming
EU	European Union
EUREPGAP	Euro-Retail Produce Working Group (EUREP) Good Agricultural Practices. Currently known as Global-GAP.
FAO	Food and Agriculture Organisation
FIKA	Financial Knowledge for Africa
FKL	Frigoken Kenya Limited
FPEAK	Fresh Produce Exporters Association of Kenya
FTA	Field Technical Assistant
HCDA	Horticultural Drops Development Authority
KARI	Kenya Agricultural Research Institute
Kenya-GAP	Kenya Good Agricultural Practices benchmarked to Global-GAP
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KSH.	Kenya shilling(s)
KWFT	Kenya Women Finance Trust
MGH	Meru Greens Horticulture
MOA	Ministry of Agriculture
PRA	Participatory Rural Appraisal

Abstract

There has been growing interest in out-grower schemes through contract farming as a mechanism to coordinate linkages between farmers and agribusiness as a result of the international trends towards tighter alignment in agri-food supply chains. An effective out-growers system has the potential to address the imperfections in the agricultural markets relating to access to key factors of production such as land and labour, credit, insurance, appropriate technologies and market information.

Although out-growers schemes are often mentioned as the modality to overcome quality and quantity problems in a small-scale farmer setting, only limited success has so far been documented.

The study analysed the out-growers business model for canning French beans as it is implemented by Meru Greens Horticulture Ltd (MGH) with the aim of defining a framework under which the out-grower model can be best utilized based on lessons learnt from MGH and relevant best practices from other parts of the world in order to reduce risks and enhance sustainability in the out-grower-buyer relationship.

The study involved a review of literature on out-growers schemes and a field research which took place between 12th July and 19th August, 2011. The study assessed the organisation of the canned French beans value chain, the motivations for running or joining the out-growers scheme, the challenges facing both MGH and the farmers. The data were collected through a farmers survey stratified into three distinct production regions (strata) for comparisons. For triangulation of data, focus group discussions were held in the three regions in addition to four key informant interviews.

The results indicated that, although there was a statistically significant difference ($P < 0.05$) in the farmers' level of education across the three regions, it did not affect the farmers' ability to cultivate French beans as there was no significant correlation ($P < 0.05$) between the level of education and the average amount of beans the farmers harvested per kilogramme of seed planted. It was also established that majority of the farmers joined the scheme as individuals. MGH deliberately deals with individual farmers even when farmers have formal groups.

The study revealed that most of the farmers joined the scheme because of the guaranteed market. Whereas a few farmers said they joined the scheme because of the provision of inputs on credit and cash advances, majority of them rely on MGH for farming inputs. Despite the fact that majority of the farmers have a bank account, only a limited number have ever borrowed a loan from the bank and instead they rely on MGH cash advances and mostly personal savings for financing French beans cultivation.

Pests and diseases is one of the major challenges facing the out-growers. Other challenges include: high costs of inputs, water shortages, low produce prices and high labour costs. Despite these challenges, most of the out-growers do not receive any form of support from the other stakeholders apart from MGH.

Recommendations to make the scheme efficient were made. On farmer support, MGH may consider relinquishing cash and inputs supply on credit to the financial institutions and inputs suppliers by entering into a memorandum of understanding on behalf of the farmers. For easier service delivery such as in inputs distribution and monitoring in addition to facilitation of debt recovery, MGH should organise farmers into groups.

Finally, further research is suggested on the best mode of public-private among the private agro-chemical suppliers, public regulatory agencies, public and private extension providers and financial institutions for an effective and efficient out-growers scheme.

1. INTRODUCTION

1.1 Structure of the report

This report reviews the existing literature and current status of contract farming as it is practised by Meru Greens Horticulture (MGH) a company procuring canning French beans from small-scale growers in the county of Meru, Kenya.

This topic on contract farming, by means out-growers scheme, was specifically chosen because it is one of the chain governance strategies that can be used to address the market imperfections arising from inadequate credit facilities, insurance, flow of information, factors of production, raw materials and increase in transaction costs associated with bargaining and screening of products. It therefore falls in the domain of agricultural production chains management. For example, small-holder farmers may have access to cheap family labour and land but limited access to information and credit and insurance facilities. The management of MGH helped to identify the topic whose findings would be of immediate use to them.

This study therefore aims at defining a framework (circumstances) under which the out-grower model can be best utilized based on lessons learnt from the French beans value chain and relevant best practices from other parts of the world in order to reduce risks and enhance sustainability in the out-grower-buyer relationship.

To achieve this objective, the research endeavours to answer the following broad questions through empirical and secondary data:

- What is the organisation of the current value chain?
- What are the pros and cons of an out-grower business model?
- What are the key success factors of out-grower business model(s)?

The report is therefore structured around the above key questions into 6 other chapters. In the subsequent sections of this chapter, the importance of contract farming have been highlighted as background information, research problem and owner, justification, objectives and the research framework.

Chapter 2 reviews selective literature on contract farming. The review focuses on the definition of the concepts of contract farming and out-grower schemes and their relationship to the agricultural markets' imperfections and value chain governance. The various forms of out-grower model and their characteristics have been highlighted. The chapter also touches on the various aspects of out-grower scheme management and monitoring such as group formation.

Chapter 3 presents the methodology of the research including the study area, research strategy including data collection and analysis while highlighting some of the weaknesses inherent in the methodology. The chapter concludes with definition of terms that if not elaborated might confuse the reader. Meru county was chosen as the study area because of its familiarity to the researcher and the ease of approaching the respondents most of whom he had met before. Meru county, according to Guide2Kenya (2011), is an agricultural region and is home to MGH which has operated an out-growers scheme for over a decade.

The study methodology used survey and focus group style discussions with farmers and key informant interviews with the other stakeholders. Unlike in the survey where random sampling was carried out, key informants and the focus group discussion participants were selected by purposive selection based on their experience on the research topic (see list in appendix 9).

During the interview process of key informants and focus group discussions, guide questionnaires/check-lists were used (see appendix 2 - 5).

In the farmers' survey, questionnaires with closed and open ended questions were administered to collect a wide scope of information (see appendix 1).

Different methods were used to analyse the data. Quantitative data from the farmers' survey were analysed using a Statistical Package for Social Sciences (SPSS version 17) and the results presented in the form of tables, bar-graphs and pie-charts. PESTESWOT matrix, value chain mapping, adapted Porter's value chain and competitive advantage models and stakeholders' matrix were used to analyse and/or present the qualitative data from the other stakeholders' interviews and focus group discussions. The limitations of the undertaken research and their influence are also outlined.

Chapter 4 presents the results and findings in the form of quantitative and qualitative data. The researcher's observations during the process of field research are also incorporated. The chapter has two sections with the first section presenting data results from the farmers' survey. However, this section contains information gathered during focus group discussions where the same issues were dealt with for cross-verification. The second section presents findings from interviews with key informants and part of focus group discussions together with researcher's observations.

Chapter 5 is a discussion of the results and findings in detail while comparing them with existing literature to agree or criticise the existing knowledge. Some results from key informant interviews are presented together with their detailed discussions in chapter 4 in the form of PESTESWOT and multi-stakeholders matrices and models such as Porter's value chain and competitive advantage.

Based on the discussions, chapter 6 presents conclusions drawn from the findings and the discussions based on the lessons learnt.

Chapter 7 outlines recommendations for the improvement of the out-growers scheme as it is implemented by MGH based on the critical analysis of the current system and suggestions for further research.

1.2 Background information

With climate change threatening agricultural output, and the world's population estimated to grow by an extra 2.5 billion by 2050, even multinational food corporations are now looking towards sustainable small-scale farmers to secure their supplies of raw materials (Rooijakkers, 2010). This way, the contracting companies are able to spread production risks of crop failure due to drought or floods water. Estate production is therefore deemed risky where access to land, labour costs and the infrastructural investments may be high. According to Okello (2010), developed countries have expanded their sourcing of vegetables from developing countries to satisfy growing demand for these products which is driven by changing consumer incomes and urbanization. Kenya is one of the leading suppliers of French beans to the European markets and production is predominantly by smallholder farmers because they can employ family labour.

There has been growing interest in out-grower schemes through contract farming as a mechanism to coordinate linkages between farmers and agribusinesses as a result of the international trends towards tighter alignment in agri-food supply chains. Consequently, there has been a growing demand for information and technical support on planning and implementing contract farming operations. In response to this, FAO has developed a resource centre website on contract farming (FAO, 2011).

Well-functioning value chains are a major incentive to increase agricultural productivity and are a pre-requisite for the generation of a sustainable income for the farmers and higher profitability for agro-industrial firms. Access to raw materials and critical factors of production such as land and water has been impacted negatively by the increase in population and climate change. This calls for integrated approaches to poverty reduction and empowerment (people), economic growth (profit) and ecological sustainability (planet).

According to the Government of Kenya, (2010), in her agricultural sector development strategy 2010 – 2020, it is aimed at strengthening the synergies and interdependence of the agricultural sector with agribusiness by promoting forward and backward links. The government aims at achieving this through enforcement of contractual obligations, forging partnerships between smallholders and agribusiness in the form of out-grower and contract farming schemes. Contract farming, as noted by Warning and Key (2002), creates positive multiplier effects for employment, infrastructure and market development in the local economy. For this reason, it is more politically accepted (Abwino and Rieks, 2006) as opposed to estate production (Mayers and Vermeulen, 2002). Such partnerships guarantee smallholders of markets for their produce, and the supply of inputs on credit basis and access to other forms of agricultural financing in addition to technical support services. In such arrangements, contracting companies have a guarantee of consistent supply of produce of higher quality. This can also be an effective tool for rural industrialization and poverty reduction.

1.3 Research problem and problem owner

Meru Greens Horticulture (MGH), a privately owned agricultural production and marketing company has been in operation in Meru County since 1992. It is a produce marketing company, engaging small-holders in contract production of French beans while maintaining a supply contract with a processor-cum-exporter. It has been growing and marketing canning French beans in an out-growers system. Although out-growers model is usually hailed as the most workable method of engaging small-holder farmers in commercial production of high value horticultural crops, the company has faced a myriad of challenges implementing this model. This has led to very high business transaction costs. However, there is a great potential for a sustainable out-growers scheme especially with the unique opportunities presenting themselves in the wake of promulgation of a new constitution in Kenya. The constitution guarantees among other things women ownership of land and credible court systems to ensure a legal framework that captures the conditions for the legal agreement in the out-growers system.

Visualised problem (Causal diagram)

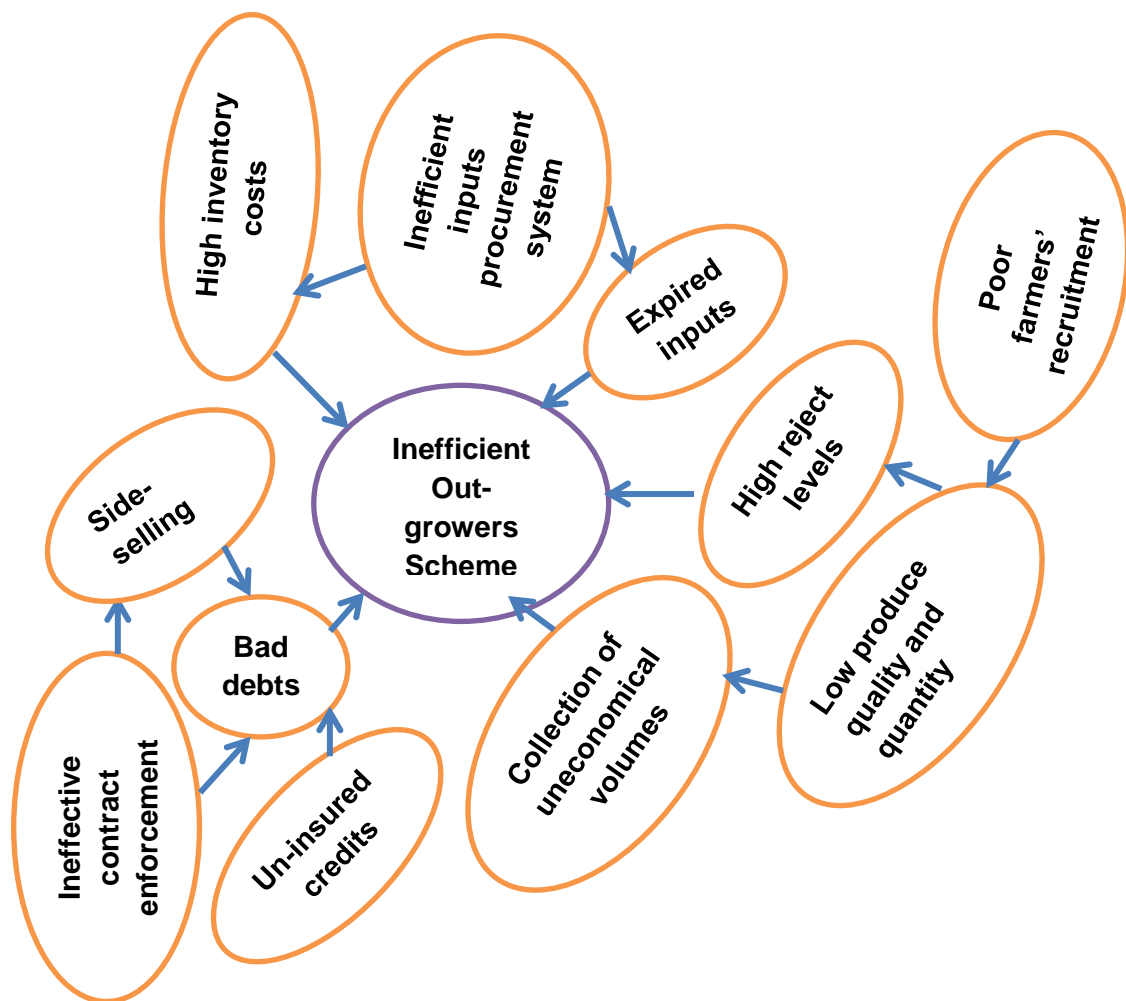


Figure 1: Visualised problem

1.4 Justification

Although out-growers schemes are often mentioned as the modality to overcome quality and quantity problems in a small-scale farmer setting, only limited success has so far been documented. On the other hand, when farmers produce without any prior agreement with the buyers or other market outlets, exporters and/or processors are often not able to procure the quantity and quality of the product they are looking for. Contract farming (CF) is a possibility to improve such a situation. According to FAO, 2002, many attempts to produce in an out-growers system have been only partially successful or have failed entirely in producing the expected quantities and quality of produce. Most important issues in these business models are quality control and secured supply, the creation of dedicated, sustainable chains of production, and a fair share principle for the added value created. Yet many commercial out-grower schemes struggle to succeed in reaching these objectives. Contracting with many smallholders can be costly for firms and time consuming to organize.

Quite often, farmers do not stick to the contract or quality/quantity agreed upon and standards are not achieved. Other times, the contracting companies fail to honour the agreement by refusing to pay

At times, when smallholders have taken loans from the contracting company, they have an incentive to sell elsewhere to avoid deduction of these loans (Natural Resources Institute, 2003). In essence, this leads to increased transaction costs and risks. Out-grower models should not be static. Continuous contract enforcement and frequent fine-tuning need to be done to address emerging constraints and changing economic environments (World Bank, 2006).

An ever-increasing human population drives an increasing demand for horticultural produce such as French beans which can be produced more efficiently by contracted smallholders because of their high labour demand. While there are examples of successful corporate smallholder partnerships in the tropics, many attempts have been only partially successful or have failed entirely in producing significant quantities and quality of produce in ways that benefit both the growers and the contracting company (FAO, 2002).

When efficiently organized and managed, out-grower system through contract farming reduces risk and uncertainty for both the producers and the contractors. A functional French beans out-growers scheme can be adjusted and introduced in other crops by MGH or other companies in the region.

1.5 Objectives

- To carry out a comprehensive review of the out-growers scheme model as it is implemented by MGH while taking cognisance of the models being implemented elsewhere.
- To make appropriate recommendations to improve the model being implemented by MGH based on review of experiences and best practices being implemented elsewhere.

1.6 Scope of research and demarcation of the subject

This research did not look into the technical aspects of French beans production.

The study therefore, dwelt on the management aspects of out-growers system as a supply chain governance strategy.

The recommendations will be for the out-growers scheme as it is implemented by Meru Greens Horticulture. The research was based on the research framework shown in figure 2 next page.

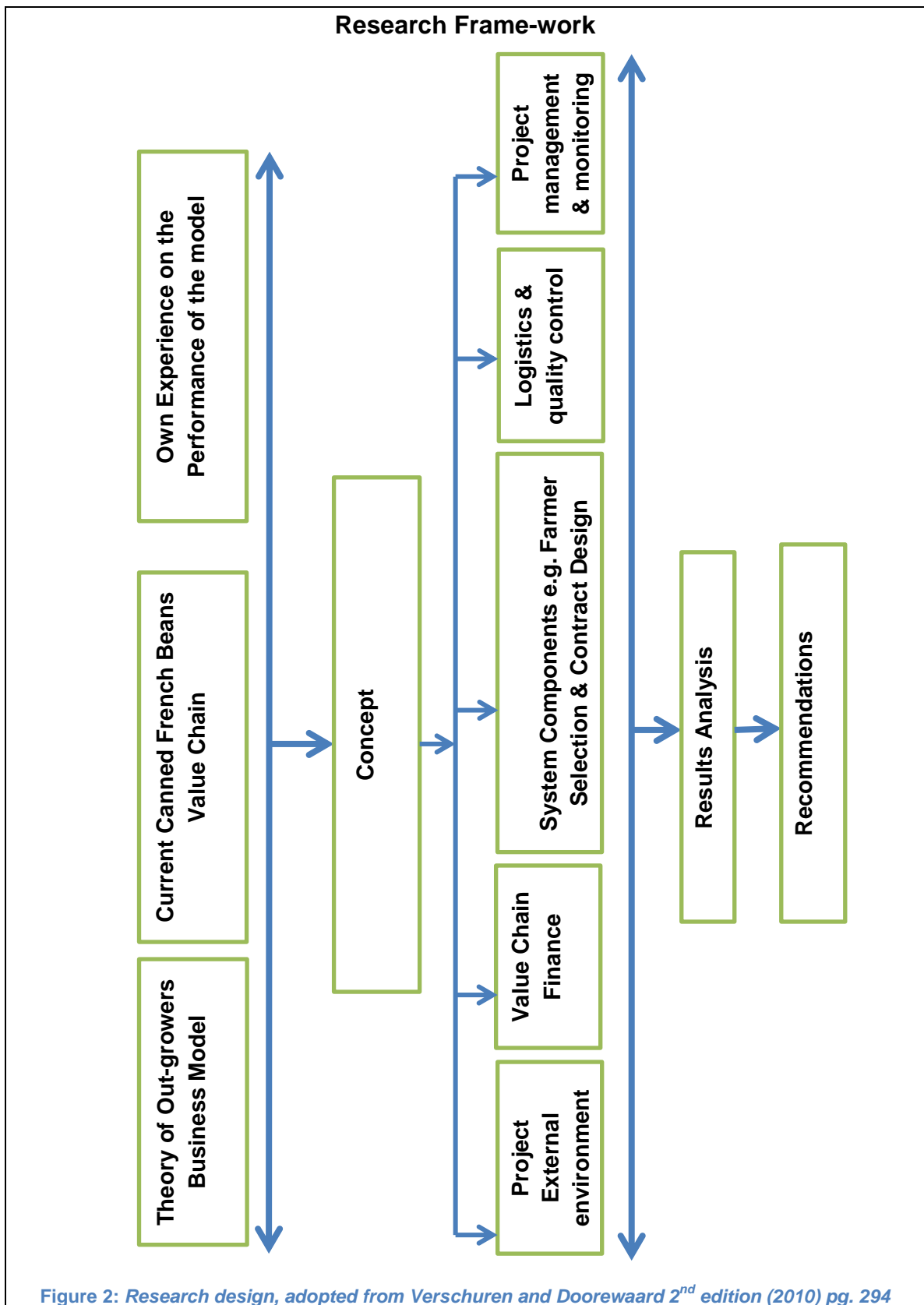


Figure 2: Research design, adopted from Verschuren and Doorewaard 2nd edition (2010) pg. 294

2. LITERATURE REVIEW

2.1 Definition of out-growers scheme and contract farming

FAO, 2001 defines an out-grower scheme as a partnership based on contracts between growers or landholders and a company for the production and supply of agricultural or forestry products. The partnerships seek to share the production and marketing risks between the growers and the contracting firm. The risks stem from market and/or institutional imperfections resulting in smallholders' limited access to inputs, market information, infrastructure, financing and/or insurance (World Bank, 2006; Key and Runsten, 1999). Contract farming is therefore a supply chain governance strategy (World Bank, 2006) in response to the above-mentioned shortcomings. While growers take up production risks, the contracting firm takes care of marketing risks and costs including support and monitoring costs surrounding the production process (Arumugam, et al., 2010).

In an out-growers arrangement, the agro-industrial firm is able to spread the production risks without having to invest in land, labour and other factors of production. However, the firm, through its elaborate extension system, is able to monitor the production by visiting the farmers frequently to ensure good realisation of enough quantity and quality of produce and ultimately track product traceability (Poulton, Dorward and Kydd, 2010). Growers can be individual farmers or a group of farmers using private or communal land that has a guaranteed tenure at least for the contract period as one of the preconditions. The prices and terms of purchase are set in advance while the contractor may provide extension package of inputs, credit and technical advice (Overseas Development Institute, 2000). In other words, ad hoc trade agreements are replaced by co-ordinated commercial relations between growers, processors, and traders leading to a vertical integration of the agricultural value chain. Contract arrangements can also be a good source of an additional income and valuable information which are limited for the smallholders. The smallholders shift from the subsistence or traditional agriculture to the production of export-orientated, high-value products. Natural Resources Institute, (2003) notes that smallholder partnerships in the production of high value horticultural crops have unique benefits due to their willingness to embrace opportunities that offer regular income and guaranteed markets. They have inherent strengths as well as weaknesses as shown in the table 1 below.

Table 1: Strengths and weaknesses of smallholders involved in out-growers schemes

Strengths	Weaknesses
➤ Use of manual labour enables them to grow crops that are uneconomical to mechanise	➤ The majority of smallholder farmers live in areas with poor infrastructure such roads and storage facilities
➤ Year round supply due to their varied settlement in areas with differing climate	➤ Inadequate pricing information
➤ Potential to raise huge volumes of produce because they exist in large numbers.	➤ High interest bearing loans
➤ Low costs of production as a result of use family land and labour	➤ Low bargaining powers when they are not in stable groups
➤ They can manage a crop closely owing to their smaller production scale	➤ Low levels of production and scattered distribution increases the costs of coordination, monitoring and ensuring traceability
	➤ Limited access to technical information

The various strengths give the agro-industrial firms an incentive to contract with smallholder farmers.

Each of the above shortcomings can be overcome as described below:

- **High cost of monitoring to ensure traceability of produce.** To overcome this, devolution of responsibility to the group leaders and designing and implementation of appropriate record keeping and monitoring techniques is essential.
- **High transaction costs because of the need for greater organization and co-ordination** can be overcome by group(s) formation (see section 2.7.2: Forming and managing producer groups).
- Arrangements should be made (by the contracting company) to make extension services and other inputs accessible to the farmers in order to curb the **problem of access to technical information and inputs.**
- **Weak negotiation skills** can be overcome by building genuine business relationships based on viable market opportunities, transparency and trust.

Source: Natural Resources Institute, 2003

2.2 Prerequisites for out-grower system

Apart from striving to sustain or increase their profits by implementing an out-growers model, companies need, to be sure:

- that the crops selected and the methods of production adopted build on the strengths of smallholders and minimize the impact of any weaknesses they may have.
- that the crop and its production methods used are both agronomically and environmentally sustainable. According to Abwino and Rieks (2006), the specific crop must be suited in the selected physical environment in terms of suitability of the topography, location of the out-growers, climate, soil fertility and water availability.

Abwino and Rieks (2006), further advice that before a firm sets out to form an out-growers scheme, there must be an already identified long-term profitable market.

The firm can then gauge the social and physical environment of the targeted contract area including the available government support.

The interaction of these pre-conditions directly affects the quantity, quality and ultimately the profitability of the scheme in general.

Out-growers schemes should not compromise the out-growers social conditions, environmental integrity and economic viability of their ventures.

Environmental and Socio-economic concerns

Some of the environmental concerns such as chemical inputs, soil, water and waste and pollution management are covered by codes of practice and standards such as Global-GAP (Global-GAP, 2010).

Most of the social issues covered by the horticultural sector codes of practice such as freedom of association, prohibition of forced or child labour and legal minimum wages among others relate to employer-employee relationship (Global-GAP, 2010). However, there are also certain other socio-economic issues not covered by codes of practice, which should be taken into account when working with smallholders. They include extra-contractual marketing, labour availability and contract stipulations incompatible with social norms and traditional practices. For example, harvesting activities should not coincide with festivals or celebrations which can incite farmer dissatisfaction and withdrawal from the project.

The scheme must ensure equitable women participation in the programme through capacity building and facilitation in terms of accessible credits and inputs.

Economic considerations

According to FAO 2002, growers perceive potential benefits from out-grower schemes when:

- net returns that are higher than alternatives are anticipated;
- cash flow is reliable through a regular income or assured sales;
- technical and financial support is available; and
- terms of engagement with the contractor are clear.

The potential returns must be demonstrated to the growers on the basis of realistic yield estimates while the risk must be at an acceptable level (Mayers and Vermeulen, 2002).

2.3 Contract farming as a response to market imperfections

According to Key and Runsten (1999), contract farming is an organisational strategy¹ in response to imperfections in markets for credit, insurance, information, factors of production, and raw product; and in transaction costs associated with search, screening, transfer of goods, bargaining and enforcement. For instance, whereas small-holder farmers may have access to cheap family labour and land they lack market information, appropriate technologies and access to credit and specialised inputs such as improved planting materials and agro-chemicals. Warning and Key (2002) argue that the market imperfections have been as a result of economic reforms being carried out by governments that aim at reducing public expenditure on credit programmes, inputs subsidies, research and extension. Agro-industrial firms therefore step in to not only fill these gaps by providing the said services but also take advantage of the situation to engage the farmers in supply agreements because they can capture the returns to their investment at the marketing and processing stages (Poulton, Dorward and Kydd, 2010).

2.3.1 Negative impact of contract farming

Contract farming has inherent dangers where the contracting companies can manipulate the producers through arbitrary quality criteria and produce rejections. This is especially true where local and regional markets are weakly developed. In this kind of a relationship, the contracting firm has the power of money and the market. This in effect leads to skewed income distribution, established indebtedness and overdependence on the part of the farmers, household tensions, food insecurity and selective regional development due to strict and rigid farmers' recruitment.

2.3.2 Role of the government

The government, according to Natural Resources institute (2003), has the following responsibilities in ensuring that contract farming works well for both the farmers and the contracting firms:

Regulatory and enabling role

- Appropriate laws and efficient legal system.
- Arbitration or dispute resolution.
- Provision of training in technological and managerial skills.
- Initiation and facilitation of research activities into the products under contract.
- Provision of agricultural extension services.
- Provision of specialized services (phytosanitary controls, plant pathology, research stations).

¹ "To maximise profits, firms chose their organisational strategy –whether or not to contract production, integrate vertically through estate production or spot buying. The determinants of the decision are discussed in detail by Key and Runsten (1999)."

Development role

- Reallocation of development resources to ensure good road networks and cooling facilities
- Promotion of contract farming by bringing together agribusiness and interested farmers or farmer groups
- Dissemination of market information on products for which there is a demand
- Strengthening managerial skills of farmer organizations
- Registration of out-grower companies

2.4 Kenyan French beans prospects in the international market

CBI (2011) notes that the French have for long perfected the methods for growing green beans and that is why the green beans are also called French beans while the French call them “haricots verts”. These methods have however become too expensive in Europe owing to the high labour intensity. They have increasingly outsourced bean supplies from the developing countries including Kenya which is the second largest, from the Netherlands, exporter to France. French canners such as the Bonduelle have established a strong trade relationship with Kenyan producers which explains the 21 per cent of France French beans imports coming from Kenya. Actually, France accounts for 69 per cent of all the EU canned beans’ imports. In 2009, France had the leading canning industry in the EU accounting for 32 per cent of EU production of canned vegetables.

2.5 Motivations for running and/or joining out-growers scheme

Masakure and Henson (2005)², note that contract farming, both in the developed and the developing world, has become increasingly common as a process of agro-industrialisation. They argued that the motivation for an agribusiness to enter into a contract arrangement with growers differ depending on the firm and the particular sector. The various motivations can be classified broadly as: performance assurance and risk management. The risks vary from limited access to factors of production such as land and labour, price fluctuations, quantity and quality inconsistencies due to vagaries of weather and other production problems related to pests and diseases.

From the perspective of producers, Masakure and Henson, (2005); Arumugam, et al. (2010), indicate the following factors as the incentives for entering into contract arrangements with an agro-industrial firm. They include:

- Access to marketing information technology.
- Transfer of technology and machinery to improve farming practices.
- Access to farming inputs.
- A response to missing markets in an environment of persistent risks.
- Incomplete information and information asymmetry.
- The need to access credit to overcome input supply problems.
- Potential enhancements in access to extension advice.
- Increased market integration and stability.

² Unless otherwise stated, most of the literature cited in this section comes from Masakure and Henson (2005).

2.5.1 Influence of crop characteristics on contract farming

The market for quality standard beans, which offers low-priced products, is saturated and offers opportunities only to large scale producers (CBI, 2011).

The niche market for fine and extra fine quality beans is interesting to small scale suppliers because quality fine and extra-fine beans are labour intensive and better suited for small-holder farmers as opposed to large growers. This also makes it expensive to produce in Europe and elsewhere in the developed world.

According to HCDA (2011), French beans varieties that are suited for canning includes the Julia variety which MGH grows in their scheme. The prices remain stable because they can be processed and stored even when there is over-production.

The transaction frequencies of French beans are two to three times a week and payments cannot be made on daily basis. This coupled with the uncertainties of the crop in terms of perishability and variability of crop quality necessitates signing of contracts between the producers and the company.

2.6 Out-grower schemes models

According to Strohm and Hoeffler (2006), there are four distinct out-grower models namely;

- The centralized model
- The nucleus estate model
- The multipartite model
- The informal model
- The intermediary model

The centralized model

In this setting, the buyer, usually a processor and/or exporter directly contracts a large number of farmers or farmers' groups. In most cases, the buyer provides technical back-up, inputs provision as well as collection of the produce from predetermined collection points. The payments are made to the farmers through either their respective groups or individual accounts. Examples of this model in Kenya include Homegrown Kenya Ltd and Frigoken Kenya Ltd.

The intermediary model

This is a scenario where the final buyer, usually an exporter and/or processor out-sources the produce from an intermediary company. Both parties enter into a formal contract where the intermediary company engages the growers through either formal or informal contracts for the supply of the produce. The intermediary company handles operations such as inputs supply, extension services, transportation of the produce to the exporter's and/or processor's premises and timely farmers' payment. This is convenient for the buyer because it eliminates the burden of having to deal directly with numerous small-holder farmers. As noted by Strohm and Hoeffler (2006), an intermediary can evolve into a central company as it is the case with MGH which is in the process of acquiring a processing factory. This will enable the company to integrate vertically³ and start exporting directly to the consumers in Europe. A good example of this model is the arrangement between MGH and Frigoken Kenya Ltd.

³ As Strohm and Hoeffler (2006) noted, MGH's vertical chain integration has been made possible by market experience and a steady increase in the out-growers' base.

Depending on the terms of contract and the relationship between the two partners, the exporter and/or processor may enter into value chain financing agreements where the exporter and/or processor may extend support to the intermediary company in the form of cash advances, inputs supply or technical back-up. This kind of model has worked very well for MGH and Frigoken Kenya Ltd.

The nucleus estate model

The exporter grows most of the crop to be processed and/or exported in the company's farm usually called an estate or plantation. The balance, especially during the times of scarcity, is then sourced from the neighbouring out-growers'. The processing plant is usually within the estate. The neighbouring farmers get support from the exporter in the form of farming inputs, technical advice and logistical services such as packaging materials and transportation of the produce. However, as stated by Abwino and Rieks (2006), they still stand the risk of high reject rates as produce from the exporter's estate are given the first priority.

The multipartite model

This is where a number of stakeholders such as the producers (farmers), exporters, financial institutions and/or NGO's come together with each of them offering specific services. For example, financial support and/or entrepreneurial training services are better delivered by a financial partner while exporters deal with produce marketing and logistics. This kind of model requires a high level of coordination to ensure that all stakeholders deliver their roles.

The Informal model

This involves seasonal contracts for the purchase of produce between the growers and the buyers who are usually small companies or middlemen. At times, these contracts are through a word of mouth with the farmers' support being limited to basic inputs such as seed and fertilisers while relying on public extension services for technical back-stopping (Abwino and Rieks, 2006).

2.7 Management of out-grower schemes

2.7.1 Profitability of schemes

Financial risk

To reduce financial risks for both the growers and the contracting firm:

- The crop must be familiar to the farmers and agronomically well suited to the particular region.
- The farmers must be able to produce to the required specifications in terms of quantity and quality.
- The obligations of both parties must be spelt out in advance.

Added value

After establishing the costs at every stage of the production chain, the company must do everything in its capability to ensure that an adequate share of the profits accruing from the enterprise reach the farmers. In that way, the company is able to win the growers loyalty.

Profit calculation

A company's decision to out-source produce from small-scale growers is dependent on the price that must be paid which is directly related to the cost of production and the reliability of supply from the viewpoint of quality, regularity of supply and political, social, economic and environmental sustainability.

Profitability is then calculated by subtracting the costs of production from the gross revenue. The opportunity costs of family labour and land need to be put into consideration as it greatly affects profitability.

The smallholders' decision on whether or not to adopt an enterprise as an out-grower will therefore depend on the returns which they might expect from alternative uses of their land and labour, and on the relative reliability of these returns.

The opportunity cost which they attach to their family labour, which represents the net return on their investment, is thus the critical element in their profit calculation (Mayers and Vermeulen, 2002).

Profit distribution

As mentioned earlier (see section 2.2; economic considerations), profits must be competitive with other available alternative investment opportunities.

It is preferable that the smallholders' price is determined in a way that gives them a stake in the success of the purchasing company, and hence an incentive to sell good-quality products to that company rather than to another buyer, a competitor.

Most contracting companies pay the minimum price needed to secure the amount of produce they require. This pricing system has several disadvantages, both for the smallholders and for the company:

- it gives smallholders no incentive to sell to the contracting company rather than to any other company. Indeed if smallholders have taken loans from the contracting company they have an incentive to sell elsewhere to avoid deduction of these loans;
- it does nothing to build loyalty between the smallholders and the company.

As noted by Overseas Development Institute (2000), even the most successful out-grower schemes fail to outline a clear explanation of the price formula and procedure for paying growers and a procedure for independent arbitration. Box 1 next page shows a sample of pricing formula for green beans.

For farmers to be able to make informed decisions on whether or not to take up growing of the contract crops, it is important to develop transparent pricing systems (Jonathan, et al., 2010).

SAMPLE PRICE FORMULA FOR SMALLHOLDER GREEN BEANS PRODUCTION

The price at which the contracting Company agrees to buy the Smallholder's (Farmer's) beans is determined as follows:

- (1) A minimum price per kg green beans of acceptable quality is announced by the Company at least one month before the start of the coming planting season.
 - (2) This price is calculated as follows:
 - (a) The average cost of production for cultivating 1 ha of green beans in the area in question is determined by the Company in consultation with representatives of the Farmers' Group. The production costs are based on the recorded experience of contracted smallholders who grew green beans in the previous season, and include:
 - (i) the cost of all materials used for cultivating 1 ha of beans (seed, fertilizer, agro-chemicals, fuel, depreciation on cultivation equipment, harvesting equipment and materials);
 - (ii) the total value of the labour required through the season for all operations, charged at the opportunity cost of household labour in the area (usually equivalent approximately to the cost of hired labour in the local informal agricultural sector).
 - (b) The total cost of production is divided by the average yield of green beans from 1 ha achieved by contracted farmers in the previous season. The resulting figure is the absolute minimum price which the farmer must receive to cover the costs of production, without allowing for any profit margin or return on fixed investments (especially land).
 - (3) The base price (minimum price) is adjusted as follows:
 - (a) A minimum profit margin equivalent to approximately 25% of the cost of production is added. This profit margin must be set at a level which attracts farmers to grow green beans and sell them to the company, rather than apply their land and labour to alternative enterprises or sell their products in alternative markets. (If there are attractive alternative income-earning opportunities which farmers can take up, the minimum profit margin for green beans may need to be set at a higher level. The open market prices for green beans and for competing commodities - if such prices exist in the area - are useful pointers to the minimum profit margin which is required to attract and retain green bean growers).
 - (b) A quality bonus of 10% of the adjusted base price is added for extra fine beans (linked to the 10% premium which such beans realize in the end market).
 - (c) A levy of 2% of the base price may be retained by the company in a stabilization fund to allow for losses in storage or for losses or gains further up the marketing chain, but it must be made clear that this fund is held in trust for the smallholders.
 - (4) The adjusted base price is paid to farmers as follows:
 - (a) the value of all green beans delivered by each farmer in a particular calendar month is calculated by multiplying the kg of beans delivered by the adjusted base price;
 - (b) the costs of any inputs or services supplied to the farmer by the company on credit are deducted;
 - (c) the resulting net revenue due to the farmer is paid no later than the 15th of the month following the calendar month in which the beans were delivered to the company.
 - (5) At the end of the company's financial year, when the audited accounts have been received:
 - (a) the profit realized by the company through the export of green beans is calculated;
 - (b) a productivity bonus linked to company profits is calculated at an appropriate level for payment to contracted farmers;
 - (c) the productivity bonus is paid to contracted farmers per kg of green beans delivered in the previous financial year, as an incentive for future performance and as a trust-building exercise between farmers and company.
 - (6) Operation of a price formula based on the above model depends on:
 - (a) a willingness on the part of the company to accept a significant degree of transparency in relation to its financial accounts;
 - (b) an open consultation between the company and farmer representatives, usually with the help of a facilitating intermediary, throughout the process.
- Few companies may yet be willing to enter into such an open dialogue, but the dividends for those that do, in terms of enhanced farmer commitment and loyalty and raised future productivity, are great. The model should be viewed as an ideal target to be achieved over a period of time.

Adapted from: Natural Resources Institute, 2003

Box 1: Sample price formula for smallholder green beans production

2.7.2 Forming and managing producer groups

KIT, et al. (2006) and Lazzarini, et al. (2001) argue that small-scale farmers must exploit the social establishments in their localities to build structures to enable them position themselves favourably in the value chain. This can be through price negotiations and advocacy in lobbying for better terms of engagement with the buyer when they are in groups. Where horticultural producers are small and scattered over a large area, provision of services such as extension, inputs supply and collection of contracted produce from each one individually is uneconomic (Poulton, Dorward and Kydd, 2010). Communication, monitoring and quality control are also difficult. Such problems can be tackled easily when farmers are organised in groups.

Furthermore, there is an added advantage of joint collateral for loan security and peer group pressure for loan repayment which reduces default rates. These groups must be legally registered to ensure that they can enter into a binding contract with the contracting company.

Poulton, Dorward and Kydd (2010), further note that the prohibitive fixed costs associated with the establishment of traceability schemes can be reduced by spreading the costs amongst the farmers through collective action. Furthermore, committed farmers working together can perform some of the monitoring functions required for traceability at lower cost than the employees of buying firms can.

2.8 Performance monitoring

According to Masakure and Henson (2005), the relationship between the contracting firms and the producers within contract production are rarely governed by clear performance and risk-sharing incentives. A combination of both contracts (formal) and informal incentives may be the most cost-effective means of managing performance.

The contract, whether formal or verbal, must for instance address the issue of the utilisation of inputs if they are being provided by the agro-firm. This will ensure that they are not diverted to other non-contracted crops or sold out by the farmers. The contracting firm must also ensure that there are mechanisms in place to follow up the crops progress in the farm so that farmers attain top quality produce.

For the purposes of performance monitoring and the requirements for good agricultural practices, farmers must be taught and encouraged to keep records. These records should among other things capture the usage of inputs per block of crop. These records must be inspected by the company staff on every visit.

3. METHODOLOGY

This chapter presents the study area, the questions to be answered in the research, research strategy including data collection and analysis while highlighting some of the weaknesses inherent in the methodology. The chapter concludes with definition of terms that if not elaborated might confuse the reader.

3.1 Area of study and background of MGH

This study was carried out in the county of Meru where MGH has its Headquarters. All the key informants were based in this region as shown in figure 3 below except Frigoken representative Mr Peter Muthee whose offices are in Nairobi, the capital city of Kenya. According to Guide2Kenya (2011), Meru County lies in the Eastern part of Kenya. It borders Isiolo County to the North and North East, Tharaka County to the South West, Nyeri County to the South West and Laikipia County to the West. Meru is an agricultural county but also a business and educational centre for Eastern and North Eastern parts of Kenya. It has a population of about 1,400,000 as per the 2009 population and housing census.

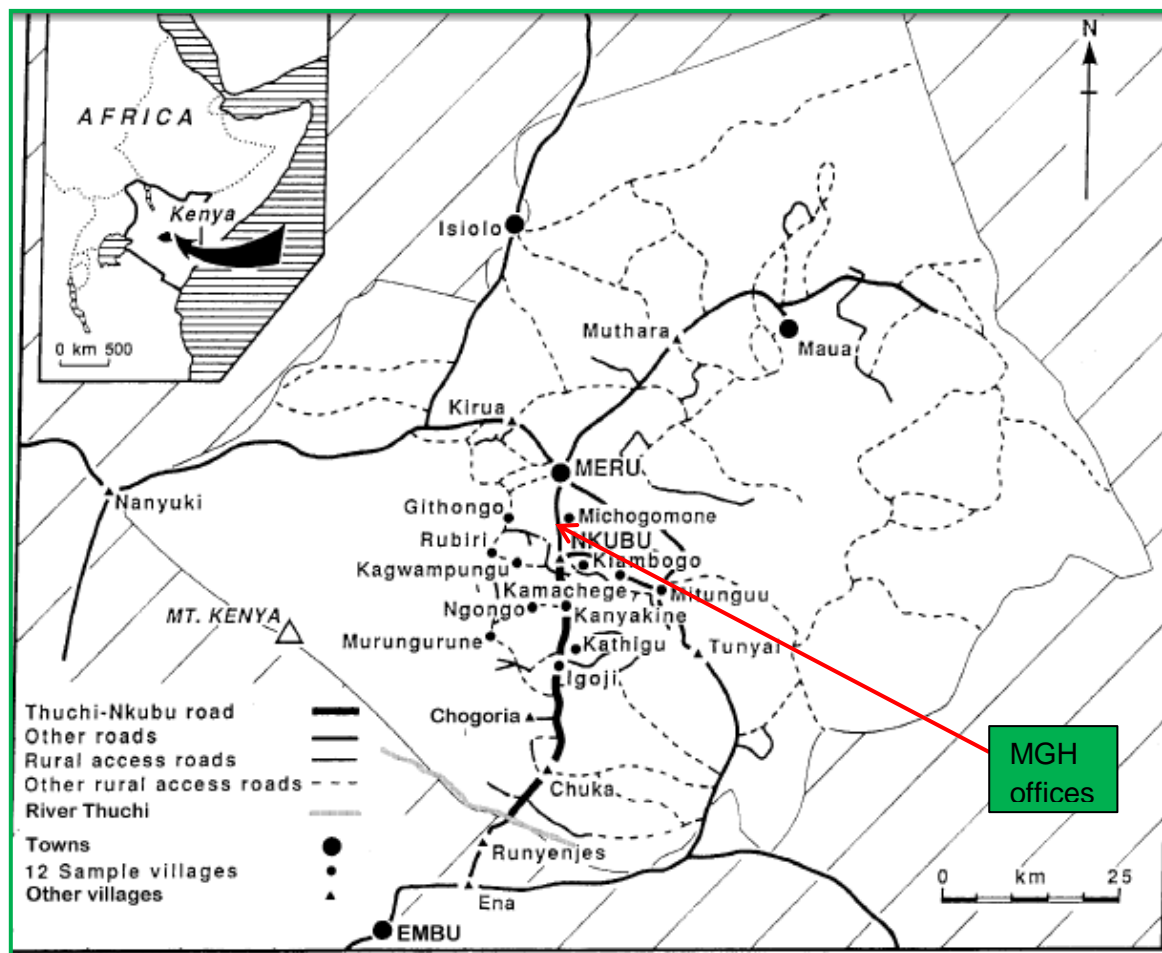


Figure 3: Sample of villages in the study area.
Adapted from, Transport Research Laboratory, 1998

Meru Greens Horticulture (MGH) is a privately owned horticultural company in Kenya. It was established in 1992 to grow and market high quality horticultural products. MGH's initial product has been French beans, the canning variety (Muthomi, 2009).

The company is contracted by a processor-cum-exporter to supply beans for canning. The processor exports predominantly to France.

MGH, on the other hand, sub-contracts about 6,000 small-holder farmers who are organised into groups in an out-growers scheme. However, these farmers are in production at different times of the year depending on the prevailing weather and other competing enterprises. These groups are spread across the county of Meru in the Eastern province of Kenya with the collection centres distributed proportionally among the respective farmer groups. The collection centres are administered by MGH's staff from where farmers receive inputs and deliver the contracted crop. The cost of inputs, most of which are supplied on credit, is recovered from the value of delivered produce during payments which are made every two weeks as indicated in the contract (see sample contract, clause 3 appendix 7). MGH also provides private extension, management support and marketing services including transportation. This means that MGH also plays the role of a chain facilitator (see figure 21). MGH stipulates strict criteria relating to produce quality among other aspects such as delivery time and place as shown in the sample contract in appendix 7. All produce that do not comply with the set out quality criteria is rejected at the collection centre and returned to the respective farmer(s). MGH, after collecting the produce from the farmers, undertakes preliminary processing including sorting and packaging into crates before forwarding to Frigoken for final processing and subsequent exporting. As such, this contractual arrangement not only increases household incomes and provides over 6,000 producers, most of them women, with a primary source of livelihood but also creates employment for at least 30,000 workers on these farms (Muthomi, 2009).

3.2 Research questions

Among other issues, the study therefore was aimed at answering the following research questions:

- What is the organisation of the current value chain?
 - Who are the stakeholders in the current French beans value chain?
 - What is the source of financing in the value chain?
 - What are the strengths and/or weaknesses of the current value chain?
 - What internal control systems are in place for farmers' recruitment and quality control?
- What are the pros and cons of an out-grower business model?
 - What are the company motives for running an out-growers scheme?
 - What are the smallholder motives for joining an out-growers scheme?
- What are the key success factors of out-grower business model(s)?
 - In what ways do out-grower scheme components such as farmers' recruitment, contract design and enforcement, logistics and financing influence the functioning of the out-grower model?
 - What is the influence of the external environment on the functioning of the out-growers model?

3.3 Research strategy

The study was largely observational. Observation of situations and measurement of variables of interest was done without any attempts of influencing the responses (Moore, 2000). A critical analysis of the current out-growers model was done which yielded insights for the formulation of sound recommendations for improvement.

It was done through the review of literature of various theories on the out-growers business models and relevant experiences and case studies from all over the world. The analysis was supplemented by interviews with the relevant representative actors.

Saunders, Lewis, and Thronhill, (2007, p.139) state that “data collection techniques in a case study research are various and are likely to be used in combination.”

Empirical data collection was through quantitative and qualitative approach based on techniques such as interviews and observations while literature review of textbooks and documents from FAO, World Bank and specific internet sites such as Web of science, Science Direct and Google-scholar provided secondary data. A survey of 30 out-growers, using stratified random sampling (Lohr, 1999 and Moore, 2000), was conducted in three distinct production zones (highlands, transition and lowlands).

The three regions differ agro-ecologically as it is reflected by the predominant crops that are grown. For example, the highlands are tea zones, the transitions are coffee zones while the lowlands are cotton zones. Random sampling within clusters of male and female farmers was done. Ten (10) farmers from each zone were interviewed. During the survey, a questionnaire with closed and open ended questions was administered to collect a wide scope of information (see section 3.4 on data collection and analysis). A sample farmers' questionnaire can be found in appendix 1.

For triangulation of information (Verschuren and Doorewaard, 2005) from the survey, three focus groups (one group from each zone) were selected for in-depth discussions. Each focus group comprised of 6–10 farmers for ease of management. Each group had an equal number of male and female members to enable analysis of contract farming on the basis of gender (cluster) among the farming community. The focus group participants were not supposed to have participated in the general out-growers survey.

Representatives of the other chain actors were engaged in this study as key informants to supplement data obtained from the farmers. Purposive selection was used to pick the informants based on their experience and their insights in the research topic (Oliver, 2008). These included: One MGH director, the general manager of a bean processing and exporting company (Frigoken) supplied by MGH, credit officer of Equity bank (one of the local banks that work closely with the farmers) and Kenya Horticultural Crops Development Authority (HCDA) depot technical manager in charge of Meru County.

During the interview process of key informants and focus group discussions, guide questionnaires/check-lists were used (see appendix 2 - 5). They acted as guideline to questions and areas of interest and added direction to informal interviews. Extra information was acquired whenever possible through follow-up questions to the respondent's responses between conversations. The questions on the check-list only served as sub-topics which allowed for flexibility to get a good understanding on the topic.

During the field trips process, the data were cross-checked by observations. Ranking, a participatory rural appraisal (PRA) data collection tool was used during Focus group discussions.

The research applied a value chain analysis approach with the aim of defining a sustainable out-grower model to be utilised in the French beans value chain.

3.4 Data collection and analysis

Data collection was conducted from 12th July to 19th August, 2011. The farmer respondents both in the survey and focus group discussions (as mentioned in section 3.3) were stratified into three main strata namely: the highlands (tea zone), the transition (coffee zone) and the lowlands (cotton zone). These are distinct agro-zones owing to their differences in their elevations above the sea level and the types of other crops, apart from beans, grown. The highlands experience reliable rainfall while middle areas, medium rainfall and lower regions unreliable and poorly distributed rainfall. The collection centres, within each of the three zones/strata from where the respondents were picked, were selected by simple random sampling using a table of random digits (Moore, 2000, p. 171). Out of the 33 administered questionnaires, 3 were used for pre-testing.

The respondents in every production zone were further subdivided into clusters of males and females. Other variables within these gender clusters such as age, level of education, duration of engagement in the scheme, size of beans plots, farming status (full/part-time), distance to the collection centre, and frequency of farmer visits by MGH extension staff were analysed.

Different methods were used to analyse the data gathered in the field:

The quantitative data from the farmer surveys were analysed and/or presented using SPSS (version 17) computer programme's descriptive statistics, cross tabulations, chi-square tests and Analysis of Variance (One-Way ANOVA). The confidence interval was taken at 95% ($P < 0.05$).

PESTESWOT matrix, value chain mapping, adapted Porter's value chain and competitive advantage models were used to analyse and/or present the qualitative data from the other stakeholders' interviews and focus group discussions.

The multi-stakeholders' matrix finally helped to assess stakeholders that MGH deal with and also outlined MGH's major activities.

The results were interpreted and compared with the relevant literature. Therefore, theoretical discussions and empirical data analysis from the surveys, interviews and focus group discussions were used to inform conclusions and recommendations about how the current out-growers model can be sustainably utilised in the canning French beans value chain.

3.5 Limitations of the methodology and data analysis

- The study did not include data from all the chain actors especially the European retailers.
- Although the number of farmers per region was not the same, equal number of respondents was sampled per respective region. That disproportionate sampling within the strata could have had an influence on the comparisons among the various strata (production zones).
- Due to the limited number of participants, only selective statistical analysis and tests were done.

Farmer surveys presented problems of:

- Low levels of data reliability due to interview-bias. Furthermore farmers might have seen the researcher as part of MGH having worked with the company before. Therefore, the farmers might have given responses to some questions to impress him.
- High cost of administering surveys by having to walk or travel from door to door in search of the respondents.

Like other participatory approaches, the focus group discussions and key informants interviews are likely to have drawbacks related to response bias, self-selection bias and inadequate quantitative data for statistical analysis.

3.6 Definition of terms

Triangulation of information– It is the cross-verification through gathering information on the same subject from various sources in order to gain a clearer understanding of the subject matter. It facilitates validation of data collected in a research (Verschuren and Doorewaard, 2005).

Vertical chain integration – this is a situation where an actor in the value chain expands his influence either downstream to influence supply of the raw materials by producing his own raw materials or expanding upstream to by taking charge of the distribution of finished products or processing of raw materials (QuickMBA, 2008). For example, in the case of MGH where it aims at processing the French beans instead of selling it to another processor, it is called forward vertical integration.

Competitive advantage – this is the ability of a company to make higher earnings on investments compared to the costs of investment in the presence of competition from similar businesses in the sector. This is made possible by differentiating the product or service from that of competitors through fair pricing or other added benefits matching the offering price (QuickMBA, 2008).

Contract farming – is an arrangement where the growers/producers enter into a production and supply agreement (formal or informal) with an agri-business firm usually a processor and/or exporter (FAO, 2001). The agreement features pre-determined prices, quality and quantity specifications. The agri-business may or may not support the growers with inputs or technical back-up.

Out-growers scheme – this is an arrangement involving a processing company to secure raw materials at specified quantities, quality and time from small-scale farmers (Jonathan, et al., 2010). The company monitors the production process in order to achieve the required standards of quantity and quality. For the purposes of this research, contract farming and out-growers scheme can be used interchangeably.

Smallholders/small-scale farmers – These may mean differently depending on the context or agro-ecological zone. Therefore, these terms can be used interchangeably at least for the purposes of this study. These are farmers with limited access to resources relative to other farmers in the same sector. They grow subsistence crops on small plots of land with one or two cash crops while relying heavily on family labour (FAO, 2005).

4. RESEARCH FINDINGS AND ANALYSIS

This chapter has two sections. One section presents the results of farmers' survey complemented by the results of the three focus group discussions in the various regions and the other, the results of the interviews with the key informants who are among the stakeholders in the canned beans value chain.

Findings from the survey are presented to bring out the differences and the correlations that exist among the various production regions namely; highlands, transition and the lowlands or between genders. The confidence level was taken at 95%. Data generated from the interviews with the key informants are presented in the form of a chain map, PESTESWOT matrix, stakeholders' matrix and Porter's competitive advantage and value chain models.

4.1 Out-growers survey: The situation of MGH out-growers scheme

In this section, the demographics of the out-growers, farm size, financing and other forms of value chain support, out-growers' perceptions on the various services offered and the challenges facing them, farm labour and production potentials are analysed per region. These attributes will be used to describe the out-growers and their relationship with MGH. A sample of ten farmers was taken from each region. The sample consisted of equal number of male and female farmers.

Although this section dwells majorly on the survey findings, researcher's observations and related issues from key informant interviews and focus group discussions are also incorporated. Focus group discussions with the farmers in the various regions were specifically meant to access detailed information on issues raised during the survey.

4.1.1 Background information of the out-growers

Age

Out-growers in the highlands region had an average age of 39 years while the transition and the lowlands regions had averages of 49 and 42 years respectively. The overall average age for out-growers was found to be 43 years as shown in table 2 below.

Table 2: Average age of out-growers respondents

Which region do you come from?	Mean (Average) age	Number of respondents (N)
Highlands	39	10
Transition	49	10
Lowlands	42	10
Total	43	30

Results show that there is no significant difference; $P < 0.05$ (0.124) in the average age of the out-growers among the three regions as shown in appendix 8(i). However, the researcher observed that older people (above the age of 40 years) in the highlands relied on tea and dairy farming as their major economic activities while the generation aged less than 40 years got more involved in French beans production.

French beans farming is labour intensive especially during weeding and harvesting as one 56 year old Mrs Kinoti put it, *"Many people of my age do not want to engage in French beans farming because it is back-breaking when bending to harvest the tiny delicate pods. This age does not allow."*

It was observed that most of the farmers above the age of 40 years who grew French beans had no tea plantations or resources to start other projects like dairy farming.

The minimum and the maximum farmer ages are 27 and 68 years respectively as shown in appendix 8(ii).

Education level of the out-growers

In the entire scheme, 43% of the farmers have an education level of up to primary⁴ school (see appendix 8 iii), of whom 23% are in the lowlands region as shown in figure 4 below, followed by secondary⁵ school level at 33%. The pie chart in appendix 8 iii summarises the education levels of all the farmers in the scheme. No farmer in the lowlands has an education of college⁶ level (see figure 4 below). Farmers with certificate⁷ level of education represent 7% of the entire population sample and all of them are in the transition region as shown in figure 4 below.

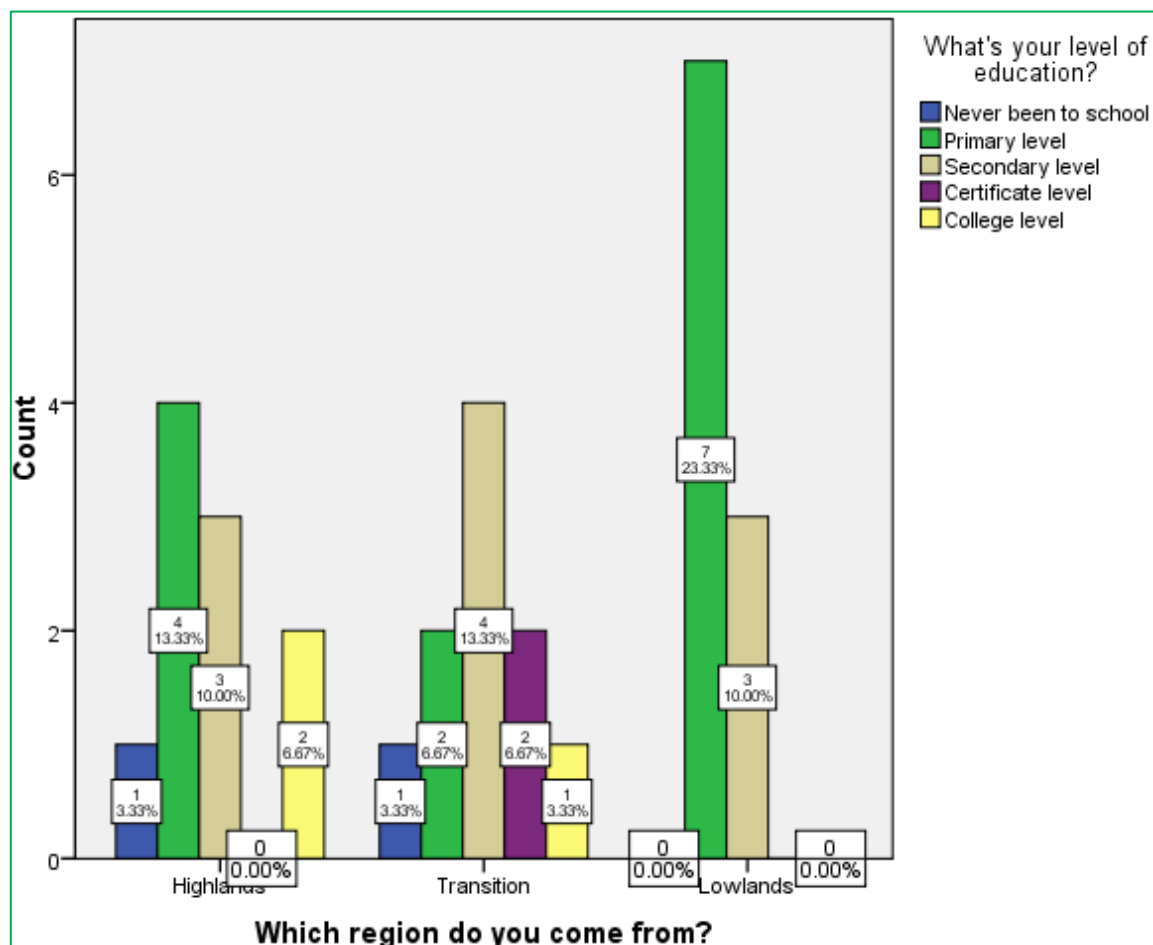


Figure 4: Education background of the out-growers in the various regions

The results show that there is a significant difference; $P < 0.05$ (0.001) in the level of education among the three regions as shown in appendix 8 (iv).

Results show that the correlation between the level of education and the amount of beans harvested per kilogramme of seed planted is not significant; $P < 0.05$ (0.298) as shown in appendix 8 (v). The researcher expected that farmers with a higher level of education would be more successful. These results show that this was not true.

⁴ Primary school level in Kenya is an equivalent of 8 years of schooling (basic education).

⁵ Secondary school level is equivalent of 4 years in school after primary school.

⁶ College level signifies a diploma or a degree.

⁷ Certificate level denotes post-secondary/primary school qualification but lesser than a diploma.

Results show that there is no significant difference; $P < 0.05$ (0.242) in the level of education between male and female farmers in the scheme (see appendix 8 vi).

Duration of doing business with MGH

Table 3: The average period (years) the out-growers have done business with MGH in the various regions

Which region do you come from?	Average period (years)	N (Number of respondents)	Minimum period	Maximum period
Highlands	4.1	10	1	10
Transition	3.7	10	0	10
Lowlands	7.5	10	3	11
Total	5.1	30	0	11

The results in table 3 above show that the average number of years the sampled out-growers have worked with MGH is approximately 5 years. The average period for the highlands, transition and the lowlands out-growers are 4.1, 3.7 and 7.5 years respectively. This difference is significant; $P < 0.05$ (0.021) as shown in appendix 8 vii.

There is no significant correlation; $P < 0.05$ (0.640) between the average period of time the out-growers have worked with MGH and the amount of harvested French beans per kilogramme of seed planted as shown in appendix 8 (viii). This means that the yield levels of out-growers who have been with MGH longer and those who joined recently do not show clear differences.

French beans as the major economic activity

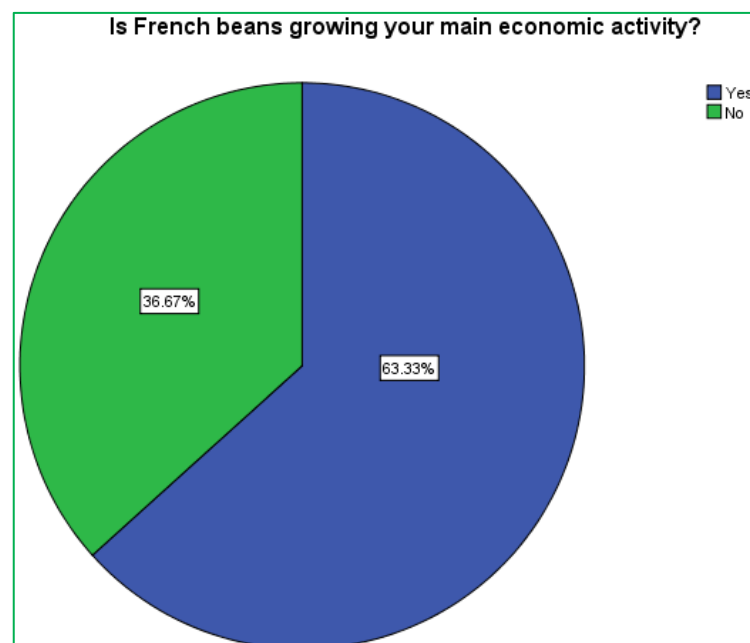


Figure 5: The proportion of those who cultivate French beans as their major economic activity.

Figure 5 above shows that 63% of the out-growers engage in beans cultivation as their main activity.

Further, results show that there is no significant correlation; $P < 0.05$ (0.640) between male and female farmers in their opinion about growing French beans as the main economic activity as shown in appendix 8 ix.

There is no significant difference; $P < 0.05$ (0.144) in the farmers opinion about growing French beans as their major economic activity amongst the three regions (see appendix 8 x).

Size of the farm

Table 4: Average size (ha) of out-growers' farms in the 3 regions

Which region do you come from?	Average farm size (ha)	Number of responders(N)	Minimum	Maximum
Highlands	.8000	10	.25	3.25
Transition	.9250	10	.25	2.00
Lowlands	.8500	10	.25	2.00
Total	.8583	30	.25	3.25

The average size of farms in the whole scheme is 0.86 ha while the averages for the individual regions are 0.80 ha, 0.93 ha and 0.85 ha for the highlands, transition and the lowlands respectively (see table 4 above).

Results show that there is no significant difference; $P < 0.05$ (0.927) in the average size of the out-growers' farms among the three regions as shown in appendix 8(xi).

Time taken from the farm to the collection centre (walking minutes)

Table 5: How far is your farm to the collection centre (minutes)?

Which region do you come from?	Average distance to the collection centre (minutes)	Number of respondents (N)	Minimum	Maximum
Highlands	29	10	10	60
Transition	37	10	5	90
Lowlands	18	10	5	45
Total	28	30	5	90

The average time taken from the farm to the collection centre is 28 minutes as shown in table 5 above. Results indicate that there no significant correlation; $P < 0.05$ (0.248) in the time taken to walk to the nearest collection centre and the amount of seed planted as shown in appendix 8 xvi. However, some farmers were pointing out that they reduce on the amount of seed they plant to avoid the trouble⁸ of transporting the produce to the collection centre especially during the rainy season for those who had to walk far to the collection centre.

⁸ The roads in the agricultural rural areas are impassable whenever it rains.

The managing director for MGH also confirmed that they usually “request” the farmers to take their produce to the nearest accessible collection centre during such times.

The researcher however noted that such eventualities are not elaborated in the contract (see appendix 9) since farmers are supposed to take their produce to one pre-agreed collection point.

4.1.2 Reason and mode (individual or group) of joining the out-growers scheme

When the out-growers were asked to identify the main reason for joining the scheme, about 57% of them said it was because of the guaranteed markets. Access to training and information, according to the results shown in figure 6 above scored about 7% of the respondents. Results further indicate that 10% of the out-growers had other reasons for joining the scheme (see figure 6 below). These reasons include: profitability of French beans compared to alternative agricultural enterprises feasible in their locality, getting lump-sum amount of money to pay bills like school fees and constant predictable incomes from the fortnight payments.

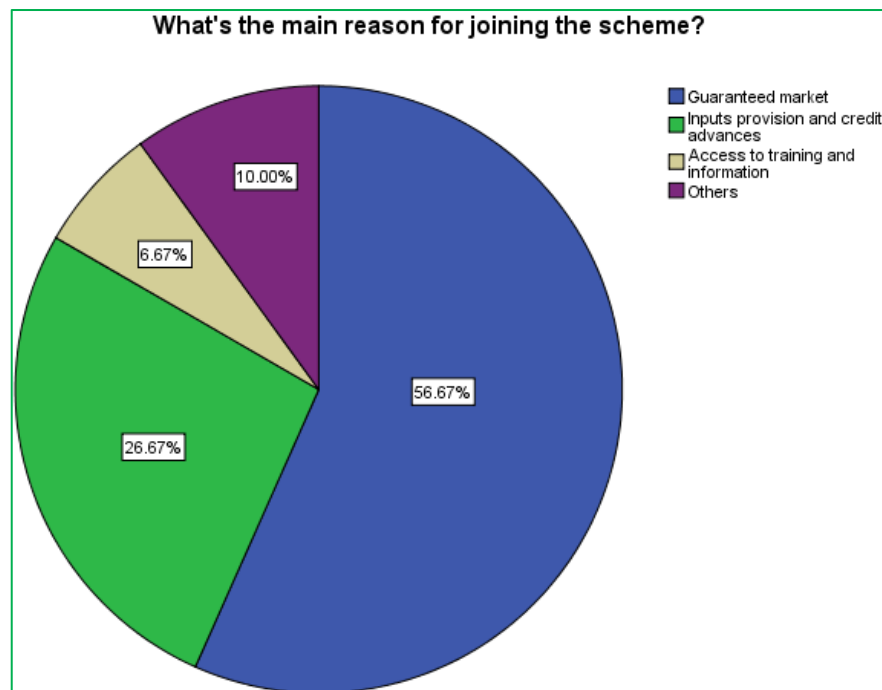


Figure 6: Main reason for joining the scheme

Results show that there is no significant difference; $P < 0.05$ (0.643), in the main reasons for joining the scheme between male and female farmers (as shown in appendix 8 xii). When the difference in the main reasons for joining the scheme amongst the three regions was tested (Kruskal Wallis), results showed that there was no significant difference; $P < 0.05$ (0.376) as shown in appendix 8 xiii.

During the focus group discussions, guaranteed market and prices, inputs supply on credit and access to training and extension services ranked top in that order. Farmers noted that most of the brokers do not offer any support be it technical or material. Furthermore, the farmers noted that the brokers only come to them to buy produce when there is a high demand in the market. Other reasons included:

- Provision of packaging materials such as crates.
- Minimal rejection rates due to training on production and quality management.

Mode of joining the scheme

Results according to figure 7 below indicate that about 63% of the out-growers join the scheme as individuals. In addition, results show that there is no significant difference; $P < 0.05$ (0.710) in the mode of joining the scheme between men and women (see appendix 8 xiv).

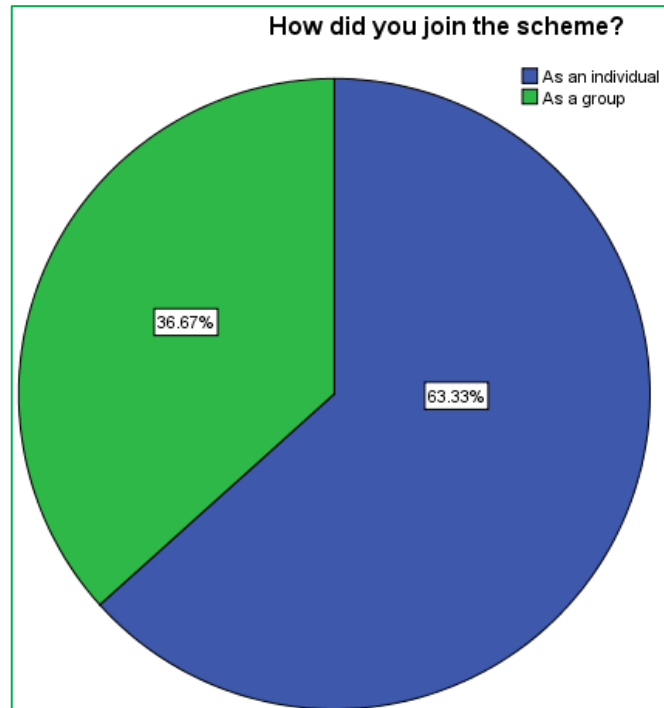


Figure 7: Mode of joining the scheme

The researcher was informed by the managing director of MGH that even if farmers joined the scheme as a group, farmers will still be treated individually on matters such as payments and debt recoveries. The managing director noted that the company resorted to individual farmer dealings after some members lost their money to unscrupulous group officials. He further indicated that most of the group officials lacked basic accounting knowledge a claim the researcher could not ascertain.

Group registration

Those farmers who joined the scheme as a group were asked whether or not their group is registered. One out of the 11 groups, representing 9% of the groups, was not registered by the relevant government ministry – the ministry of gender and social affairs (see appendix 8 xvii).

4.1.3 Rating of MGH services/products and the number of visits by MGH staff

About 93% of the farmers are visited weekly by MGH staff (see appendix 8 xix).

When farmers rated the various products/services offered by MGH namely; contract design, inputs credit, cash advances, fortnight payments, extension services, transport, and quality control and farmer recruitment, the results were as shown in appendix 8 xviii (a-h). For example, all the farmers thought that MGH extension services were either, good, very good or excellent. Actually, 40% rated extension services as excellent. However, 53% of the farmers were not happy with the MGH contract design as they rated it as either, poor or very poor.

4.1.4 Production level

Amount of seed (Kgs) planted

The average amount of seed planted per farmer in the whole scheme is 1.7 kilogrammes as shown in table 6 below.

Table 6: Average amount of seed planted per plot in the 3 regions

Which region do you come from?	Average amount of seeds planted (in Kgs)	Number of respondents (N)
Highlands	0.975	10
Transition	1.600	10
Lowlands	2.450	10
Total	1.675	30

The researcher observed that MGH packages seed in 0.25kg packs for issuance to the farmers (see picture 1 below). There is a permanent staff member who does the work of re-weighing and re-packaging the seeds at the main store at the MGH head-quarters.



Picture 1: A farmer in Miathene carrying away two packs of ¼ Kg planting seed

Source: Author

Harvested beans (Kgs) per kilogramme of seed planted

Table 7: Average production (Kgs) per kilogramme of seed planted

Which region do you come from?	Average production (kg) per kg of seed planted	Number of respondents (N)	Minimum production	Maximum production
Highlands	655	10	400	1000
Transition	580	10	300	1000
Lowlands	510	10	300	1000
Total	582	30	300	1000

Results indicate that the overall average production per kilogramme of seed planted is 582kgs. The average productivity of a kilogramme of seed planted in the highlands, transition and the lowlands are 655, 580 and 510 kilogrammes respectively (see table 7 above).

Results show that there is no significant difference; $P < 0.05$ (0.328) in the average productivity per kilogramme of seed planted among the three regions as shown in appendix 8(xv) although yields in the highlands seem to be higher than the other regions.

The minimum and the maximum amount of French beans produced per kilogramme of seed planted are 300 and 1000 kilogrammes respectively as shown in table 7 above.

4.1.5 Problems experienced by the farmers

Results presented in figure 8 below show that low prices of French beans is the biggest problem (about 37%) facing the current MGH out-growers. About 13% of the problems mentioned by the farmers as “others” include: Arbitrary rejects, delayed claims resolutions, poor farmers’ representation in MGH management and unfair debt recoveries.

Apart from the challenges identified during the survey, the following challenges were highlighted during focus group discussions:

- Low contract prices compared to the ones offered by brokers.
- Record keeping. Some farmers cannot read and write and therefore keeping these records becomes a big challenge to them.
- Cash advances to sort out urgent matters take long to be approved and reach the farmers.
- Although the company quality controllers check the produce before it is accepted, there are incidences where rejects are returned to the farmers more than two days after the produce had been collected.
- There are times when rejected produce affects even the volumes of farmers whose produce was evidently up to the required standards.

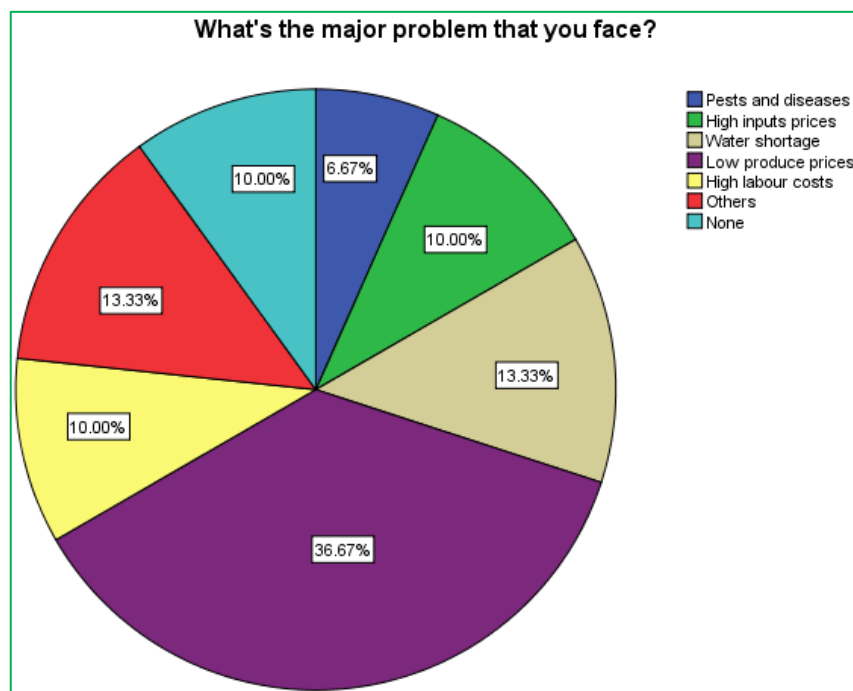


Figure 8: The major problems facing the out-growers

4.1.6 Labour

Results indicate that about 57% of the out-growers use a combination of both hired and family in their farm (figure 9 below).

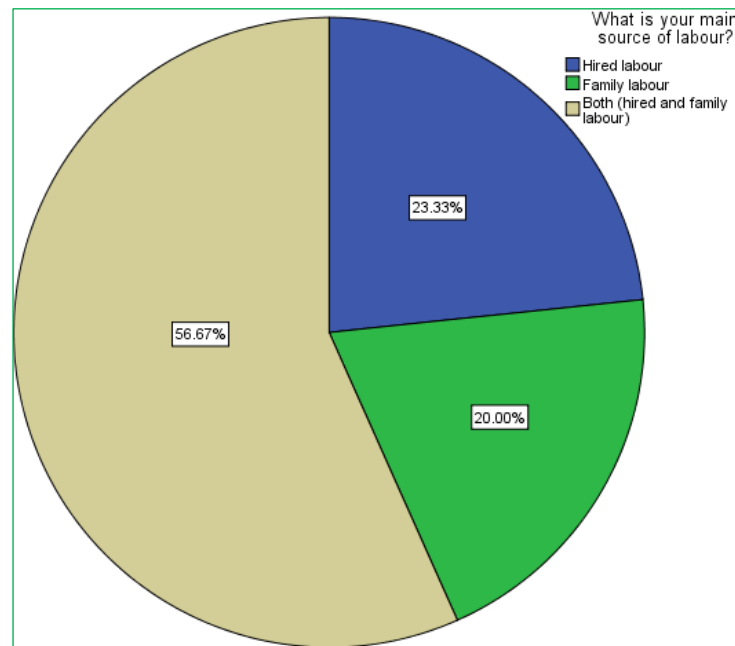


Figure 9: Main sources of labour for French beans cultivation

Farmers indicated that most of the labour is spent on weeding and picking (harvesting). It was observed that these jobs are mostly done by women and children⁹.

4.1.7 Value chain financing

When the farmers were asked whether or not they owned a bank account, one of the prerequisites for accessing financing from a bank, the results showed that 24 farmers out of the 30 respondents representing 80% of the farmers owned a bank account (see table 8 below).

However, of those who had bank accounts (24 farmers), 5 farmers (21%) had ever borrowed a loan from the bank as shown in table 8 below.

Table 8: Farmers with bank accounts who have ever borrowed a loan for French beans cultivation

Do you have a bank account? * Have you ever borrowed a loan?		Cross-tabulation		
		Have you ever borrowed a loan?		Total
		Yes	No	
Do you have a bank account?	Yes	5	19	24
	No	0	6	6
Total		5	25	30

Therefore, 17% of the out-growers borrow loans for the cultivation of French beans.

⁹ It is against the Global-GAP protocol to use child labour in the cultivation of export crops.

During discussions with the equity bank representative, it was revealed that the bank has various farming loan products:

- a. Remittance-based. In this case the buyer of the farmers produce such as MGH enters into a memorandum of understanding with bank to be remitting the farmers payments through the bank for loan deductions. The bank on its part finances the farmer based on the company agronomist's appraisal of the farmers needs in terms of inputs. It is the company's responsibility to ensure that the loan is put into the intended use. The farmer must produce the contract with buyer as prove of guaranteed market for his/her produce. Under this arrangement, vetting of the farmers and collateral requirements are less intensive.

It was also revealed that MGH had such an arrangement with equity bank but it failed due to the high default rates by the farmers and the high interest rates charged by the bank.

- b. Non-remittance based. In this arrangement the bank finances the farmer after it has been proven that the farmer has a guaranteed market. Thorough vetting is however done to prove the farmers past farming and trading history. The farmer may need to be recommended to the bank by the buyer who commits to buy the farmer's produce. This is however not common.
- c. Individual farmer loans. The farmer approaches the bank with his farming proposal and based on the amount of money requested and the collateral raised, the bank loans the farmer. The bank official said that this is very common especially with the tea farmers in the highlands region.

When the farmers were asked what their source of farming inputs were, the results were as shown in appendix 8xx, with MGH store as the main source (about 97%).

Source of finance for the French beans cultivation

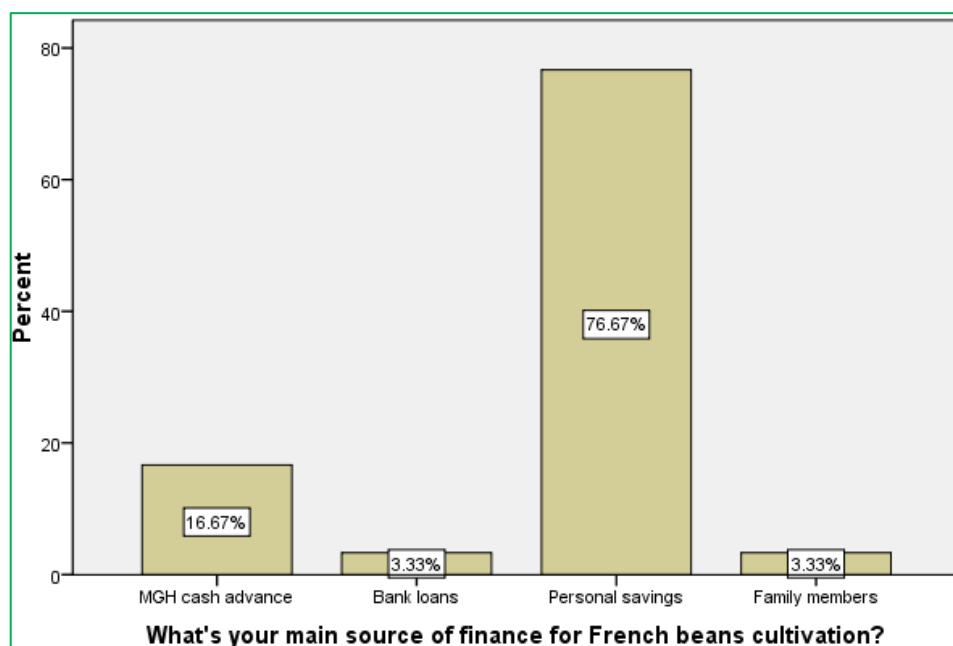


Figure 10: Main source of finance for French beans cultivation

The main source of finance for cultivation of French beans is personal savings (77%). In addition, about 17% of the farmers rely on MGH for the financing (see figure 10 above).

Farmers during focus group discussions were asked to rank the sources of financing for the cultivation of French beans in terms of dependability and accessibility. The results revealed that apart from farmers' savings which they said were limited, MGH inputs and cash advances ranked second in terms of reliability and accessibility (see table 9 below). The farmers said MGH cash advances had no interests.

Table 9: Sources of financing and/or credits ranked according to dependability and accessibility

Rank	Source
1.	Personal savings
2.	MGH cash advances
3.	Micro-finance Institutions e.g. Kenya Women Finance Trust (KWFT), Faulu Kenya and Jenga Kenya
4.	Bank loans e.g. Equity bank and Co-operative bank of Kenya.
5.	Merry-go- rounds
6.	Money-lenders

4.1.8 Chain support

The farmers were asked whether they get any kind of support from the other actors apart from MGH and 76 % said they got no support apart from MGH.

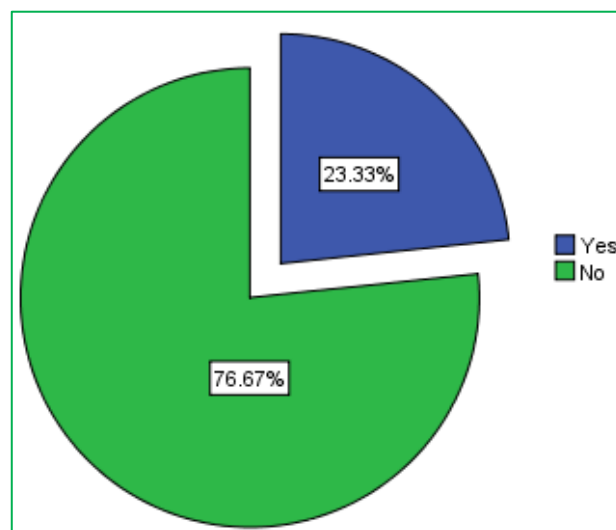


Figure 11: Do you get support from other stakeholders apart from MGH?

The out-growers who receive support (23%) were asked who their supporters were and the results were as shown in figure 12 next page. For those who never got any support other than from MGH (77%), this question was "not applicable" (N/A) to them.

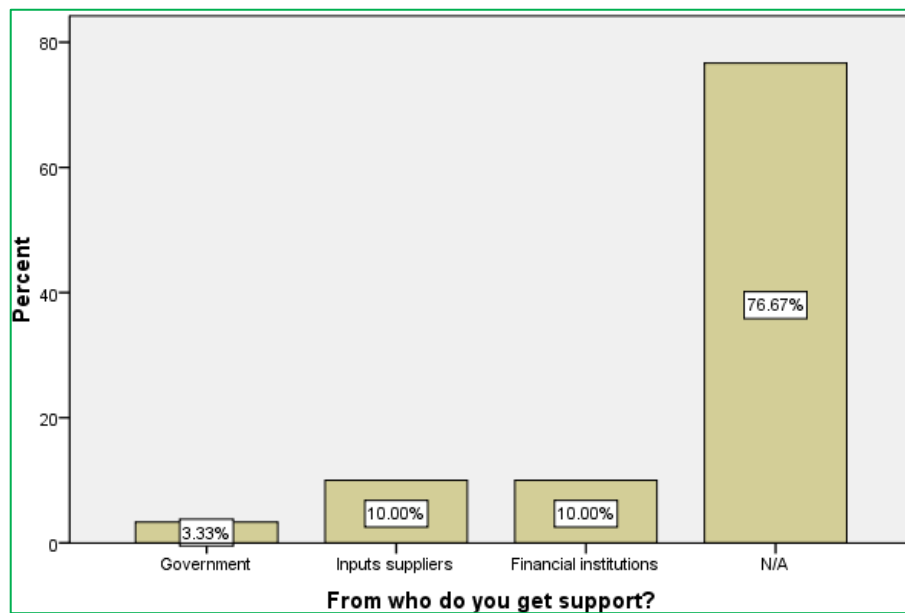


Figure 12: Other Supporters apart from MGH

Kind of support

The government one of the actors offering support to the out-growers offers training. The government through the ministry of social services trains willing groups on group dynamics and facilitates their official registration. HCDA which is also a government corporation together with the ministry of agriculture (MoA) trains the farmers on agricultural marketing, production and agri-business. However, the farmers revealed that these services are offered on demand to organised groups.

During the discussions with the Key informants, Equity bank representative confirmed that the bank has rolled out an ambitious project dubbed Financial Knowledge for Africa (FIKA) targeting over 1 million Kenyans including farmers. The project is a joint venture between the Equity Group and the MasterCard Foundations. The project aims at imparting financial management skills to farmers and other small scale entrepreneurs which will subsequently facilitate their access to credit facilities. However, only two farmers in the highlands regions reported to have heard about this project that is in its inception stages. The officer also noted that the bank also offers crop insurance products through its Equity Insurance Agency.

4.2 Organisation of the canned beans value chain

This section presents findings on the current status of the canned French beans value chain based on the interviews and discussion held with the various informants and groups (see list in appendix 9). These are presented in the form of value chains map, PESTESWOT matrix and stakeholders' matrix which highlights MGH's role in the value chain. Other tools used to analyse data in this section include Porter's value chain and competitive advantage models. These tools combine the information gathered from afore-mentioned sources. Some results in this section are presented with their detailed discussions.

4.2.1 MGH position in the canned French beans value chain

MGH Objectives and Strategy

The company's main objective is to market high quality cost effective vegetables while ensuring small-holders' full participation in the value chain.

In its short term strategies, the company plans to improve its produce quality while expanding its growers' base to increase so that it can raise enough produce which will make it easy to integrate forwards in the long term¹⁰. The company foresees a future where it will be able to process and export its produce.

Motives for setting up an out-growers scheme

According to the managing director of MGH which is a family business, they started growing French beans on their own family farm and selling to the local exporters. However, they noticed the opportunity to supply huge volumes (long term) which motivated them to set up the out-growers scheme because:

- i. They did not have enough land to produce the required volumes. Hired labour for weeding and harvesting huge tracts of land was becoming expensive.
- ii. The risks of producing huge volumes on their own farm were enormous due to the fact that in case of natural calamities they would bear it all alone.
- iii. The French beans were also labour intensive and the costs of labour for weeding and harvesting were massive.
- iv. Canning French beans do not have supply quotas¹¹ which meant that they could sign contracts with the farmers at fixed prices even during the times of over-supply.

The managing director however noted that quality control at the collection centres is more tasking unlike when they were producing on their own partly due to the farmers and/or staff mischief or farmers' varied level of production management. The company employs quality controllers at every collection centre.

MGH plays the role of a chain facilitator (notice MGH position in the value chain, figure 13 next page). That is; it provides extension services, inputs, credit facilities (cash advances) and marketing services including packaging, storage and transportation.

¹⁰ The company is already on the process of putting up a processing factory in Nairobi.

¹¹ Surplus canning French beans can be processed and marketed during times of scarcity unlike freshly marketed vegetables.

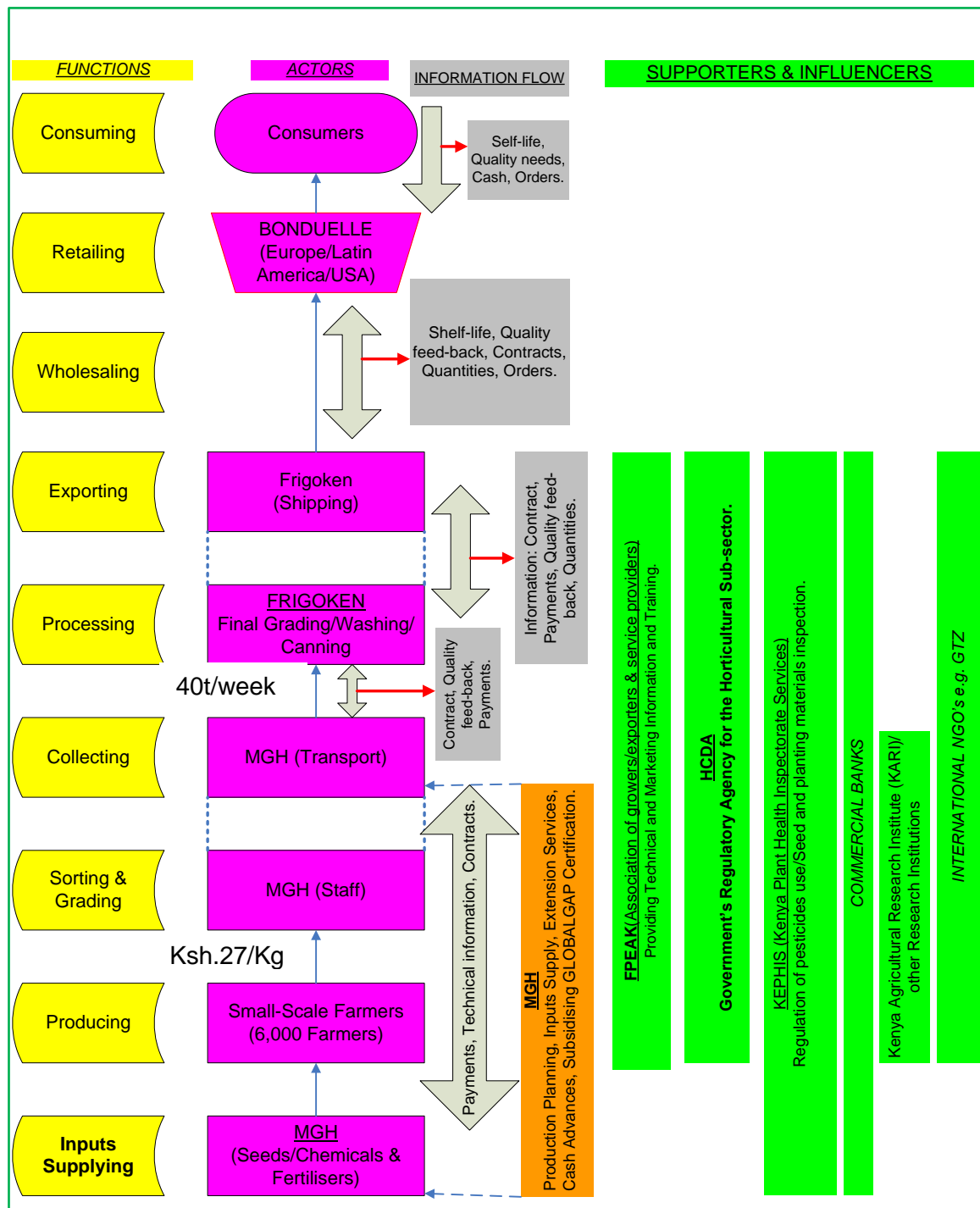


Figure 13: Canned French beans value chain in Kenya involving MGH

Source: Authors own illustration

MGH Porter's value chain model framework

To analyse the specific activities through which MGH can create a competitive advantage, the company can be modelled as a chain of value-creating activities (QuickMBA, 2008) as shown in figure 14 below. The goal of these activities is to create value that exceeds the cost of providing the product or service, thus generating a profit margin.

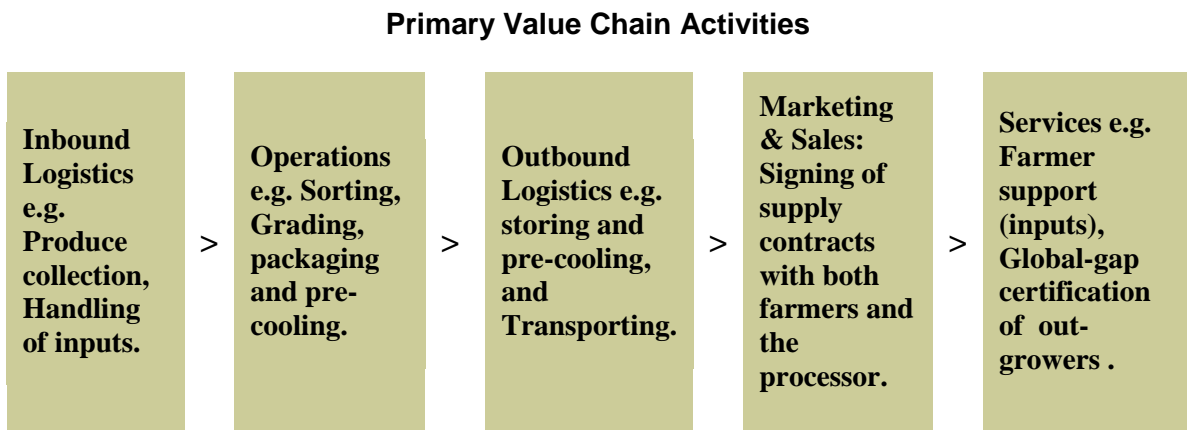


Figure 14: MGH primary Value Chain Activities

Source: Adapted from QuickMBA, 2008.

The goal of these activities is to create value that exceeds the cost of providing the product or service, thus generating a profit margin. MGH has its own transport department that runs a fleet of vehicles which means the company does not need to hire vehicles from outside.

Support Activities:

The primary value chain activities described above are facilitated by such support activities as (QuickMBA, 2008):

- Procurement – e.g. purchasing of inputs or packaging materials used in the various value-creating activities. It was learnt that provision of packaging materials (crates) to the farmers at the farm level has boosted the farmers' loyalty to the company. It was mentioned during focus group discussions as one of the other reasons as to why farmers joined the MGH out-growers scheme.
- Technology Development - includes development and adoption of computer software to manage stock inventories, tracking credits and/or farmer payments. MGH is currently using an accounting programme called "tally" for tracking farmers' debts and production trends. It was however observed that the programme does not generate farmers' payrolls which are prepared separately using 'Microsoft excel' computer programme.
- Human Resource Management - the activities associated with recruiting, development, and compensation of employees. This department, as the managing director pointed, out lacks in capacity. For instance, the company lacks specialised training to facilitate capacity building of managers and staff.
- Firm Infrastructure - includes activities such as finance, legal and quality management. The company has collection centres constructed to the Global-GAP standards.

It was observed that some of the company's out-grower groups have not had a comprehensive produce traceability system. The company is in the process of certifying¹² these groups to Global-gap.

Quality control and logistics

Proper external and internal quality characteristics must be met, which may vary depending on the market destination. Colour, texture, size, and flavour continue to be the predominant quality characteristics important for successful international marketing of horticultural crops including French beans (HCDA, 2010). Significant shifts in vegetable crops demand have recently occurred based on product quality characteristics.

Exporters require produce that has a special size (6.5 millimetres in diameter for extra-fine Julia beans), is not infected by insect-pests such as caterpillars and diseases such as rust. The beans must also have a particular shape (cylindrical along the length, not flat or curved). The Julia variety of beans is grown for its extra fine beans which are thinner than fine beans. It is best suited for canning. Extra fine beans do not exceed 6.5 millimetres in diameter. The output per hectare of the extra fine grade varies depending on the frequency of harvest. Harvesting frequency of more than three times a week yields a higher percentage of the extra-fine beans. Farmers are usually sensitised on picking management.

During the harvesting period, farmers harvest the French beans every day except Saturdays and Sundays and take them to the designated collection centres (mostly done by women as shown in picture 2 below). Owing to the fact that French beans are highly perishable, they cannot be kept in good condition without cooling facilities which are limited at the farmers' level. It is therefore very important to transport them the same day to Meru Greens' cooling facilities to prevent decline in quality.

All collection/grading centres are managed by a trained centre manager. In addition, MGH employs technical assistants (TA's) mainly for quality assurance and management see picture 2 below).



Picture 2: MGH staff (in green) facilitating and monitoring the grading process

Source: Strohm and Hoeffler, (2006).

In addition to the quality specification sheets given to farmers, practical examples of beans showing the acceptable sizes and shapes together with the unacceptable specimens such as curved pods as shown in picture 3 next page. Based on this experience farmers can do sorting and first grading at the farm level.

¹² MGH managing director said that the process of out-growers certification is an expensive venture that requires support from the government or other development partners.



Picture 3: A practical display of the sorting/grading criteria

Source: Strohm and Hoeffler, (2006).

To ensure traceability, the centre clerk weighs the accepted produce and records the weight down on a farmer's card containing farmer's particulars such as name, code and ID numbers, the name and code of the buying centre, harvesting date and the grader's and/or clerk's name or signature. Every crate is labelled with a label stating the producer's code centre name, picking day, variety and the clerks name and/or signature. The label accompanies the produce till it is processed. The same information is entered into a produce journal book in duplicates so that the farmer gets his/her copy as prove of sale and the duplicate is taken to the head office for farmers' payrolls preparation. In the case of MGH, this is the grading on which farmers' payment is based. The final grading and/or quality analysis takes place at the processing factory (Frigoken Ltd) in Nairobi. Here, deeper analyses of aspects like maximum residual levels are carried out. The beans that do not meet the minimum quality criteria are rejected and a quality analysis report sent to MGH for further action on the given recommendations.

MGH competitive advantage (Based on Porter's competitive advantage model)

Ideally, for an organisation like MGH to be considered as competitive, it needs to sustain profits that exceed the average for its industry and/or sub-sector. Michael porter in his value chain model identifies two basic types of competitive advantage namely:

- Cost advantage where a firm is able to deliver the same benefits as competitors but at a lower cost and;
- Differentiation advantage where a firm delivers higher benefits than the competitors. For example, with MGH having its out-growers certified to global standards such as Global-gap.

Cost and differentiation advantages are also known as positional advantages because they describe the company's position in the industry as a leader in either cost or differentiation.

A resource-based view which shows how MGH utilises its resources and capabilities to create a competitive advantage that ultimately results in superior value addition are summarised in figure 15 below.

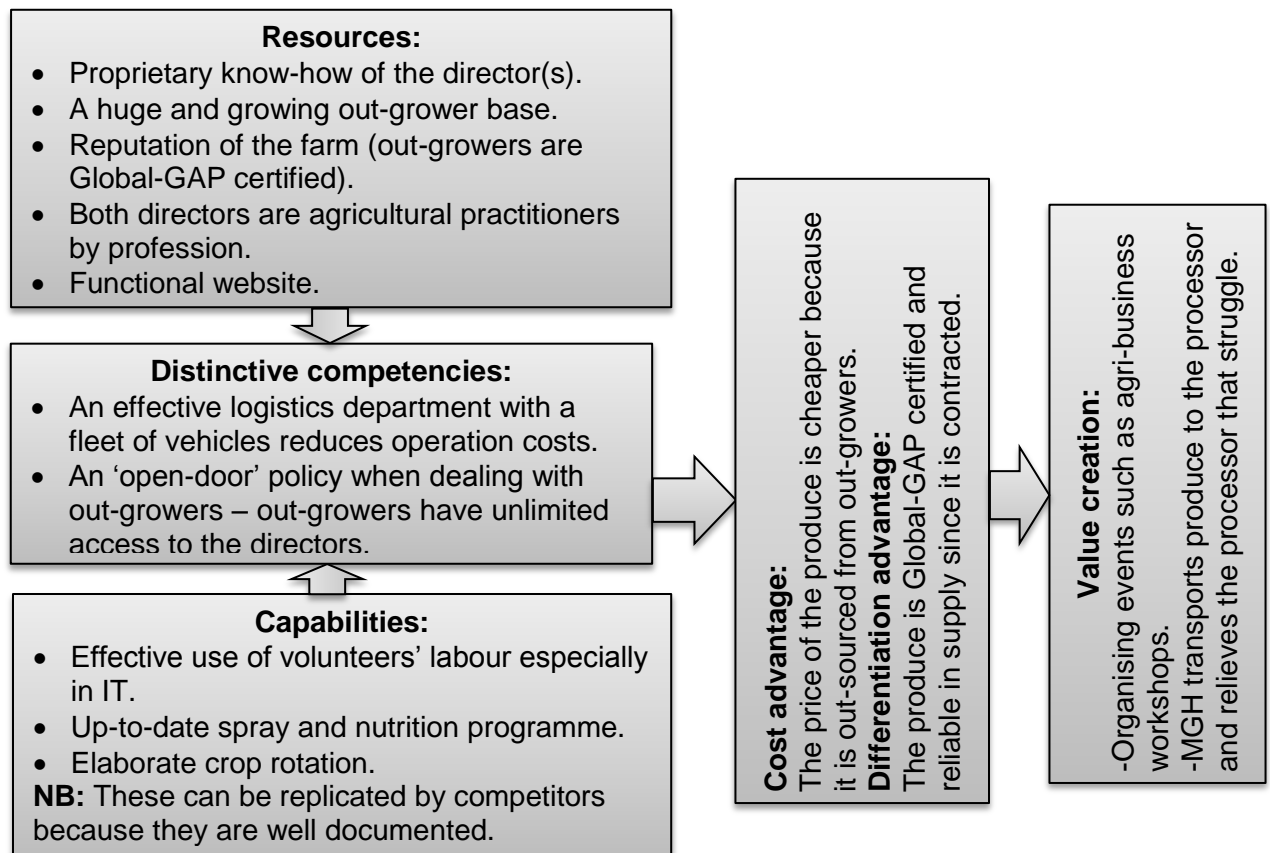


Figure 15: A model of competitive advantage of MGH.

Source: Adapted from QuickMBA, 2008.

These advantages enable MGH to offer a higher value for its clients and increased profit margins for itself (QuickMBA, 2008).

Specific challenges faced by MGH in running the scheme

The following were identified by the MGH director as the some of the major challenges facing MGH:

- Extra-contractual/side-selling.
- High transaction costs associated with monitoring of the production process. The company currently deals with individual farmers.
- Debt accumulation from the inputs supplies facility.
- High transport costs.
The researcher noted that some of the collection centres are located in the interior of rural areas where the roads network is very poor.
- Stagnant prices offered by the processor. The MGH managing director noted that the prevailing inflation rates in Kenya are making it difficult for both the farmers and the company to operate economically.
- High costs associated with taking the out-growers through Global-GAP certification.
- Declining land productivity associated with declining soil fertility.

Supporting and hindering external and internal factors

The various external and/or internal environments that hinder or support MGH in improving the governance of the value chain with an inclusive perspective can be summarised in a PESTE/SWOT matrix analysis as shown table 10 below. For instance, it can be easily noticed which internal or external weaknesses are economic and vice versa.

Table 10: PESTE/SWOT matrix

	Strengths	Weaknesses	Opportunities	Threats
Political	-Non-political interference with private enterprises.	-Incoherent land policy. -Inadequate enforcement of regulations.	-Enactment of a new constitution (Gives women right to own land). -Streamlined judiciary for legal redress.	-Political instability (tribal clashes) in potential/ production areas. -Strict EU quality regulations.
Economical	-Good reputation and long term relationship with local banks. -Joint investments with the processor/exporter.	-High interest rates on loans. -High taxation rates. -Underdeveloped crop insurance.	-Partnerships with development partners e.g. the EU. -Devolved funds for rural investors e.g. CDF.	-Increasing inputs prices. -Stagnant produce prices. -High labour costs. -Breach of contracts by farmers/processor. -High inflation rates.

	Strengths	Weaknesses	Opportunities	Threats
Socio-cultural	<ul style="list-style-type: none"> -Company founders come from the highest producing regions. They are able to tap into their social networks to build working relationships with the local farmers. -Good reputation and long term relationship with farmers and the processor. -Free extended family labour. 	<ul style="list-style-type: none"> -Women do not own land. -The company deals with individual farmer which is costly. 	<ul style="list-style-type: none"> -Cheap labour costs in the rural areas. -Growing culture of contract farming. 	<ul style="list-style-type: none"> -HIV AIDS pandemic.
Technological	<ul style="list-style-type: none"> -Investments in new information management systems. 	<ul style="list-style-type: none"> -IT illiterate staff. -Low farm mechanization by out-growers. 	<ul style="list-style-type: none"> -Completion of the under-sea internet cable. -Advanced mobile telephony e.g. money transfers. 	<ul style="list-style-type: none"> -Digital information can fall into wrong hands (competitors).
Environ-mental	<ul style="list-style-type: none"> -Permanent offices near production areas. 	<ul style="list-style-type: none"> -Inadequate infrastructure e.g. cooling facilities. 	<ul style="list-style-type: none"> -Adequate water resources. -Fertile volcanic soils. 	<ul style="list-style-type: none"> -Climate change. -Exhausted soils.

4.2.2 Multi-Stakeholder analysis of canned French beans value chain

Several actors and other stakeholders play more than one role in the canned beans value chain. For instance, apart from collecting and primary post-harvest handling, Meru Greens also supplies inputs, cash advances and extension services to the growers. The multi-stakeholders matrix in the next page shows the analysis of the various actors and their specific roles.

Table 11: Multi-stakeholders matrix

STAKEHOLDER(S)	ROLE(S)	REMARK(S)
Ministry of Agriculture and Rural Development.	<ul style="list-style-type: none"> -Provision of infrastructure and maintenance e.g. cold rooms and refrigerated trucks. -The government finances public corporations involved in the sector, e.g. HCDA. 	<ul style="list-style-type: none"> -The government extension officers lack in capacity to address the needs of farmer especially on prevailing market prices.
Commercial Banks	<ul style="list-style-type: none"> -Offering credit facilities (short and long-term). 	<ul style="list-style-type: none"> -Small/medium farmers have limitations of collateral. -The contracts with the buyers come in handy when farmers need credit from the banks.
Produce marketing organisations (PMO's) e.g. MGH	<ul style="list-style-type: none"> -Production planning. -Extension services. -Collection grading/sorting and packaging. -Cash advances and inputs supplying to farmers. -Co-financing growers' GLOBALGAP certification. 	<ul style="list-style-type: none"> -Farmers have become over dependent. -Large exporters/processors such as Frigoken find it more economical to deal with such kind of organisations.
KARI (Kenya Agricultural Research Institute.	<ul style="list-style-type: none"> -Research and extension 	<ul style="list-style-type: none"> -Sometimes the research findings take long to be adopted by farmers.
KEPHIS (Kenya Plant Health Inspectorate Services).	<ul style="list-style-type: none"> -Seed and planting materials inspection especially the imported ones and those meant for exports. -Regulation of pesticides use. 	<ul style="list-style-type: none"> -This helps to prevent entry of low quality planting materials into the country.

STAKEHOLDER(S)	ROLE(S)	REMARK(S)
HCDA (Horticultural Crops Development Authority)	<ul style="list-style-type: none"> -Provide specialized extension services. -Make recommendations and implement appropriate quality standards. -Advice on production and marketing. -Promote horticulture produce utilization including local consumption and domestic processing. -Enlighten the industry on international trade. -In collaboration with other stake holders advise on policies that enhance horticulture development. -Support horticulture training and research in collaboration with KARI, Universities, and Agricultural Institutions. -Inspecting fresh produce destined for export to ensure conformity with international market standards. -Issuance of export license for exporters. -Initiating farmers/groups certification programmes. -Development and enforcement of the industry's code of conduct. 	<p>-HCDA has not been very effective especially in the enforcement of the code of conduct which for instance, requires that all exporters must have a written contract with the grower (farmers). This has not always been the case¹³.</p>

¹³ MGH Frigoken blamed HCDA for not fulfilling its mandate of implementing the rules pertaining to contract farming. They said unethical buyers have always gone unpunished.

STAKEHOLDER(S)	ROLE(S)	REMARK(S)
Ministry of Environment and Natural Resources (MENR)	<ul style="list-style-type: none"> -Responsible for environmental policy. -Environmental impact assessment. -Catchment area/water conservation. 	<ul style="list-style-type: none"> -Re-use of water is not very common with small-scale farmers who have limited investment in sophisticated technologies. -Farming along the rivers and catchment areas has been effectively banned.
Universities and Colleges of Agriculture	<ul style="list-style-type: none"> -Provide courses at degree and diploma levels related to agriculture, horticulture and environment. -Involved in research. 	<ul style="list-style-type: none"> -Limited funding has hampered research in core areas such varietal development.
Pest Control Products Board (PCPB)	<ul style="list-style-type: none"> -Regulate the importation, exportation, manufacture, distribution and use of products used for the control of pests. 	<ul style="list-style-type: none"> -Some of these activities are being performed by KEPHIS. This calls for harmonization of these activities in order to avoid any conflicts.
International NGO's e.g. GTZ	<ul style="list-style-type: none"> -Partnering with local associations, ministries on key areas such as capacity building to achieve global standards certification. 	<ul style="list-style-type: none"> -GTZ was a facilitator in the benchmarking of KENYAGAP to GLOBALGAP.
FPEAK	<ul style="list-style-type: none"> -A trade association representing growers, exporters and service providers in the horticulture industry. -Active lobbying and advocacy programmes to enhance the sector's competitiveness. -support growers and exporters by providing technical and marketing information and training. -Act as an information centre. -Provides a focal and coordination point for the horticulture export industry. 	<ul style="list-style-type: none"> -KENYAGAP (Kenya Good Agricultural Practices), a standard benchmarked to GLOBALGAP was established through the efforts of FPEAK.

4.2.3 Frigoken

It is one of the companies owned by Aga Khan Fund for Development (AKFED). It is a vegetable processing company located in Nairobi the capital city of Kenya. It was established in 1989 as a member of Industrial Promotion Services (IPS) group of companies (AKFED, 2009). It is one of the leading vegetable processors in Kenya and exports to some of the leading food processors in Europe such as Bonduelle. According to the general manager, the company runs its own out-growers schemes but sub-contracts about 5% of its requirements to MGH. They have been in this partnership since 1997.

The contract¹⁴ between MGH and Frigoken stipulates issues of quality control, maximum rejection levels (set at 18% for MGH) and prices among other things. All the out-growers, for example, supplying MGH must be Eurep-GAP compliant. This contract is renewed annually.

In addition to the commercial contract Frigoken signs with MGH, there is a memorandum of understanding to supply MGH with farming inputs such as seeds, fertilizers and agro-chemicals for subsequent lending to the out-growers. MGH administers the inputs and are later deducted from the sales of produce delivered by MGH. MGH is responsible for making sure that the farmers repay the inputs.

Frigoken faces various challenges when dealing with MGH. These include;

- Produce volume fluctuations due to sudden changes in weather such as hail-storms in the production areas.
The company has diversified their product lines to deal with these shortages which render machinery and work-force idle. The company has also embarked on opening up new regions of production especially in the western parts of Kenya.
- Climate change has left the 'traditional' French beans producing areas of central and Mount Kenya less productive.
- Increase in inflation rates has caused the farmers to demand for increased produce prices.
- Out-growers are reluctant to get Global-GAP certified and opting to produce for the local market although even the local supermarkets have also started demanding compliance to Kenya-GAP which is a standard bench-marked to Global-GAP (FPEAK, 2010).

¹⁴ The contract could not be accessed by the researcher for verification – it was confidential.

4.2.4 Horticultural Crops Development Authority (HCDA)

“Horticultural Crops Development Authority (HCDA) is a state corporation and it is Kenyan government’s regulatory agency for the horticultural sub-sector. It is mandated to regulate the horticultural industry through licensing and application of rules. It also provides advisory and marketing services to the stakeholders in the industry for planning purposes,” HCDA, 2011.

The corporation runs a fleet of refrigerated trucks and cold rooms scattered across the major horticultural areas of Kenya including Meru. It also offers packaging materials such as crates at a fee. HCDA is supposed to sign all the contracts between the farmers and the contracting companies. These contracts, as the technical manager Nkubu depot put it *“gives the farmers peace of mind”* because the major problems facing out-growers schemes, according to her, is side-selling by the farmers or non-payment by the contracting firms.

HCDA (Nkubu depot) is currently sensitising farmer on the formation of strong farmer organisations so that farmers can gain bargaining power with the contracting firms.

The manager revealed some changes taking place at HCDA:

- Concentrating on specialised extension such green production horticulture, fruit trees propagation techniques such as low-back grafting and Arid and Semi-arid land (ASAL) cultivation, for example through introduction of drip kits.
- Stopping offering transport services and selling out of all the trucks.
- Hiring out all the pack-houses and cold stores to a private entrepreneur.

5. DISCUSSION

Background information the out-growers

Out-growers' characteristics influence farm management decisions and are important in understanding their participation in the scheme.

Out-growers in the three regions in this study had a lot in common but dissimilarities did exist in their ages, levels of education, mode and reasons for joining the scheme.

The average age of the out-growers was found to be 43 years with the highlands region farmers having the least average age of 39 years. This is the case because huge chunks of land in the area are occupied by tea plantations owned by farmers older than 40 years. The farmers in the highlands only plant their French beans in small portions bordering the tea estates.

There was no significant correlation between the level of education and the productivity per kilogramme of seed produced. This could mean that the frequent (weekly) visits by MGH staff, as reported by 93% of the farmers (see figure 9), are effective in extension service delivery. Furthermore, the extension staffs are locals who speak the farmers' language. These results contradict the findings by FAO, (2005) that linked farmers' success to their levels of education. There could also be the effect of confounding factors such as natural talent and experience gain over time. Entrepreneurial breakthrough however, may require some of proficiency in at least basic marketing, record keeping and business economics.

The research established that 63% of the farmers cultivate beans as their major economic activity. This, coupled with the fact that the average duration the out-growers have worked with MGH is about 5 years, is a good indication that MGH has a stable raw materials base to roll out processing as a forward chain integration strategy. Farmers in the lowlands seem to stick longer with MGH than the rest of the regions. However, this might not be due to loyalty to the company but due to the fact that they have limited options owing to the erratic rains that fall in the region.

Reasons and the mode of joining the scheme

Guarantee in the market for the French beans was the major motivation (56%) for the farmers to join the scheme. This confirms the findings by FAO, (2002) that assured market is a key motivation for joining an out-growers scheme. Other incentives include provision of inputs on credit and access to training. These findings are in line with the findings of KIPPRA, (2006), their study on 'issues in smallholder agricultural commercialisation in Kenya.'

MGH opted for an out-growers scheme as opposed to producing in their own farm(s) due to limitations of labour and land. These findings are in line with Masakure and Henson (2005) arguments on the agribusinesses' motivations for running an out-growers scheme.

MGH services

Majority of the farmers (93%) are visited by MGH on a weekly basis. This could be possible because the Field technical assistants (FTA's) are stationed in the field where they reside with the farmers. There were also a few farmers in production at the time of the research because of the prevailing drought in most parts of Kenya.

The out-growers might not be happy with the contract design because as individuals entering into a contract with MGH, the negotiation powers are minimal especially when MGH offers to provide the farming inputs and cash advances. This leaves the farmers dissatisfied although they do not do anything as individuals to change the situation.

Production level

Although the lowlands region had an average land size per farmer of 0.85 hectares, second from the transition which had an average of 0.925 hectares, it had the highest average amount of seed planted per farmer of 2.45 kilogrammes.

This scenario may have been contributed by the fact that MGH does not limit the amount of seed a farmer can plant provided he/she can prove availability of labour especially during harvesting.

Statistical analysis showed no significant difference; $P < 0.05$ (0.328) in the production levels per kilogramme of seed planted in the various regions. However, highlands region had the highest production followed by the transition and lowlands regions. Additional analysis may be necessary to distinguish the effect of environmental factors from those of other confounding factors such as differences in input use.

Challenges facing the out-growers

Although the constraints facing the French beans out-growers differ in ranking, they are similar to those outlined by KIPPRA, (2006) in the general horticulture sector. According to FAO, (2005), problems affecting agriculture, both agricultural and non-agricultural need to be tackled simultaneously.

Pests and diseases, high input prices, water shortage, low produce prices and high labour costs were the major challenges cited by the farmers in descending order of importance.

The challenge of increasing pest and disease incidences could be linked to the farmers' desperation resulting from high input costs. The farmers might have decided to use minimal agro-chemicals in a bid to 'cut costs.' The rainfall trends are changing and the rain is becoming more and more unreliable especially for the farmers in the lowlands who practice rain-fed agriculture. The irrigation methods being used are flooding and over-head sprinkler irrigation both of which are not water efficient.

Source of labour

Contrary to FAO, (2005) findings that most smallholder farmers rely largely on family labour, the out-growers in this scheme used a combination of both hired and family labour. This is partly because the French beans are very labour demanding harvesting to avoid quality deterioration of pod quality due to over-maturity. Furthermore, the Global-GAP protocol prohibits use of child labour in the French beans fields.

Value chain financing

With 80% of the farmers having bank accounts, MGH can organise joint trainings with the banks to sensitise the farmers on the services such as overdrafts and inputs loans the bank can offer. This can in turn reduce the dependence on MGH for inputs credit or cash advances. There seems to be over-dependence on the part of farmers which the company can use to exploit the farmers through low produce prices. MGH loses a lot of money every season due to farmer defaults. The cash advances and the credit facility are not insured. Therefore, the company bears the whole risk of bad debts. Previous studies by Natural Resources Institute, (2003) have shown that farmers who have inputs credit or cash advances from the contracting firm are more likely to side-sell to evade debt deductions.

Chain support

The research revealed that about 77% of the farmers do not receive any support apart from MGH. Active support might have lacked due to the perception that MGH provided most of the needed services such as inputs supply and extension services. Lack of initiative on the part of the farmers may have contributed to the current situation.

Mode of joining the scheme

The majority of the farmers (63.33%) joined the scheme as individuals across the three regions. Farmers should be encouraged to join the scheme in groups so that they can benefit from other external assistance. Such groups are also important targets by development agents who find it easy and cost effective to work with groups.

Forward vertical integration

According to QuickMBA (2008), forward vertical integration like the one MGH wishes to up need to be evaluated carefully so that the added costs in technology acquisition, securing capital for investment in value adding activities and building a specialized human resource does not compromise the benefits of the same.

However, there are chances that MGH may benefit from economies of scale because it has large production quantities from a stable base of out-growers that it has built over time.

Although MGH and Frigoken points out the high costs of out-growers Global-Gap certification, horticultural production for international marketing channels, as well as some national markets is increasingly subject to food safety standards as consumers' demands on the assurance of quality and safety of food products and their production process (Luning and Marcelis, 2009). This increases the need for contractual arrangements for control and traceability purposes (Strohm and Hoeffler, 2006). In fact, even the local supermarkets have started demanding compliance of their suppliers to Kenya- which has already been benchmarked to Global-GAP (FPEAK, 2010).

According to Jonathan, et al. (2010), the farmers' selection criteria in an out-growers scheme must encompass the farmers' farm location so that the cost of transportation can be minimised since transport costs is one of the challenges facing MGH especially with current increase in fuel prices.

6. CONCLUSIONS

The current French beans value chain is organised in such a manner that each of the key chain actors such as the farmers, MGH, the processor (Frigoken) and the importer (Bonduelle France) have a close relationship based on formal contracts. However, there are constraints that are outlined in this section.

The out-grower scheme is based on linkage-dependent relationships, with the company (MGH) providing inputs and technical support to the smallholder farmers in return for access to their produce. About 97% of the farmers rely on MGH for inputs supply. MGH can use this to exploit the farmers on the basis of over-dependence.

However, the inputs credit facility especially the provision of specific certified seeds, technical advice on chemical use and other agronomic aspects ensure that the produce is of consistent quantity and quality. Furthermore, it gives MGH a competitive advantage over the other produce buyers. This is one of the advantages of an out-growers scheme.

Although the farmers are happy with the MGH extension services, they seem to be dissatisfied with the contract design because they are not involved in the drafting of the terms of engagement. Most of them joined the scheme because of the guaranteed market for their produce while the company opted to run an out-growers scheme because of the limitations of inadequate land.

Some of the major constraints facing the farmers are high cost of inputs, stagnant produce prices and high labour costs, increasing pests and diseases incidences and shortage of water. The problem of water shortage is an issue that is bound to be persistent even into the future because of the climate change and the continued destruction of water catchment areas in the region.

Although it is ideal to visit the farmers frequently in an out-growers scheme, weekly visits to a huge percentage of the farmers can be costly for the company.

The highlands seem to have a higher production level per kilogramme of seed planted although the difference from the rest of the regions is not statistically significant ($P < 0.05$).

The out-growers selection criteria do not take into account their location and the road conditions which make produce collection costly for the company when the trucks have to penetrate the bad roads in the rural areas.

MGH deliberately¹⁵ deals with individual farmers even when farmers have formal groups. Although this may serve to minimise their bargaining power, it works to the disadvantage of the company because it does not benefit from peer pressure during repayment of debts. Furthermore, inputs distribution and monitoring can be made easier when farmers are in groups. The arrangement for farming inputs loans is accumulating a lot of bad debts resulting from farmers' repayment defaults due to the company's insistence on dealing with individual farmers. Poulton, Dorward and Kydd, (2010) note that groups can lessen the default rates due to peer pressure from the group members.

¹⁵ Notice that the sample contract in appendix 7 is signed between MGH and individual farmers.

Buyers and consumers in the principal importing nations require consistent supplies of high quality products. The farmers, especially small-scale holders are reluctant to embrace GLOBALGAP and other standards' certification due to the high costs involved unless where they are threatened by exporters to lose their markets. There are no premium prices offered to the compliant farmers and/or farmer groups.

MGH has a long time experience in the production of vegetables and have developed a huge producer base of about 6,000 out-growers who can supply enough quantities for processing in case the company eventually decides to start processing, which they are keen on, as a forward integration strategy. This one of the key success factors of an out-growers business model.

The guaranteed market for the farmers' produce is one of the success factors of the out-growers scheme and this has been demonstrated by the fact that some farmers have been working closely with MGH for even 11 years.

7. RECOMMENDATIONS

For MGH, services such as inputs supply to the farmers might be more cost effective if they are relinquished to a third party because MGH's core business is not inputs supply. Furthermore, the company has been losing huge amounts of money as unrecovered debts from farmers. Financing agriculture is a risky business especially when the financier is not insured. The supply contracts signed by the farmers coupled with their deliveries records may be used by farmers to acquire inputs' loans from financial institutions with MGH guaranteeing to pay these farmers through the same banks. MGH can negotiate, on behalf of the farmers, the modalities for the loans' deductions. Furthermore, 80% of the farmers are already customers in the local banks as indicated by the percentage of farmers with bank accounts. This can spare the company the agony of bad debts and concentrate on its core business of production and marketing. Besides, the company lacks competent staff for credit administration.

To ensure that farmers access quality and affordable farming inputs and maximise farm outputs, MGH may explore the option of a public-private partnership whereby private agro-chemical suppliers provide seeds, fertilizers and pesticides/insecticides, public regulatory agencies monitor quality while public and private extension providers train farmers in different regions to ensure effective utilisation. The inputs suppliers can get into a memorandum of understanding with a contracting company like MGH to supply the out-growers with inputs on credit.

MGH may lobby the local county government to spend part of the community development funds (CDF) to enable farmers' access to small scale water efficient irrigation systems. MGH can also mobilise farmers and train them to harness water from underground water. When they are organised into groups, it will also be easier for them to access external funding from the development partners 'donors'. Alternatively, individual water conservation projects from floods and run-offs during the rain seasons should be emphasized by MGH extension staff.

The company should lobby the government to up-grade the infrastructure such as roads in areas that show production potential for ease of accessibility.

MGH may consider alternatives to forward vertical integration that might offer the same benefits but with few drawbacks. For example, the company can seek a joint-venture investment with the importer.

To make it easy and less risky dealing with smallholder farmers, MGH should organise them into 'interest' groups or clubs, with the common interest being the production of French beans. The groups need not be registered formally. The company should consider dealing with farmers groups so that financing and other operation costs can be reduced.

The company should come up with criteria for farmer visits for cost effectiveness. The visits may be during recruitments for a new planting, at critical stages of the crop such as flowering or in case of emergencies such as pests or disease break-outs. The rest of the time can be used to recruit new farmers.

It may be an option for MGH to partner with local research institutions and NGO's to introduce low cost mechanisation of some activities such as planting and weeding to reduce on the costs of labour.

MGH may consider putting down, in writing, a farmer recruitment criteria (check-list) against which to admit or reject farmers in the scheme especially on the basis of accessibility. The company should consider holding consultative meetings with farmer representatives to review the terms of contract with the farmers.

To ensure that produce is maintained in its near fresh form before processing, MGH must ensure that there is adequate infrastructure and logistical support. This can be in terms of improvised charcoal coolers at the collection centres to hold the produce before it is collected and adequate and reliable transport arrangements to ensure timely collection of produce.

Moreover, to meet the quality standards demanded by the importers, exporters and produce marketing organisations such as MGH should encourage production contracts with carefully selected farmers using a set out criteria such the willingness of the farmer to adhere to Global-GAP protocol and prior experience with growing of horticultural crops. The same criteria should also take into account the farmers location so that produce collection becomes cost-effective.

To boost compliance with the set global standards, the contracting company might consider partially meeting the certification costs of the producer groups. This will also give the company a competitive advantage over the competitors since it will eventually be dealing with compliant produce hence guaranteeing safety to the consumers. Compliant farmers must also get premium prices to encourage compliance.

For further research, there is need to find the best mode of public-private partnership whereby private agro-chemical suppliers provide seeds, fertilizers and pesticides/insecticides, public regulatory agencies monitor quality while public and private extension providers train farmers in different regions to ensure effective utilisation. The financial institutions must be included to offer their financial and insurance products. The project should be geared towards making the out-growers scheme more effective and efficient.

References

- Abwino, E. N. and Rieks, H., 2006. Out-grower System through contract farming. [Online] Available at: http://www.grolink.se/epopa/publications/Outgrower_System_Zambiac.pdf [Accessed 4 July 2011].
- AKFED, 2011. Aga Khan Fund for Economic Development. [Online] Available at: http://www.akdn.org/akfed_companies.asp [Accessed 01 September 2011].
- Arumugam, N., Fatimah, M.A., Chiew, E.F.C. and Zainalabidin, M., 2010, "Supply chain analysis of fresh fruits and vegetables (FFV): Prospects of contract farming", *Agricultural Economics*, vol. 56, no. 9, pp. 435-442.
- CBI, 2011. Canned beans in France. [Online] Available at: <http://www.cbi.eu/?pag=84&doc=5897> [Accessed 28 June 2011].
- FAO, 2001. Forestry Out-Grower Schemes: A Global View. [Online] Available at: <http://www.fao.org/docrep/004/ac131e/ac131e03.htm#bm3.1> [Accessed 6 June 2011].
- FAO, 2002. Towards Equitable Partnerships between Corporate and Smallholder Partners. Relating partnerships to social, economic and environmental indicators. [Online] Available at: <http://www.fao.org/DOCREP/005/Y4803E/y4803e10.htm> [Accessed 5 June 2011].
- FAO, 2005. Framework for analysing impacts of globalisation on smallholders. [Online] Available at: www.fao.org/documents/showcdr.asp?url_file=/docrep/007/y5784/y5784e02.htm [Accessed 02 September 2011].
- FAO, 2011. Contract Farming Resource Centre. [Online] Available at: <http://www.fao.org/ag/ags/contract-farming/en/> [Accessed 3 June 2011].
- FPEAK, 2010. Kenya Fresh Exporters of Kenya. [Online] Available at: <http://www.fpeak.org/> [Accessed 01 September 2011].
- Global-GAP, 2010. Smallholder Guide for Global G.A.P: Environmental and Social Module. [Online] Available at: http://www.globalgap.org/cms/upload/The_Standard/IFA/English/SIG/4-GLOBALGAP-SG-Environmental-and-Social-Module.pdf [Accessed 7 June 2011].
- Government of Kenya, 2010. Agricultural Sector Development Strategy 2010 – 2020. [Online] Available at: <http://www.ascu.go.ke/DOCS/ASDS%20Final.pdf> [Accessed 20 May 2011].
- GRASP, 2011. Interpretation for South Africa. [Online] Available at: http://www.globalgap.org/cms/upload/The_Standard/GRASP/NIG/100630_GRASP_NIG_SA_ENG.pdf [Accessed 7 June 2011].

- Guide2Kenya, 2011. Meru county, Kenya. [Online] Available at:
<<http://www.guide2kenya.com/information/66/Meru-County>> [Accessed 02 September 2011].
- HCDA, 2011. Horticultural Products. [Online] Available at:
<http://www.hcda.or.ke/tech/fruit_details.php?cat_id=4> [Accessed 6 July 2011].
- Jonathan, A., Kate, S., Robert I. and Mary K. G., 2010. Smallholder Contract Farming in Sub-Saharan Africa and South Asia. [Online] Evans School of Public Affairs, Washington. Available at: < <http://evans.washington.edu/files>> [Accessed 1 September 2011].
- Key, N. and Runsten, D., 1999. Contract Farming, Smallholders, and Rural Development in Latin America: The Organization of Agro-processing Firms and the Scale of Out-grower Production. *World Development*, [e-journal] 27 (2), pp. 381-401. Available through: Science Direct database [Accessed 4 July 2011].
- KIPPRA, 2006. Participatory prioritization of issues in smallholder agricultural commercialization in Kenya. [Online] Available at:
<<http://www.kippira.org/docs/DP64.pdf>> [Accessed 2 September 2011].
- KIT, Faida Mali and IIRR. 2006. Chain Empowerment: Supporting African farmers to develop markets. Royal Tropical Institute, Amsterdam, the Netherlands.
- Lazzarini, S.G., Chaddad, F.R. and Cook, M.L., 2001. Integrating supply chain and network analysis: the study of Netchains, *Journal on Chain and Network Science* 1:7-22.
- Lohr, S. L., 1999. Sampling: Design and Analysis. Duxbury: Brooks/Cole Publishing Company.
- Luning P.A. and Marcelis, W.J., 2009. Food Quality Management. Wageningen Academic Publishers Wageningen, the Netherlands.
- Masakure, O. and Henson, S., 2005. Why do small-scale producers choose to produce under contract? Lessons from non-traditional vegetable exports from Zimbabwe. *World Development*, [e-journal] 33 (10), pp. 1721-1733. Available through: Science Direct database [Accessed 3 July 2011].
- Mayers, J. and Vermeulen, S., 2002. Farming and Rural Development. Macmillan International Political Economy. [Online]
<www.grolink.se/epopa/publications/Outgrower_System_Zambiac.pdf> [Accessed: 1 June 2011].
- Moore, D. S., 2000. The Basic Practice of Statistics. Second edition. New York: W. H. Freeman and Company.
- Muthomi, G., 2009. MGH concept paper. [Submitted to Innovation Fund for Agriculture] February 2009.
- Natural Resources Institute, 2003. Small Producers in Export Horticulture: A Guide to Best Practice. [Online] Available at: < <http://www.nri.org/projects/NRET/SPCDR>> [Accessed 2 June 2011].

- Okello, J. J., 2011. Exit, voice and loyalty in Kenya's French bean industry: what lessons can we learn from smallholder farmers' past response to international food safety standards? *African Journal of Food, Agriculture, Nutrition and Development*, Vol. 11(No. 1, 2011), pp. 4460-4475.
- Oliver, P., 2008. *Writing Your Thesis*. Second edition. London: Sage Publications Ltd.
- Overseas Development Institute, 2000. *Equity and Efficiency in Contract Farming Schemes*. [Online] Available at: <http://www.odi.org.uk/resources/download/2022.pdf> [Accessed 6 June 2011].
- Poulton, C., Dorward, A. and Kydd, J., 2010. The Future of Small Farms: New Directions for Services, Institutions, and Intermediation. *World Development*, [e-journal] 32 (10), pp. 1413-1428. Available through: Science Direct database [Accessed 4 July 2011].
- QuickMBA, 2008. *Strategic Management*. [Online] Available at: <http://www.quickmba.com/strategy/porter.shtml> > [Accessed 29 August, 2011].
- Rooijakkers, P., 2010. Money for farming, *Farming Matters*, [Online]. Available at: <http://www.agriculturesnetwork.org/magazines/global/money-for-farming> [Accessed 14 June 2011].
- Saunders, M. Lewis, P. and Thronhill, A., 2007. *Research Methods for Business Students*. Fourth edition. Harlow: Pearson education - Prentice Hall.
- Strohm, K. and Hoeffler, H., 2006. *Contract farming in Kenya: Theory, evidence from selected value chains, and implementations for development cooperation*. [Online] Nairobi: PSDA/GTZ. Available at: <http://www.uni-leipzig.de/~afrika/index.php?>> [Accessed 22 July 2011].
- Transport Research Laboratory, 1998. *A study of household travel in the Meru district of Kenya*. [Online] Available at: <http://www.dfid.gov.uk/r4d/pdf/outputs/R5591TRL353.pdf> [Accessed 19 August 2011].
- Verschuren, P. and Doorewaard, H., 2005. *Designing a Research Project*. Second edition. The Hague: Eleventh International Publishing.
- Warning, M. and Key, N., 2002. The Social Performance and Distributional Consequences of Contract Farming: An Equilibrium Analysis of the Arachide de Bouche Program in Senegal. *World Development*, [e-journal] 30 (2), pp. 255-263. Available through: Science Direct database [Accessed 4 July 2011].
- World Bank, 2006. *Review of Horticultural Out-grower Schemes in Mozambique*. [Online] Available at: <http://www.usaid.gov/mz/doc/misc/moz%20outgrowers%20report.pdf> [Accessed 7 June 2011].

Appendices

Appendix 1: Farmers' survey questionnaires

Date:

Questionnaire No.

1. Region.....
2. Farmers' group/station name.....
3. Age
4. Sex ☐ Male ☐ Female
5. What's your education background?
 - a) Never been to school
 - b) Primary level
 - c) Secondary level
 - d) Certificate level
 - e) College level
6. Do you have a bank account? ☐ Yes ☐ No
7. If yes, have you ever borrowed a loan to support your French beans farming activity? ☐ Yes ☐ No
8. For how long have you done business with MGH?
9. What is the main reason why you joined the scheme?
 - a) Guaranteed market
 - b) Inputs provision and credit advances
 - c) Access to training and information
 - d) Others (specify)
10. How did you join the scheme?
 - a) As an individual
 - b) As a group
11. If you are in a group, is the group registered by the government? ☐ Yes ☐ No
12. How often are you visited by MGH staff?
 - a) Once a week
 - b) Once in two weeks
 - c) Once a month
 - d) Not at all
13. Is French beans growing your main economic activity? ☐ Yes ☐ No
14. What other activities do you engage in?
 - a) Off-farm
 - b) On-farm

15. Please rate the following services/products as provided by MGH by indicating either (very poor, poor, good, very good or excellent)

Service/Product	Very poor	Poor	Good	Very good	Excellent
Contract design					
Inputs credit					
Cash advances					
Fortnight payments					
Extension service					
Transport					
Quality control					
Farmer recruitment					

16. What is the size of your whole farm?

17. How many kilogrammes of French beans do you plant in the French beans plot?

18. How much beans do you harvest per Kilogramme of seed planted?

19. How much of these (French beans harvested per kilogramme) are rejected during grading?

20. What is your major problem that you face in the current out-growers arrangement?

21. How far is it from your farm to the nearest collection centre (Hrs. /Min)

22. What is your main source of labour for French beans cultivation?

- a) Hired labour
- b) Family labour
- c) Both (Hired and family labour)

23. What is your source of farming inputs?

- a) MGH store
- b) Local agro-shops
- c) Government inputs programme

24. What is your main source of finance for the French beans cultivation?

- a) MGH cash advance
- b) Bank loans
- c) Personal savings
- d) Village money lenders
- e) From family members
- f) Other (specify)

25. Do you get support from elsewhere (other actors) apart from MGH?

Yes

No

26. If yes, from who?

- a) NGO's
- b) Government
- c) Inputs suppliers
- d) Financial institutions
- e) Others (specify)

27. What kind of support do you get?

- a) Training
- b) Financial
- c) Inputs
- d) Others (specify)

Appendix 2: Key informants check-list (Frigoken)

Respondent's Name

Institution: Frigoken (Processor/exporter)

Position

Date

1. Background and history of the company.
2. How long have you worked with MGH.
3. What proportion of your processing beans comes from MGH?
4. Comment on the rejection rates for MGH beans?
5. How is the current canned French beans organised?
For example:
 - i. Information flow
 - ii. Quality control
 - iii. Prices and price determination
 - iv. Contracts
 - v. Actors
6. How do you deal with volume fluctuations?
7. What quality and traceability control mechanisms have you put in place?
8. What are the strengths of the current value chain and your relationship with MGH?
9. What are the major challenges you face in the contractual arrangement you have with MGH?
10. What external factors influence the canned beans value chain?

Appendix 3: Key informants check-list (HCDA)

Respondent's Name

Institution: Horticultural Crops Development Authority (HCDA)

Position

Date

1. What is the mandate of your organisation?
2. Who are the actors in the canned beans value chain?
3. In what ways does your organisation support the value chain?
4. What are the major constraints facing the canned French beans value chain?
5. In your opinion, what is the contribution of contract farming in the local community and the horticulture subsector in general?

Appendix 4: Key informants check-list (Equity Bank)

Respondent's Name

Institution: Equity Bank of Kenya (Nkubu Branch)

Position

Date

1. What services do you offer to the French beans farmers?
2. Are these services sufficient your opinion?
3. Do you have a tailor-made financial product for French beans farmers?
4. If the answer to the foregoing question is yes or no, please explain the reason.
5. What constraints do you face dealing with French beans farmers?
6. What significant contributions has your bank made towards the canned French beans value chain?

Appendix 5: Key informants check-list (MGH)

Respondent's Name

Institution: MGH

Position

Date

1. Background and history of the company – motivation for starting the company.
2. What was the motivation for adopting an out-growers business model?
3. What challenges do you face in this arrangement?
4. How is the current value chain organised?
For example:
 - i. Information flow
 - ii. Quality control
 - iii. Logistics
 - iv. Prices and price determination
 - v. Contracts
 - vi. Actors
5. How is quality control implemented?
6. What are the strengths in the current value chain?
7. What are the constraints in the current value chain?
8. Comment about sustainability of the scheme in terms of gender, environmental consciousness and profits.
9. How do external factors such as government policies affect your business?
10. What kind of external support do you get and from who? Is the support satisfactory?

Appendix 6: Focus group discussions check-list

Region

Date

1. What are the reasons for joining the scheme? Rank the reasons in order of importance.
2. What are the challenges faced by farmers in the current scheme?
3. What other horticultural crops are grown in this region? Rank them in order of importance including Julia (canning) French beans.
4. What are the sources of finance for the cultivation of French beans? Rank them in order of dependability/reliability and accessibility.

For example:

SOURCES OF FINANCING AND/OR CREDIT	
Dependability	Accessibility

5. What kind of external support, financial or otherwise, apart from MGH, do you receive and from who?

Appendix 7: Sample MGH out-growers contract

FARMING/FARM INPUTS FACILITY AGREEMENT

BETWEEN

MERU GREENS HORTICULTURE, P.O. BOX 1730, MERU – KENYA

Herein referred to as “**M.G.H**”

AND

Name of the farmer: _____

ID. No. _____

Contact address: _____

(District _____ Division _____)

Location _____ Collection Centre _____)

Next of Kin _____ ID.No _____ Relationship _____

Bank Account No: _____

Referred to as “THE SUPPLIER”

Growing and supply Contract from

(date).....

This document shall constitute the entire agreement between parties referred to above.

The supplier agrees to grow and sell Julia Beans (Extra fine beans) to M.G.H and the latter commits to buy the said produce subject to the following terms and conditions.

TERMS OF THE CONTRACT

1. THAT M.G.H will supply seeds, fertilizers and other Agro-chemicals necessary for the successful completion of the production programme. These inputs will be charged at the current market prices. The supplier will not be allowed to use inputs that are not approved by M.G.H. All credits advanced are recoverable within the crop cycle. On receipt of inputs, the supplier will append his/her signature/thumb-print on the farmer card.
2. THAT M.G.H agrees to buy from the supplier, produce that meets the acceptable grade at a price of Ksh.30/= ¹⁶ per Kilo. Any other volume that is substandard will either be rejected or paid at a rate of Ksh.23/= per kilo.
3. THAT M.G.H shall pay the supplier twice a month. The net acceptable weight of produce collected from 1st – 15th shall be paid by 22nd day of the same month, while produce collected from 16th to the end of the month shall be paid by 7th of the following month.

¹⁶ The prices had reduced to Ksh. 27 at the time of carrying out this research.

4. THAT payment of produce will be net of any deductions for inputs or other items that may be provided to the supplier by M.G.H.

Out-growers sample contract (continued)

5. THAT payment for produce will be net of any deductions for reject material that didn't comply with the raw materials specifications and tolerance limits. M.G.H will only accept fresh, clean extra fine beans not exceeding 6.5mm in diameter. The same should not have insect bites, mechanical damages, chemical residues or strings among other defects.
6. THAT M.G.H will agree with the supplier days and times of harvesting produce. M.G.H will collect the produce on the appointed days from the designated collection points at no charges to the supplier.
7. THAT the supplier MUST NOT sell his/her produce to other buyers without a written consent from M.G.H. Any supplier found side-selling will have his/her payment withheld and all the credits advanced recovered in full and the agreement shall be rendered Null and Void.
8. THAT the farm inputs facility had been advanced for farming of Julia beans only. The whole consignment of inputs shall therefore be used only for the purpose set out herein M.G.H shall have legal rights to demand immediate payments of all the outstanding debts if it shall come to the knowledge of M.G.H that the inputs or part of them has been or is being expended for any other purpose.
9. THAT the supplier agrees to adhere to the technical advice on crop husbandry, Good Agricultural Practices (GAP) and quality control given by M.G.H representative(s) pursuant to the GLOBALGAP protocol.
10. THAT if the supplier does not abide by this agreement, legal action will be taken against him/her through the Provincial Administration or court of law.
11. THAT M.G.H shall not accept liability due to losses arising from adverse weather or destruction by animals and should not be the reason as to why the supplier should not pay the outstanding debts.
12. THAT the guarantors shall be M.G.H contracted farmers.
13. THAT in case of disagreement between the parties in this agreement, it can be arbitrated by Ministry of Agriculture representatives or the Provincial Administration.

Out-growers sample contract (continued)

This agreement has been witnessed and signed by:-

1). Name _____ ID. No. _____

Sign: _____ Date: _____

(The Supplier)

2). Name _____ ID. No. _____

Sign: _____ Date: _____

(Guarantor)

3). Name _____ Designation _____ Sign: _____

Date: _____

(M.G.H Representative).

4). Name _____ Designation _____ Sign: _____

Date: _____

(H.C.D.A Representative)

5). Name _____ Designation. _____ Sign: _____

Date: _____

(Company Lawyer)

Appendix 8: Statistical tests

i. One way ANOVA of age of out-growers in the various regions

What's your age?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	526.667	2	263.333	2.256	.124
Within Groups	3152.000	27	116.741		
Total	3678.667	29			

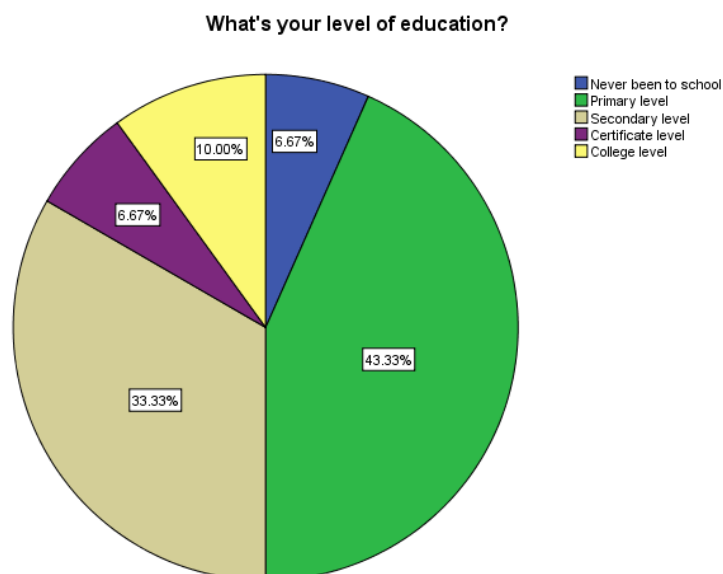
ii. Frequency statistics for farmers age

What's your age?

N	Valid	30
	Missing	0
Mean		43.33
Std. Error of Mean		2.056
Median		41.50
Mode		30 ^a
Std. Deviation		11.263
Minimum		27
Maximum		68

a. Multiple modes exist. The smallest value is shown

iii. A pie chart showing the farmers levels of education in the whole scheme



iv. Chi-square tests for the level of education

Test Statistics

	Which region do you come from?	What's your level of education?
Chi-Square	.000 ^a	17.667 ^b
df	2	4
Asymp. Sig.	1.000	.001

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.0.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 6.0.

v. The correlation between the level of education and the amount of French beans harvested per kilogramme of seed planted (spearman's correlation test).

Correlations

			What's your level of education?	How much French beans do you harvest per Kg of seed planted?
Spearman's rho	What's your level of education?	Correlation Coefficient	1.000	.197
		Sig. (2-tailed)	.	.298
		N	30	30
	How much French beans do you harvest per Kg of seed planted?	Correlation Coefficient	.197	1.000
		Sig. (2-tailed)	.298	.
		N	30	30

vi. Mann-Whitney for the level of education between male and female farmers

Ranks

	What's your sex?	N	Mean Rank	Sum of Ranks
What's your level of education?	Male	15	13.73	206.00
	Female	15	17.27	259.00
	Total	30		

Test Statistics^b

	What's your level of education?
Mann-Whitney U	86.000
Wilcoxon W	206.000
Z	-1.171
Asymp. Sig. (2-tailed)	.242
Exact Sig. [2*(1-tailed Sig.)]	.285 ^a

a. Not corrected for ties.

b. Grouping Variable: What's your sex?

vii. One – way ANOVA of the number of years out-growers in the various regions have worked with MGH

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
How long have you done business with MGH? * Which region do you come from?	Between Groups	(Combined)	88.617	2	44.308	4.490	.021
	Within Groups		266.425	27	9.868		
	Total		355.042	29			

viii. Correlation between length of time as an out-grower and the production level per kilogramme of seed planted.

Correlations

			How long have you done business with MGH?	How much French beans do you harvest per Kg of seed planted?
Spearman's rho	How long have you done business with MGH?	Correlation Coefficient	1.000	-.089
		Sig. (2-tailed)	.	.640
		N	30	30
	How much French beans do you harvest per Kg of seed planted?	Correlation Coefficient	-.089	1.000
		Sig. (2-tailed)	.640	.
		N	30	30

ix. Correlation between gender and growing French beans as the major economic activity.

			How long have you done business with MGH?	How much French beans do you harvest per Kg of seed planted?
Spearman's rho	How long have you done business with MGH?	Correlation Coefficient	1.000	-.089
		Sig. (2-tailed)	.	.640
		N	30	30
	How much French beans do you harvest per Kg of seed planted?	Correlation Coefficient	-.089	1.000
		Sig. (2-tailed)	.640	.
		N	30	30

- x.** The difference in opinion about cultivating French beans as a major economic activity among the farmers in the three regions (chi-square test)

Test Statistics

	Which region do you come from?	Is French beans growing your main economic activity?
Chi-Square	.000 ^a	2.133 ^b
df	2	1
Asymp. Sig.	1.000	.144

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.0.

b. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 15.0.

- xi.** One way ANOVA analysis for the size of the farms in the 3 regions

What is the size of your whole farm (ha)?

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.079	2	.040	.076	.927
Within Groups	14.131	27	.523		
Total	14.210	29			

- xii.** Mann-Whitney test for gender and the main reason for joining the scheme

Test Statistics^b

	What's the main reason for joining the scheme?
Mann-Whitney U	102.500
Wilcoxon W	222.500
Z	-.464
Asymp. Sig. (2-tailed)	.643
Exact Sig. [2*(1-tailed Sig.)]	.683 ^a

a. Not corrected for ties.

b. Grouping Variable: What's your sex?

xiii. Kruskal-Wallis test for the main reasons for joining the scheme among the 3 regions

Test Statistics^{a,b}

	What's the main reason for joining the scheme?
Chi-Square	1.959
df	2
Asymp. Sig.	.376

a. Kruskal Wallis Test

b. Grouping Variable: Which region do you come from?

xiv. Mann-Whitney test for gender and the mode of joining the scheme

Test Statistics^b

	How did you join the scheme?
Mann-Whitney U	105.000
Wilcoxon W	225.000
Z	-.372
Asymp. Sig. (2-tailed)	.710
Exact Sig. [2*(1-tailed Sig.)]	.775 ^a

a. Not corrected for ties.

b. Grouping Variable: What's your sex?

xv. One Way ANOVA for the production per kg of seed planted among the 3 regions

ANOVA

How much French beans do you harvest per Kg of seed planted?

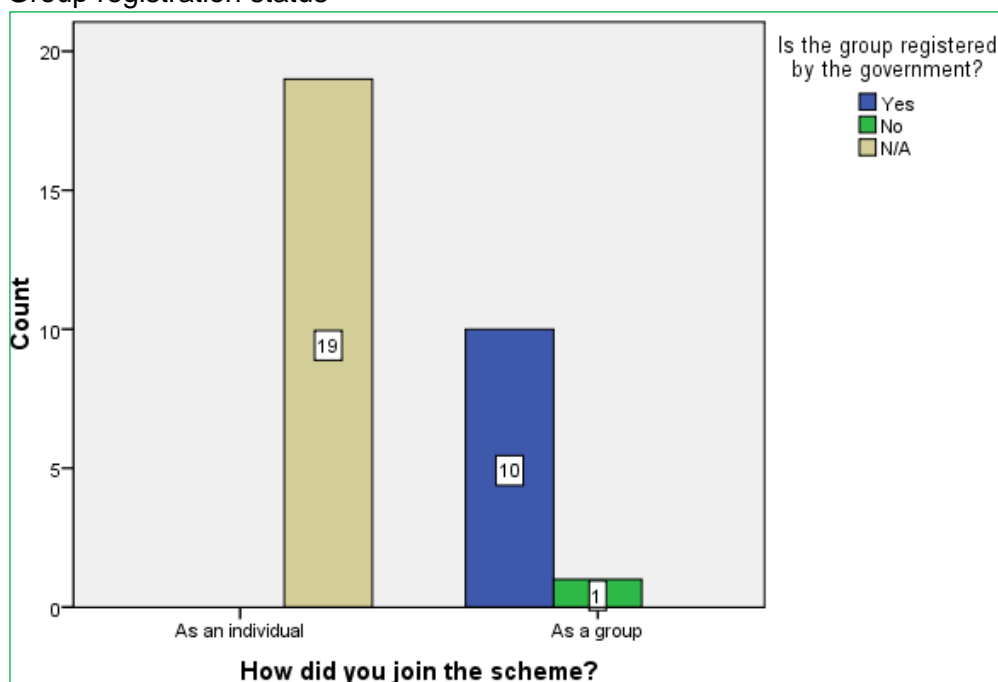
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	105166.667	2	52583.333	1.162	.328
Within Groups	1222250.000	27	45268.519		
Total	1327416.667	29			

xvi. Non-parametric correlation of the amount of seed planted and the distance of the farm to the nearest collection centre.

Correlations

			How many Kgs of seed do you plant in your French beans plot?	How far is your farm from the collection centre (min)?
Spearman's rho	How many Kgs of seed do you plant in your French beans plot?	Correlation Coefficient	1.000	-.217
		Sig. (2-tailed)	.	.248
		N	30	30
	How far is your farm from the collection centre (min)?	Correlation Coefficient	-.217	1.000
		Sig. (2-tailed)	.248	.
		N	30	30

xvii. Group registration status



xviii. Farmers' rating of MGH services/products

a) How do you rate MGH contract design

Rating	Frequency	Percentage	Cumulative Percent
Very poor	1	3.3	3.3
Poor	15	50.0	53.3
Good	11	36.7	90.0
Excellent	3	10.0	100.0
Total	30	100.0	

b) How do you rate MGH inputs credit

Rating	Frequency	Percentage	Cumulative Percent
Poor	1	3.3	3.3
Good	13	43.3	46.7
Very good	5	16.7	63.3
Excellent	11	36.7	100.0
Total	30	100.0	

c) How do you rate MGH cash advances

Rating	Frequency	Percentage	Cumulative Percent
Very poor	1	3.3	3.3
Poor	15	50.0	53.3
Good	10	33.3	86.7
Very	4	13.3	100.0
Total	30	100.0	

d) How do you rate MGH fortnight payments

Rating	Frequency	Percentage	Cumulative Percent
Very poor	1	3.3	3.3
Poor	1	3.3	6.7
Good	17	56.7	63.3
Very good	2	6.7	70.0
Excellent	9	30.0	100.0
Total	30	100.0	

e) How do you rate MGH extension services

Rating	Frequency	Percentage	Cumulative Percent
Good	14	46.7	46.7
Very good	4	13.3	60.0
Excellent	12	40.0	100.0
Total	30	100.0	

f) How do you rate MGH transport services

Rating	Frequency	Percentage	Cumulative Percent
Good	16	53.3	53.3
Very good	2	6.7	60.0
Excellent	12	40.0	100.0
Total	30	100.0	

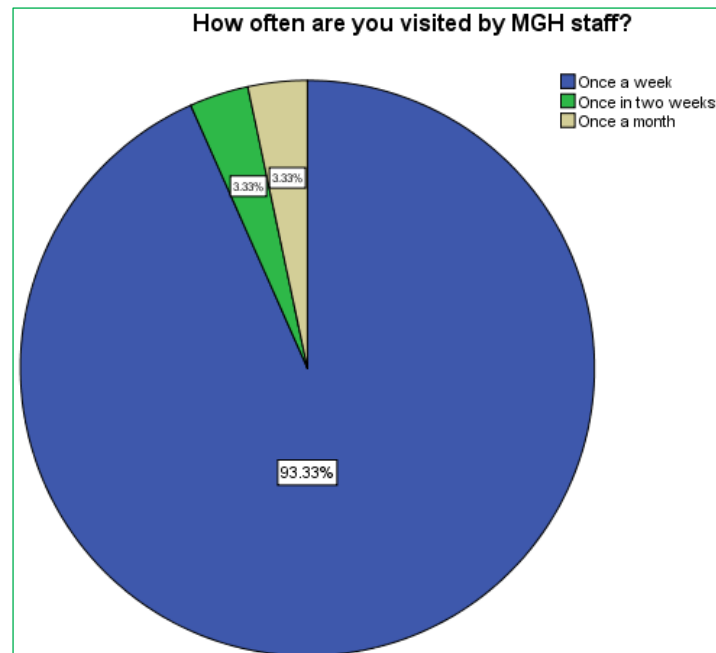
g) How do you rate MGH quality control

Rating	Frequency	Percentage	Cumulative Percent
Poor	4	13.3	13.3
Good	14	46.7	60.0
Excellent	12	40.0	100.0
Total	30	100.0	

h) How do you rate MGH farmer recruitment?

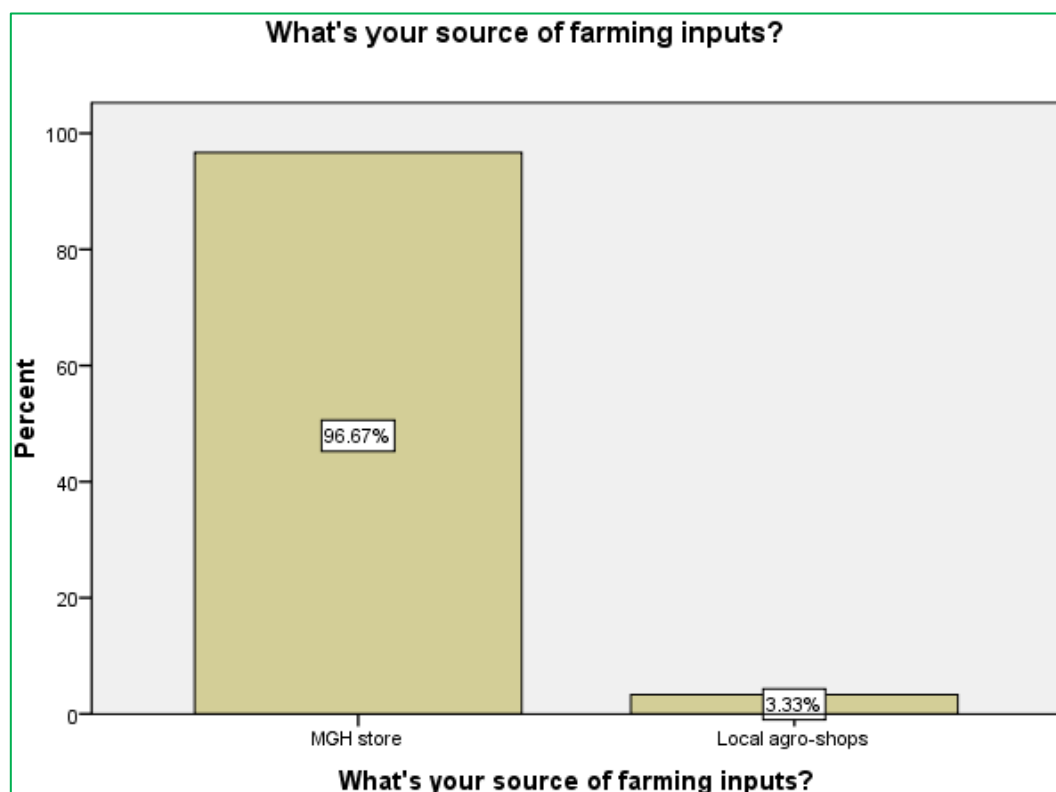
Rating	Frequency	Percentage	Cumulative Percent
Very poor	1	3.3	3.3
Poor	2	6.7	10.0
Good	12	40.0	50.0
Very Good	3	10.0	60.0
Excellent	12	40.0	100.0
Total	30	100.0	

xix. Farmer visits by MGH staff



Farmer visits by MGH staff

xx. Source of out-growers' farming inputs



Source of out-growers' farming inputs

Appendix 9: List of key informants and focus group discussions representatives

Organisation	Name	Position	Contacts
Meru Greens Horticulture (MGH)	Gerald Muthomi	Managing Director	0722 - 783045
Frigoken (K) Ltd	Peter Muthee	General Manager	0722 – 203396
HCDA (Nkubu Depot)	Zipporah Muthomi	Technical manager	0720 – 721666
Equity Bank (Nkubu Branch)	Moffatt Kinoti	Credits officer	0712 - 665581
Highlands region	Boniface Kiriimi	Farmer	0735 – 499150
Transition region	Mrs Mbaya	Farmer	0723 – 754963
Lowlands region	Ndubi Boniface	Farmer	0729 - 319676